

# Are Consumer Decision-Making Phenomena a Fourth Market Failure?

Peter D. Lunn

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**Abstract** This paper challenges the increasingly common view that the findings of behavioural economics constitute a fourth type of market failure. It shows how many behavioural phenomena, while they do imply departure from the standard competitive market model, undermine the use of this idealized model for policy analysis. A case study of the three-part tariff illustrates two problems: the validity of inferring that consumers' choices after an intervention are superior to previous choices and the potential for distributional consequences when policy alters choice. These issues make behavioural phenomena fundamentally different from the standard market failures, as the deductive theoretical framework can no longer provide criteria to determine whether a policy improves consumer welfare. Thus, conceiving of behavioural phenomena as another form of market failure is to underestimate their implications for policymaking.

**Keywords** Market failure · Decision-making biases · Behavioural economics · Regulation

## Introduction

Advances in behavioural economics and related disciplines have generated debates among those interested in consumer and competition policy. Specifically, many of the empirical findings unearthed by the behavioural approach to economics question the assumptions and applicability of orthodox (neo-classical) competitive market models and, consequently, appear to have implications for policies that rely on such models for guidance (e.g., Bennett et al. 2010; Garcés 2010; Mehta 2013; Rosch 2010). These findings hence represent a new twist in the long-running argument about the extent of desirable intervention in markets (e.g., Micklitz et al. 2011; Salinger 2010; Sunstein 2011) and whether information-based remedies for deficiencies are likely to improve welfare or merely place additional burdens on market participants for little return (Faure and Luth 2011; Sunstein 2011).

The present paper makes a contribution to this growing literature by challenging a specific conceptualization of behavioural economic phenomena that violate orthodox microeconomic consumer theory. It is becoming increasingly common among academics and policymakers to

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P. D. Lunn (✉)

Economic and Social Research Institute (ESRI) & Department of Economics, Trinity College Dublin,  
Whitaker Square, Sir John Rogerson's Quay, Dublin 2, Ireland  
e-mail: pete.lunn@esri.ie

conceptualize such behavioural phenomena as an additional form of market failure. Bennett et al. (2010, p. 115) state that "...arguably, behavioural biases can be viewed simply as a fourth type of market failure" to be listed alongside externalities, market power, and asymmetric information. Shogren and Taylor (2008; also Shogren 2012) introduce what they call "behavioural failure" when discussing environmental regulation, making an explicit parallel to the concept of market failure. Bar-Gill (2008) has coined the term "behavioural market failure" to emphasize the potential negative welfare effects of such phenomena in consumer markets. This term has also been adopted by Sunstein (2013) and by Bubb and Pildes (2014), who credit behavioural economics with changing the normative theory of regulation in part through the creation of a "new category" of market failure (p. 1603). Similarly, in the UK Government Economic Service's *Behavioural Economics: A Guide for Economists in Government*, the role of behavioural economics in market failure is labelled "rationality failure."

The present paper argues that the relevant behavioural phenomena are fundamentally different from previously identified forms of market failure. This difference derives from the contrasting scientific method that has generated them: inductive observation rather than deductive formal analysis. The central argument can be stated as follows. The concept of market failure elevates the standard competitive market model to the status of an ideal. A substantial body of scholarship has generated formalized models of market failures and associated corrections, allowing analysts and policymakers to identify departures from this ideal model and to deduce policies that will move the market back towards it. In contrast, although many behavioural phenomena also constitute departures from the ideal model envisaged by the market failure framework, the volume and variety of the findings question the legitimacy for policy analysis of the framework itself. They present challenges to consumer and competition policy that the market failure framework was not designed to address and about which it cannot provide clear policy direction. Two specific challenges are highlighted: the identification of normative preferences and the likelihood of distributional consequences where policy alters consumer choices. The intractability of these issues within the market failure framework means that to consider behavioural phenomena as an additional market failure is potentially to misunderstand their policy implications. The questions they pose for how we think about consumer and competition policy are more fundamental, with implications for how empirical evidence is used in policy development and for the skill sets of policymakers.

For ease of exposition, the paper employs a case study that views a particular challenge raised by behavioural economics from the perspective of the policymaker. Evidence has accumulated to suggest that "three-part tariffs," which are widespread in mobile telecommunications and residential broadband markets, exploit established behavioural phenomena and result in significant consumer detriment (Bar-Gill and Stone 2009; Grubb 2009; Lambrecht and Skiera 2006). The paper considers whether a policymaker, in view of this evidence, can employ the market failure framework to guide policy.

Note that the purpose of this paper is not to provide a review of the many behavioural phenomena that are potentially relevant to consumer and competition policy, but instead to consider how such phenomena should be conceptualized when considering their implications for policy. Existing works already contain good overviews of the relevant phenomena (e.g., DellaVigna 2009; Dolan et al. 2010; Sunstein 2011). Thus, the paper takes as given that these phenomena are numerous and, at least for the most part, scientifically robust.

"The Market Failure Network" first revisits the long-standing concept of market failure, noting that throughout its evolution, the aim has been both to identify and to correct market failures by reference to an idealized model. "Case Study: Three-Part Tariffs in Telecommunications" describes the three-part tariff problem in telecommunications, arguing that it exemplifies the policy challenges posed by behavioural economics and illustrating why

the market failure framework does not provide clear policy direction. “[Beyond Market Failure](#)” generalizes the argument by showing how the alternative scientific method employed in behavioural economics delivers findings that themselves undermine the market failure framework. The last section concludes and considers other ways that policymakers might conceptualize and respond to the relevant behavioural phenomena.

## The Market Failure Framework

The argument to be presented in part rests on how and why the concept of market failure evolved and how it has come to be used. This section shows that even prior to the marginal revolution in economics, the concept was directed at both the identification of and, crucially, the correction of departures from an idealized allocation system. The study of established market failures within economic theory has always relied and continues to rely primarily on deductive theory that aims to inform both diagnosis and treatment, subject to limitations of cost.

### Market Failure in the History of Economic Thought

The concept of market failure can be traced back to nineteenth century classical economics. As documented by Robbins (1952), far from being conservative supporters of a free-market system, the classical economists were reformers intent on directing economic policy for the benefit of wider society. They held that the well-being of society as a whole would be advanced by free consumer choice within a market system in which producers also had freedom, subject to regulation by government to protect such freedom. Within this tradition, the writings of John Stuart Mill in the mid-nineteenth century began an identifiable intellectual effort to define more precisely the legitimate extent of state intervention in the market. As Medema (2007) shows, Mill (1848) broke away from the classical tradition by identifying many cases of what came to be understood as examples of two of the three standard market failures studied in micro-economics: externalities (including public goods) and market power. Mill’s analysis included examples relating to the consumer policy of the time, such as the state’s role in establishing a standard set of weights and measures to alleviate buyers’ difficulties when assessing quantities. For present purposes, the key point is that from its inception, the analysis of market failures aimed to categorize departures from the ideal model and to deduce possible interventions to return the system to an ideal state or what Mill called the “system of natural liberty.”

This conceptualization of market failure and the motivations for studying it continued through the turn of the twentieth century, notably in the work of the Cambridge School of Economics, which introduced analytical rigour and mathematics to the study of market failure (O’Donnell 1979). While empirical examples and case studies were extensively discussed in the literature of the time, following the marginal revolution, the primary scientific method employed was deductive. The efficiency of the market system was deduced from formalized assumptions. Instances were then analysed where certain assumptions did not hold and Pareto optimal outcomes did not obtain, allowing the further deduction of potential policy measures to correct the failure and return the model to its idealized form or, in later work, to a second best level of efficiency (Lipsey and Lancaster 1956). Perhaps the most celebrated early example is the Pigouvian tax as an antidote for externalities (Pigou 1920).

### Three Standard Market Failures

While market failures may happen for a great number of reasons, on the assumption that public goods are considered a special case of externalities, orthodox microeconomics equips analysts and policymakers to identify and address three broad categories: externalities, market power, and information asymmetry. It is for this reason that Bennett et al. (2010) contend that various behavioural phenomena constitute a “fourth type of market failure.” With respect to information asymmetry, the same deductive scientific method characterized the initial analysis in the late 1960s and early 1970s as had previously been applied to externalities and market power. The breakthrough studies that changed understanding (e.g., Akerlof 1970) introduced an assumption of asymmetric information into standard equilibrium models, which by then had a highly formalized neo-classical flavour, and deduced suboptimal outcomes and potential solutions for restoring Pareto efficiency. The analysis proceeded via theoretical deduction, with the introduction of asymmetric information justified through casual observation, before seeking real-world application and empirical tests to establish the extent of the identified market failure or the prevalence of efforts by market participants and authorities to combat information asymmetry (Stiglitz 2000).

Thus, the methodological approach has been consistent throughout the development of the market failure framework over a period of more than a century and a half. A deductive model of an efficient ideal market is the starting point. The assumptions of the model are then tweaked to reflect potentially important properties of real markets. The efficiency properties of the model are reassessed and, where efficiency failures are identified, further deductions suggest corrections to restore optimality or to reach a second-best level of efficiency. From the deductive analysis flow criteria for welfare improvement and, hence, what have become standard policy solutions to market failures. Externalities can be removed by completing the market and pricing them in or neutralized by taxing them at the efficient level. Market power can be addressed by preventing collusion and removing barriers to entry. Information asymmetry can be tackled by requiring accurate disclosure, improving access and policing product descriptions and quality guarantees. These solutions are born of the market failure framework, in which it can be deduced that they will direct the market back towards the ideal competitive model.

### Linking Behavioural Economics to Market Failure

Part of the impetus to describe and conceptualize relevant behavioural phenomena as market failures is to get them taken seriously by those whose instinct is to caution against excessive government intervention. An example is Bar-Gill (2008), who outlines evidence for “behavioural market failures” in credit card markets, where some consumers fail to make beneficial switches to lower cost cards and some simultaneously hold credit card debt that bears high interest and savings that earn much lower interest. Bar-Gill asks why detailed factual inquiry and legal intervention are not employed to address these market failures, just as they are when the market failure results from monopoly and collusion. Similarly, Sunstein (2013, p. 39) posits that behavioural market failures “supplement the standard (welfarist) justifications for government action.” Indeed, many behavioural phenomena can be linked to one or more violations of the orthodox competitive market model, thereby implying that, in a market where such phenomena persist, a deduction of efficient allocation is invalid.

However, as demonstrated above, the market failure framework was developed to do more than list violations of perfect efficiency. The framework presents an ideal to aim for and is designed to allow the analyst or policymaker to deduce a direction for policy that shifts

allocation back towards this ideal. This aspect of the market failure framework is recognized also by Shogren (2012, p. 350), who uses the term behavioural failure in a parallel sense to market failure to “stress the normative notion in behavioural economics that society can ‘fix’ these failures given some third-party expert who knows the optimal outcome and can create cues and nudge people towards that outcome.” It is at this point, when the analyst or policymaker turns to the market failure framework to make deductions about potential policies, that various behavioural phenomena become troublesome. From the outset, note that while the three standard market failures were first investigated by scholars via the deductive scientific method, the relevant behavioural phenomena were not. Arguably, therefore, we might expect these phenomena to have some distinctive properties. Before pursuing this further in a generalized analysis, however, a concrete case study helps to clarify the nature of the problem.

### Case Study: Three-Part Tariffs in Telecommunications

Three-part tariffs consist of a fixed fee in return for a specified level of service up to a limit, beyond which additional charges are levied. Applying these tariffs to mobile telephone and broadband services, consumers pay for an allowance of units of the product (calls, text messages, and/or megabytes of data) supplied at zero marginal price, while any units consumed beyond the allowance are charged at a positive (usually much higher) marginal price. These contracts are widespread in contested markets and hence appear to be popular with both providers and consumers, yet as the following section demonstrates, there is good evidence that they result in a substantial proportion of consumers paying considerably more for the service than they need to.

This section employs the three-part tariff as a case study of the challenges for policymakers posed by behavioural phenomena. The aim is to adopt the perspective of the policymaker and to consider, first, the insights into the problem that behavioural economics offers, then second, and crucially for the present argument, whether the market failure framework is helpful for conceptualizing the problem and determining a policy solution. Thus, the case study looks at the scientific literature available to the policymaker, then asks what an evidence-based policymaker might make of it.

Before going into detail, it is important to establish the relevance of the case study. Consumer detriment associated with three-part tariffs is certainly of sufficient magnitude to be attracting attention from regulatory policymakers in telecommunications and other sectors (see, for example, Federal Communications Commission 2010; OFGEM 2012). More importantly for present purposes, however, this case study has certain properties in common with other topical policy issues where behavioural economics is generating debate over the appropriateness of interventions. Indeed, it exemplifies the main consumer and competition policy dilemmas thrown up by behavioural findings.

Firstly, while the basic empirical facts outlined below are not disputed, the precise cause of the apparently disadvantageous consumer decisions, in this case the failure to select the cost-minimizing tariff, is not a matter of scientific consensus. This applies to other behavioural phenomena that have been observed in real markets and brought to the attention of policymakers, such as the power of defaults to determine choices relating to retirement savings (e.g., Madrian and Shea 2001; Poterba 2009) or online transactions.<sup>1</sup> The influence of defaults is easy to demonstrate empirically, yet it is unclear to what extent the effect is due to

<sup>1</sup> In both cases, policy has been changed in response to findings. See, for example, <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/11/675&type=HTML>.

individuals treating defaults as advice, viewing them as an indication of what others do, adopting them as a reference point, or simply sticking with the default through inertia or procrastination. Thus, the empirical findings and policy response are ahead of explanatory efforts; the phenomena are not fully understood and remain the subject of ongoing research. Secondly, modern telecommunication markets are contested and offer consumers plenty of choice. Despite the apparent presence of competition, the potentially problematic transactions are entered into willingly for periods of years, with many consumers seemingly unaware that they could obtain a substantially better deal. Hence, policymakers must consider whether it is reasonable to conclude that the relevant consumers do not know what is good for them. Again, this implication is typical of behavioural evidence relating to free consumer choices across a range of competitive markets, such as insensitivity to fees for investment products (e.g., Barber et al. 2005), the anchoring of credit card repayments by a prominent minimum repayment (Stewart 2009), or the impact of container size on food intake (e.g., Wansink and Kim 2005). Lastly, the selected case study is a consumer and competition policy issue that could potentially be addressed by a range of possible interventions drawn from current debates on the implications of behavioural economics. There are arguments for doing nothing, for mandating better information disclosure, for trying other “nudges” (Thaler and Sunstein 2008) such as timely or salient consumer feedback, for introducing a limited form of price regulation (e.g., capping penalty rates), or, at the extreme, a case can even be made for banning three-part tariffs on the grounds that price schedules with zero marginal cost are theoretically inefficient. Overall, therefore, the three-part tariff problem shares key characteristics with other policy challenges raised by behavioural economics.

#### Overoptimistic and Miscalibrated Consumers

The primary evidence of concern to regulatory policymakers relates to the proportion of consumers failing to choose cost-minimizing tariffs and the associated effect size. Lambrecht and Skiera (2006) studied 11 000 customers at a single German residential broadband internet provider, choosing among just three tariffs. The majority of consumers on a three-part tariff with higher fees and allowances would have been better off on a tariff with a lower fee and allowance, while a smaller group of consumers across tariffs overstepped the limits and paid penalty rates. Overall, the effects were large. The supplier was estimated to be doubling customer lifetime value from those not selecting the cost-minimizing tariff. Similar effects have been recorded for mobile telephone tariffs in the USA by Grubb (2009) and Baggill and Stone (2009), with a somewhat higher proportion overstepping allowances. Yet despite apparent loss of consumer surplus, three-part tariffs remain popular among consumers.

A good policymaker seeking to understand and perhaps to address the problem looks to the evidence regarding what causes it, which suggests that overoptimism and miscalibration play a part. “Overconfidence bias” is an established phenomenon in behavioural economics, which manifests itself in two ways. Firstly, we are habitually overoptimistic in assessing our likely personal performance, abilities, and outcomes. For instance, one classic and oft-cited study found that 93% of drivers thought their driving skills were above the median (Svenson 1981). Secondly, we are “miscalibrated” with respect to such outcomes, believing our assessments to be more accurate than they in fact are and underestimating the likelihood of extreme outcomes. Again, the size of this miscalibration can be very large. Ben-David et al. (2013) asked a sample of Chief Financial Officers to predict stock market returns and, in doing so, to predict the 10th and 90th percentiles of the distribution. Actual returns stayed within stated 80% confidence ranges just 33% of the time. Laboratory and field studies of both types of overconfidence are reviewed by DellaVigna (2009), who finds evidence for the phenomenon among consumers



when they choose health club contracts, credit cards, and pension plans, and with respect to the judgements and decisions of both professionals and non-professionals in financial markets. Grubb (2009) argues that such overconfidence bias is the most likely explanation for disadvantageous choices among three-part tariffs. Optimism means that consumers may believe that they are in better control of usage than in fact they are, while miscalibration leads them to underestimate the likelihood both of going beyond allowances and of using too little of the service to justify the flat rate payment; three-part tariffs attract custom because consumers underestimate the likelihood of paying too much for the service at both ends of the usage distribution.

Importantly, however, the policymaker will also discover that this combination of overoptimism and miscalibration is not the only factor indicated by empirical results; other part-causes are probably involved (Lambrecht and Skiera 2006). Risk-averse consumers may pay extra for insurance against high bills, although they may not be sufficiently attentive to the size of the premium they are paying for this insurance. The “taxi-meter effect” (Prelec and Loewenstein 1998), which refers to an observed tendency to enjoy consumption more after paying in advance than when watching the bill simultaneously mount, may also be involved. That is, surfing, chatting, or messaging may actually be more pleasurable when the marginal cost is zero. The survey evidence of Lambrecht and Skiera (2006) suggests some role for both the insurance and taxi-meter effects, which are consistent with the observed preference for flat rates, although perhaps not with contracts that include high penalty rates for exceeding allowances (Grubb 2009).

Given the available evidence, three-part tariffs raise clear issues for the policymaker. Consumers are paying much more than they need to for the level of service they receive, implying substantial detriment. The prime suspect is a misperception, which, while it is the subject of relatively recent and ongoing scientific investigation, is nevertheless well documented. The evidence indicates that providers offer contracts that exploit the misperception and generate additional profits from the more overconfident consumers, yet consumers and suppliers alike willingly enter contracts with three-part tariffs and overconfidence is not the only reason consumers are willing to pay more for flat rates. So, should the regulatory policymaker act and, if so, how?

### Applying the Market Failure Framework

The market failure framework was developed to allow policymakers and analysts to spot inefficiencies and to deduce potential solutions. Does it help here? It is not needed for the policymaker to conclude that three-part tariffs lead to potentially large consumer detriment. This inference requires only the assumption that consumers would rather pay substantially less for the same service, because the empirics suggest in straightforward fashion that consumers could be doing better. But does the market failure framework help an analyst or policymaker deduce a direction for policy?

Following the same logic as applies to the three established market failures, the policymaker might deduce that a good policy is one that tries to move the market back towards the ideal competitive model. Interventions might be sought to make consumers’ perceptions of the distributions of their own likely future usages more accurate. Regulations might be introduced to force suppliers to disclose their own estimate of the probability that the consumer will overstep the allowance (Bar-Gill 2012) or to send a warning message when an allowance is about to be overstepped (Bar-Gill and Stone 2009) or to provide one-click access to contemporaneous graphical usage information (Lunn 2013). Such interventions, designed to make consumers’ perceptions more accurate or, in the jargon, to “debias” them, might initially

appear to move the market back towards the ideal competitive model with consumers adhering more closely to orthodox rationality assumptions.

There is, however, a problem with the logic here. To be effective, any intervention must alter choices. However, how can the policymaker be sure that the new choices, made following the intervention, are better for consumers than the old choices? It might be thought that any intervention that makes consumers perceive the distribution of their own future usage more accurately will be beneficial, but in fact, this is not a sufficient condition for welfare improvement. To see this, consider another established finding of behavioural economics that decision-makers overweight small probabilities when choosing between risky prospects (Camerer and Ho 1994; Tversky and Kahneman 1992). Overweighting of small probabilities may act as a counterbalance to miscalibration because while the latter effect reduces the perceived probability of unlikely outcomes, the former effect may compensate by increasing the weighting given to low probabilities in the decision. Given this, it cannot be deduced that an improvement in consumers' calibration regarding their likely future usage will necessarily result in a better choice of tariff. Following the intervention, consumers may perceive the probability distribution of future usage more accurately but continue to overweight small probability outcomes when deciding between contracts. Thus, the intervention may actually worsen decisions overall, despite the improved accuracy of one consumer perception.

Suppose the policymaker rejects the accuracy of perceptions as a criterion for welfare improvement, even though accurate perceptions are a feature of the ideal competitive market model, and instead imposes the criterion that any policy intervention must increase the proportion of consumers opting for cost-minimizing tariffs. Since it is the high proportion of consumers not opting for such tariffs that implies departure from the ideal model, this criterion again follows the logic of trying to correct a market failure. Again, however, it is not valid to deduce that such a policy intervention improves welfare even if it does increase the proportion of consumers on cost-minimizing tariffs. This is because policymakers do not know the optimal proportion of consumers on such tariffs to aim for. Some consumers' desire for insurance against high bills and their dislike of having the meter ticking may mean that they genuinely prefer to spend somewhat more than they need to. The optimal proportion on the lowest tariff for usage will, therefore, be less than 100%. How much less? Having accepted that some consumers' choices of tariff diverge from what is best for them, we no longer have a criterion for determining the optimum and thus for judging whether an intervention is unambiguously beneficial. The policymaker cannot deduce a welfare improving direction for policy even if the policy can be introduced at zero cost.

Lastly, suppose the policymaker instead attempts a more ambitious "correction" in an attempt to move the market back towards the ideal competitive model. If consumers are unable to select the optimal three-part tariff because of multiple interacting behavioural effects, another possibility is to mandate companies to make available individual usage information in machine readable form (Thaler and Sunstein 2008). By allowing those with the technical capability to use bespoke software to compare tariffs, the policy might assist consumers in simultaneously avoiding a number of potential behavioural pitfalls and adhering better to the rationality assumptions of the ideal model. Note that this aspect of the case study is not hypothetical. A version of this intervention ("midata") is being introduced in the UK at the time of writing. The policy, which imposes costs on providers, may or may not turn out to be highly beneficial to those consumers who exploit it, but raises another awkward issue. This policy raises distributional concerns. While the costs of the system will be borne by all, only those consumers who are technologically adept enough to make use of the software will benefit. Furthermore, these may be more sophisticated or active consumers who are already



less likely to be on a disadvantageous tariff. There is nothing in the market failure model that guides the policymaker faced with these distributional issues.

When faced with the three standard types of market failure, the market failure framework allows analysts and policymakers to deduce that certain policies are welfare improving and, hence, offers criteria for good policy. However, from the perspective of the policymaker faced with behavioural evidence regarding how consumers choose between three-part tariffs, deductions equivalent to trading externalities, introducing a tax at the optimum level and preventing price collusion or reducing information asymmetry, cannot be made. Thus, the case study suggests that the behavioural phenomena concerned are somehow different from the three established forms of market failure and, therefore, may need to be conceived of in a different way. None of the above analysis is to suggest that any of the potential policy interventions listed above is a bad idea, nor that policymakers should necessarily shy away from intervening (cf. Epstein 2008; Bar-Gill 2008). Faced with the empirical evidence, many people might conclude that introducing such regulations would be a good idea; the broad sweep of telecommunications consumers may welcome them. What the case study shows, however, is that the welfare effects of policies based on the behavioural evidence are more ambiguous. The following section generalizes and extends the arguments raised by the case study, which stem ultimately from the scientific and analytic approach.

## Beyond Market Failure

This section proposes that scientific method lies at the heart of the problems raised. While the market failure framework exemplifies the use of the deductive approach to the investigation of economic questions, behavioural economics addresses economic questions via a contrasting inductive approach, more commonly employed in experimental psychology. The method has produced very many replicable empirical findings, the sheer volume of which makes deductive welfare analysis intractable, at least at the present time and perhaps on a long-term basis. Furthermore, behavioural phenomena force policymakers in the area of consumer and competition policy to consider normative issues that lie outside the market failure framework. Here, two issues are highlighted: the problem of normative preferences and the redistributive implications of policy interventions.

### Deductive and Inductive Economics

There is no agreed definition of behavioural economics. Most definitions offered centre on one or both of two aspects: the branch of economics that contrasts observed behaviour with the rational choice assumptions of orthodox microeconomics (e.g., Wilkinson 2008) or the incorporation of psychology into economics (cf. Thaler and Mullainathan 2000). The second of these is perhaps more accurate than the first. To see this, consider a standard behavioural economic experiment where rational choice theory offers a clear prediction. The experimenter would surely not cease to be engaging in behavioural economics if, in the event, the prediction was confirmed. Moreover, behavioural economists increasingly test predictions derived from other decision-making models. Thus, although behavioural economics has produced many refutations of standard microeconomics, it does not, by definition, entail such empirical outcomes or require a focus on rational choice theory. In favour of the second type of definition, there is little doubt that psychology and psychologists have been foundational for behavioural economics. However, it is not clear that psychological theory or even psychological insights are necessary for making advances through behavioural economic

research. Arguably, what behavioural economics has adopted from experimental psychology is not so much theory or insight as a particular scientific method (Shiller 2005; Lunn 2012). The salient characteristic of this scientific approach is inductive logic based on extensive empirical observation and experimentation. For the most part, theory is rarely deduced from normative (or other) assumptions and then indirectly tested. Instead, behaviour is investigated through direct and open-ended empirical study. Potentially illuminating or relevant economic situations are subjected to controlled empirical investigation. Behavioural principles and models are then inferred from repeated observation and experiment—a process of induction.

The use of this inductive scientific approach has consequences. Most importantly, as in experimental psychology, the method can produce diverse empirical phenomena that are hard to unite through generalizable models. Thus, behavioural economics has established the existence of an extensive array of phenomena that influence economic decision-making, many of which have now been observed under both laboratory conditions and among economic actors in the field (DellaVigna 2009). For instance, should policymakers turn to the established scientific literature for guidance on how consumers approach the purchase of retail investment products, they would discover that choices are likely to be influenced by reference dependence, hyperbolic discounting, extrapolation bias, behavioural convergence, overconfidence, action bias, choice overload, the focussing illusion, ambiguity aversion, inattention, framing effects, and perhaps more. There is evidence that each of these phenomena, all of which generally violate rational choice theory, can significantly affect investment decisions. Thus, behavioural economics has revealed that economic decision-making is highly complex, multifaceted, and sensitive to quite subtle features of the decision-making environment. As a consequence, it may be poorly approximated by relatively simple axiomatic models, despite their merits in terms of power and generalizability. Instead, accurate models of how consumers behave in any given market may need to be quite specific to the particular context, with the strongest influences on consumer decisions identified by empirical study within the context concerned.

### Implications for Normative Preferences

This understanding of how behavioural economic investigation proceeds allows the lessons of the case study concerning consumer policy and three-part tariffs to be generalized. In many purchase contexts, the range of identifiable behavioural phenomena likely to affect consumer decisions will be broad. In the case of telecommunications, in addition to the phenomena referenced above (miscalibration and the overweighting of small probabilities, inattention, and taxi-meter effect), other behavioural phenomena such as time consistency, reference dependence, and choice overload are likely to influence choice of contract (Lunn 2013). Thus, while a proposed policy or regulation might aim to correct an apparent market failure by “debiasing” the consumer, extinguishing one seemingly disadvantageous aspect of consumer reasoning, it is not possible to deduce that consumer choices after the intervention will improve. The crux of this problem is that a key premise of the market failure framework is undermined by the broad and expanding range of decision-making phenomena uncovered by behavioural economics. The framework assumes, in the absence of the established causes of market failure, that preferences revealed by consumer behaviour represent desirable outcomes. The framework is fundamentally premised on the notion of an ideal model against which a deviation can be detected and corrected. If an intervention internalizes an externality, reduces market power, or rebalances an information asymmetry, then the market outcomes will move back towards this ideal. The preferences revealed are assumed to be normative. However, the breadth of phenomena uncovered by behavioural economics implies that, at least in some cases and perhaps many, revealed preferences cannot be treated as normative.

In the case study of the three-part tariff, it is the possibility of interactions between potentially counterbalancing influences on decision-making that makes it hard to identify normative preferences and, hence, to conclude that the policy improves consumer welfare. Interaction between “biases” is only one problem, however. Other findings of behavioural economics show that revealed preferences cannot be treated as normative for other reasons.

Most obviously, revealed consumer preferences can be inconsistent. DellaVigna (2009) reviews a number of studies where consumer decisions imply inconsistent preferences over time or in logically identical choice scenarios framed in different ways. Beshears et al. (2008) provide further examples where empirical findings suggest that revealed preferences cannot be regarded as normative because of passivity of consumer choice, complexity of the choice set, susceptibility to systematic forecasting errors, or vulnerability to marketing. To consider just one of these examples in more detail, if consumers change their choice of retirement savings plan when more options are added to the choice set (Iyengar and Kamenica 2010), which of the two choices should be regarded as superior? Should policymakers aim to simplify choice or promote greater choice? Once empirical findings reveal multiple instances of contradictory choices, where consumers do not make decisions that are in their own best interests, the identification of “normative preferences” is problematic, and therefore, policy direction is unclear.

Policymakers have the potential power to influence consumer decisions, and behavioural economics offers insight into mechanisms that might achieve this. However, unless they possess sufficient power to turn consumers into unwavering adherents to all the standard microeconomic axioms of consumer choice, whether such interventions are beneficial cannot be deduced. The evidence implies too many influences on decision-making and too much instability in revealed preferences for such a metamorphosis of consumers to be considered feasible. Consumer policy may influence decisions, but it cannot change human nature wholesale, and so the market failure approach cannot deliver criteria for good policy.

### Distributional Concerns

Under the standard competitive market model, allocations are a function of initial endowments and relative prices. Agents differ in preferences and endowments, but are otherwise identical. The focus is on allocative efficiency. The first theorem of welfare economics states that under certain assumptions, a competitive equilibrium is Pareto efficient, while the second states that, with some additional assumptions, any efficient allocation can be sustained by a competitive equilibrium. In the interests of efficiency, distributional concerns are relegated to consideration of initial endowments, which fall outside the scope of consumer and competition policy.

The evidence from behavioural economics challenges this relegation of distributional issues. As described above, consumer decision-making is a complex matter with many significant and potentially interacting influences. If so, not only is the overall quality of consumer decision-making an issue for policymakers, so is how that quality varies across the population of individual consumers—variation that rational choice theory assumes away. Indeed, while empirical investigation of individual differences in behavioural phenomena has received much less attention than the identification and measurement of average effects, what evidence there is suggests that variation in decision-making quality may be considerable and, importantly, not simply limited to differences between the majority of consumers and certain categories identified as “vulnerable,” such as children or older people. For instance, individuals who are prone to one seemingly disadvantageous decision-making phenomenon appear to be more prone to other such phenomena, i.e., biases in decision-making are significantly correlated at the individual level (e.g., Bruine de Bruin et al. 2007; Stanovich and West 2000).

These and other studies (e.g., Frederick 2005; Peters et al. 2006) also find that measures of decision-making competence are correlated with tests or other indicators of cognitive ability. While such a correlation is not inconsistent with the notion that certain identifiable groups of consumers might be considered vulnerable, it also implies that there is important variation in decision-making across the population generally.

The ideal market envisaged under the market failure framework suggests that policymakers should aim for a scenario where all consumers adhere to rational choice theory. In other words, the idealized market model has no variation across consumers in decision-making competence. Evidence, on the other hand, implies that variation in decision quality may be substantial. These findings therefore have further implications for the usefulness of the market failure framework for determining policy. Policy interventions designed to help consumers to make better decisions may vary in the extent to which they improve average outcomes and the degree to which they reduce variation in outcomes across consumers.

Thus, one of the policy implications of behavioural economics is that consumer and competition policies based on behavioural insights are likely to have distributional consequences regarding which the market failure framework offers no assistance.

## Conclusions

A conceptualization of the findings of behavioural economics as a fourth market failure implies that the standard competitive market model remains the target for policy and that correction of the identified market failure should be policymakers' aim. Through, first, the case study of the three-part tariff in telecommunications markets and, second, analysis of the more general case, this paper has shown that trying to fit behavioural economic findings into this market failure framework may be unhelpful for devising appropriate policy responses. The implications for consumer and competition policy are more fundamental.

The inductive scientific method that underpins behavioural economics has produced and continues to produce a broad range of empirical findings of relevance to consumer choice. In at least some markets, the empirics point to many simultaneous influences on consumer choice, which are often dependent on subtle aspects of the decision-making environment and may interact or counterbalance one another. The result is that, in contrast to the case of externalities, market power, and information asymmetries, deductive analysis based on a highly generalized model of an ideal market is unlikely to determine policy responses that unambiguously improve welfare. The market failure framework cannot provide criteria for good policy. Thus, behavioural findings undermine the market failure framework not only by demonstrating that consumer decision-making departs in numerous ways from rational choice theory but also by undermining the assumption that true preferences are revealed by choices. The extent and prevalence of these departures from the orthodox model and of the disjunction between revealed and true preferences remain the subject of ongoing investigation.

Meanwhile, behavioural findings also indicate important variation in decision-making capability between consumers, which implies that consumer and competition policy may have distributional consequences over and above those usually associated with policy responses to the three established market failures. In light of these empirical patterns, to conceive of the various phenomena uncovered by behavioural economics as constituting a fourth market failure is to underestimate their policy implications.

How, then, might policymakers be encouraged to conceive of the findings of behavioural economics and to exploit the new knowledge they impart? One potential answer to this question relates to what lies at the heart of the matter: scientific approach. The complexity

and sophistication of human decision-making are what necessitates the use of the inductive scientific method to investigate it. By analogy, therefore, the implication of this complexity may be that analysts and policymakers need to adopt a less deductive and more inductive approach to policy development. This would involve the collection and consideration of a range of different types of evidence regarding how consumers make choices in specific markets coupled perhaps with a willingness to experiment with policy design itself.

Beshears et al. (2008) list six forms of empirical evidence that, in circumstances where revealed preferences cannot be considered normative, might nevertheless give policymakers helpful insight into people's true preferences: active choices made by engaged decision-makers, asymptotic choices made by experienced decision-makers, aggregated choices across individuals, self-reported preferences, informed choices made by those with expertise or training, and structural estimation, where a model of revealed choices is estimated and mapped onto a normative decision-making framework. To these forms of evidence might be added others. Inferences might be made regarding normative preferences from how decision-makers respond to feedback or to the revelation of how their decisions are affected by variation in the choice set or the framing of choices. For instance, how people respond when made aware of the gap between what they pay and what they could pay for the same telecommunications service offers an indication of the desirability of their initial choice. A similar argument can be made regarding how consumers respond to realizing their susceptibility to a framing effect.

None of these types of evidence necessarily permits analysts and policymakers to observe or otherwise unambiguously determine normative preferences, either on average or with respect to variation in outcomes across consumers. Thus, the range of available empirics may offer only an indication of what is likely to constitute a welfare improving policy, perhaps on the balance of probabilities or with additional assumptions regarding the relative weight to be given to distributional concerns. For those seeking objective empirical criteria to determine policy, this level of subjectivity is doubtless unwelcome. However, the main implication of behavioural economics for consumer and competition policy may be that, at least in markets where significant behavioural phenomena have been identified, a subjective judgment informed by a range of objective but not decisive empirical findings will be the best we can do in pursuit of welfare improving policies. Such subjective judgements will surely produce better policy, the more they are informed by evidence.

The uncertainty over policy direction where evidence suggests departures from rational choice theory perhaps requires a more empirical approach to policy development itself. Policy experiments, pilots, and (where possible) randomized controlled trials (RCTs) allow policymakers to observe the consequences of possible interventions, which cannot be deduced given the complexity of the context. Again, the question of whether post-intervention consumer decisions represent a welfare improvement may not always be answered decisively, but such an empirical approach is likely to provide indications and hence to support better policy decisions.

There may however be practical barriers that limit the extent of an empirical approach to policy development. Policy trials take time and resources; they require staff trained in experimental scientific methods. RCTs sometimes raise ethical issues regarding assignment to treatment and control groups or with respect to the risk and uncertainty borne by participants in the treatment group. In consumer policy, many potential interventions require actions by providers. Variation in the willingness of private companies to engage in the testing of potential consumer protection or assistance policies might affect the feasibility of trials or the external validity of outcomes. Nevertheless, at the time of writing, consumer and competition policymakers in a number of countries have begun to take a more empirical approach. Sunstein (2011) cites numerous examples from the USA, while Lunn (2014) provides a review of how in a number of OECD countries behavioural economics is influencing regulatory

policy, especially in the area of consumer policy. Notable examples of empirical policy development include the activities of the UK Behavioural Insights Team (Behavioural Insights Team 2011) and the EU Joint Research Centre (van Bavel et al. 2013). One theme that characterizes this work is how behaviourally informed interventions often do not generalize across sectors or contexts, but need to be tailored to the implementation context (see also Willis 2013). Thus, regulators are increasingly hiring behavioural scientists to conduct empirical work within their specific sector, altering the skill sets required for the conduct of consumer and competition policy. This aspect of the practical implementation of behavioural economics in policymaking, at least to date, supports the thesis advanced in this article that behavioural phenomena ought not to be conceptualized in the same way as the three previously identified forms of market failure, because they undermine the notion of an ideal model of the competitive market that policymakers can use to guide policy across different markets.

Since many findings of behavioural economics suggest that consumers sometimes fail to act in their own best interests, there is an understandable debate about the extent to which policy might be legitimately or excessively paternalistic in limiting or promoting choices (Camerer et al. 2003; Sugden 2011; Sunstein 2013; Rebonato 2014). Although this important debate is not central to the argument presented here, the taking of a more empirical approach to policy may have implications for this debate. Firstly, empirical policy development may help to allay fears of paternalism, at least to some extent, if policymakers commit to the open publication of findings and proceed in a transparent fashion. Consumers and companies may be more willing to accept policies that constrain or manipulate choices when empirical evidence of the impact has been accumulated openly and subjected to scrutiny. However, where nudges rely on relatively automatic aspects of consumer decision-making, it is possible that openness regarding the policy might draw attention to the behavioural mechanism being exploited and thereby reduce its effectiveness (although this is an empirical question within each policy context). Secondly, notwithstanding the potential for policy to reduce consumer detriment, the adoption of an empirical approach may raise legal issues that parallel the more commonly cited philosophical and ethical ones, in particular with respect to the democratic legitimacy and accountability of regulatory policy (Alemanno and Spina 2014; see also Frerichs 2011).

It may well be that we are still at an early stage in understanding the ultimate impact of behavioural science on policy. Reisch and Sunstein (2014) argue for the importance of two different tracks of work in this area: the ethical and the empirical. While in no way detracting from the importance of both, the present analysis makes the case that there remain conceptual, practical, and legal issues to be grappled with too.

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