The Origin and Nature of Behavioural Development Economics

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The article traces the origin of behavioural development economics and brings out the characteristics of this framework in public policy.

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Introduction

There are several conceptual frameworks and methodological tools to understand how policies to alleviate poverty can be enhanced through the introduction of new variables. Sociology provides an interesting reference to examine the relationship between group identity and social policy through the prism of 'recognition and redistribution' that Nancy Fraser has proposed. From political science, we have the work of Benedict Anderson's 'imagined communities', whose various applications to different types of group solidarity in the global south have yielded rich results. In economics, Amartya Sen's capability framework has expanded our understanding of development to include indicators of opportunity and freedom of social environment. In this context, behavioural economics is one of the most recent tools that uses inferences from psychology to understand human behaviour related to decision making. It uses observation, simulation and control experiments to qualify the assumptions of rationality made in neoclassical economics.

Studies over the last five decades since the formal inception of behavioural economics, have shown that the behavioural inferences are not only more realistic in theory, but also have important application in public policy design and implementation at the point of service delivery. The increasing significance of behavioural application in economics has been recognized by awarding the Nobel memorial prize in economics in 2017 to Richard Thaler, the father of behavioural economics. The two features - experimentation and observation as methodology as well as contribution to public policy delivery - makes behavioural economics more appropriate as a theoretical framework to examine how policies delivered for poverty alleviation are received and can be improved upon, leading to empowerment of the community.

Examining the Neoclassical Model

Standard economic theory uses neoclassical model (also called rational choice model) to understand choices and decision making. Neoclassical model has a set of assumptions about human behaviour. Primarily, the assumption is that individuals are completely rational, i.e., they use well-defined and ordered preferences to maximize their utility. Secondly, these preferences reflect the true costs and benefits of the alternative choices available. Finally, in situations of uncertainty, as more information comes in, individuals are able to update their beliefs about preferences using Bayes' theorem of statistical inference (Camerer *et al.* 2003)[1]. Bayes' theorem states the probability of an event with the help of prior knowledge of the conditions related to the event.

[1] Camerer, C., ,Issacharoff, S., Loewenstein, G. ,O' Donoghue, T. & Rabin, R. (2003). Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism". *University of Pennsylvania Law Review*, 151 (3), 1211-1254.

In other words, there is no dichotomy between welfare and behavioural components of decision making in neoclassical economics because of revealed preferences (Bernheim & Rangel 2005)[2]. However, there are several studies that have examined the consequences of neoclassical assumptions about human capacities and the consequences of 'revealed preferences'. For example, Berg and Gigerenzer (2010)[3] define neoclassical assumptions as imposing unbounded self-interest, will power and computational ability on individuals. Bernheim and Rangel (2005)[4] have explained that neoclassical assumptions involve coherent preferences, the presence of a preference domain in which preferences can be ordered, fixed life-time preferences and absence of error on the part of the individual concerned.

As with the aspect of revealed preference, neoclassical model runs into criticism on the question of 'rationality'. This is because the foundation of neoclassical assumptions is the rational nature of individuals that make them choose options to maximize their utility. In other words, being rational has consequences in a singular undifferentiated way. This type of rationality leads to 'expected value maximization'. That is why scholars like Gabaix *et al.* (2002)[5] have argued that

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[2] Bernheim, B.D. & Rangel, A. (2005). *Behavioral Public Economics: Welfare and Policy Analysis with Non-Standard Decision-Makers.* NBER Working Papers 11518, The National Bureau of Economic Research.

[3] Berg, Nathan and Gigerenzer, Gerd (2010): *As-if behavioral economics: Neoclassical economics in disguise?* Published in: History of Economic Ideas , Vol. 18, No. 1 (2010): pp. 133-166.

[4] Bernheim, B. D., & Rangel, A. (2005). *Behavioral public economics: Welfare and policy analysis with non-standard decision-makers* (No. w11518). National Bureau of Economic Research.

[5] Gabaix, X., Laibson, D., Moloche, G. & Weinberg, S. (2002). *Bounded Rationality in Economics*. Presentation to the Behavioural Economics Roundtable, Summer Institute of Behavioural Economics, University of California Berkeley. Accessed on 22 December 2017. Retrieved from, https://eml.berkeley.edu/symposia/sage02/slides/laibson3.pdf

'there is only one way to be rational'. However, expected value maximization was confronted by an intractable problem of choice called the St. Petersburg Paradox, that questioned the assumptions that related utility maximization and risk aversion. Daniel Bernouilli's work on this mathematical conundrum dealt the inconsistencies in parts of the assumptions and this modification survived and grew as expected utility theory (EUT). EUT was the standard tool that was used to examine choices under uncertainty.

Expected utility theory's ability to explain observed behaviour was seriously limited further, by the coming of Allais' paradox. Maurice Allais showed inconsistencies with the choices expected by EUT and actual observations (Allais & Hagen 1979)[6]. Prospect theory, that began the behavioural trend in economics was an attempt to fix this mathematical problem. Gigerenzer (2008)[7] and Güth (2008)[8] have described the historical progression of prospect theory from EUT. While expected utility theory used transformation of pay-offs, prospect theory used transformation of probability to understand choices. Further strides were made when prospect theory was modified to include cumulative prospect theory (Tversky & Kahneman 1992)[9]. Thus, both prospect theory and expected utility theory assume that choice emerges from a process of weighting and averaging (*i.e.*, integration) of all relevant pieces of information. In other words, the

[6] Allais, M. & Hagen, O. (1979). *Expected utility hypotheses and the Allais paradox*. Dordrecht: Springer.

[7] Gigerenzer, G. (2008). *Rationality for mortals*. New York: Oxford University Press.

[8] Güth, W. (2008). (Non-) behavioral economics - A programmatic assessment. *Journal of Psychology*, 216 (4), 244-253.

[9] Tversky, A. & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5 (4), 297–323.

normative principles guiding the methodology of rationality through expected value maximization remains the same in both neoclassical and behavioural economics.

Critiquing Neoclassical Assumptions

Two viewpoints emerge with regard to the neoclassical methodological assumptions of behavioural economics. Scholars like Rabin (1999)[10] and Bernheim & Rangel (2005)[11] argue that normative principles of methodology of behavioural economics ought to be modified for selective application of the revealed preference principle. Even studies that critique the rational choice model fail to challenge this methodology question. For instance, Laibson's (1997)[12] model modifying neoclassical assumption consist of reducing the weights of future acts in favour of the present ones. Fehr and Schmidt (1999)[13] have brought in 'other-regarding preference' in addition to self-regarding preference of individuals. Their 'social expected utility model' takes these other-regarding preferences but replicates the same methodology of preference ordering and weighting. O'Donoghue and Rabin (2006)[14] suggest that will-power problem can be fixed through dis-

[10] Rabin, M. (1999). Psychology and economics, *Journal of Economic Literature*, 36 (1), 11-46.

[11] Bernheim, B. D., & Rangel, A. (2005). *Behavioral public economics: Welfare and policy analysis with non-standard decision-makers* (No. w11518). National Bureau of Economic Research.

[12] Laibson, D. (1997). Golden eggs and hyperbolic discounting. *Quarterly Journal of Economics*, 112 (2), 443-477.

[13] Fehr, E. & Schmidt, K. (1999). A theory of fairness, competition and cooperation. *Quarterly Journal of Economics*, 114 (3), 817-868.

[14] O'Donoghue, T. & Rabin, M. (2006). Optimal sin taxes. *Journal of Public Economics*, 90 (10-11), 1825-1849.

incentivizing mechanism like taxation. They cite 'sin tax' as an example of this concept. Binmore and Shaked (2007)[15] critique neoclassical model as a representative of empirical economics in which the conflict of 'fit' and 'prediction' exists. They argue that the only way out of this dilemma is to make out of sample prediction tests with the generalizations of empirical data or theory.

There are several scholars who have suggested a methodological review of neoclassical economics in this context. One of the most prominent and the first among them was Herbert Simon. Simon (1959, p. 279)[16] in his seminal paper on reviewing neoclassical assumptions of economics trenchantly observed that, 'how closely we wish to interweave economics with psychology depends, both on the range of questions we wish to answer and on our assessment of how far we may trust the assumptions of static equilibrium as approximations'. His observation was that there was a need in normative macroeconomics and management science for a fuller theory of the firm to understand the actual processes of making business decisions. He reiterated that the notions of adaptive and satisficing behaviour, drawn largely from psychology, challenge the classical picture of the maximizing entrepreneur. Second, he pointed out that the area of imperfect competition and oligopoly also pose the need for a methodological review.

Various scholars have pointed directions that a methodological review might take. Rabin advocates the use of psychology in economics to enhance the parameters included in the utility function

[15] Binmore, K. & Shaked, A. (2007). *Experimental Economics*: *Science* or *What?*, ELSE Working Paper 263. ESRC Centre for Economic Learning and Social Evolution.

[16] Simon, H. A. (1959). Theories of Decision-Making in Economics and Behavioral Science. *The American Economic Review*, 49 (3), 253-283.

(Rabin 1999)[17]. Berg and Gigerenzer (2010)[18] argue for an approach that moves away from the methodological singularity of neoclassical economics to a 'toolkit' approach' that uses diverse tools to understand choice making process. They question the axiomatic assumptions of completeness, transitivity, commensurability and optimization of the utility function. They compare preferences in economics to traits in psychology and argue that rather than universal preferences, context specific matching of preferences and environment is more useful. They introduce the concept of 'gaze heuristic' as a method of approximation that goes into actual decision-making processing. They bring out the functionality of heuristics in making the individual achieve the stated goal where rationality is not necessarily a prerogative.

Berg and Gigerenzer (2010)[19] critique the tendency of behavioural economics to resemble neoclassical economics in two aspects (i) the use of psychological insights to fit the decision outcome data, rather than to explain them, and (ii) the use of axiomatic assumptions that are not empirically driven. The extent of empirical realism that behavioural economics brings depends on the correspondence between the model and reality. Berg and Gigerenzer (2010)[20] argue for a non-axiomatic approach called 'ecological rationality' that is derived out of behavioural strategies and the environments in which they are used. Deviations from expected behaviour is especially correlated with lower earnings, lower happiness, impaired health, inaccurate beliefs or shorter

[17] Rabin, M. (1999). Psychology and economics, *Journal of Economic Literature*, 36 (1), 11-46.

[18] Berg, Nathan and Gigerenzer, Gerd (2010): *As-if behavioral economics: Neoclassical economics in disguise?* Published in: History of Economic Ideas , 18(1), 133-166.

[19] Ibid, p, 158

[20] Ibid, p, 149

lives. The need for the ecological rationality project is that it performs the 'veridical function' of explaining the decision process alternatively to the rational choice model.

Paternalism as a Regulatory Tool

The question of methodological review in behavioural economics lead to various proposals and among them, the most prominent, choice architecture. Historically, paternalism has been justified under various contexts. In the 19th century, justification for paternalism rose from the skepticism of certain sections of people to make decisions in their own interests. Camerer *et al* (2003)[21] discuss the case of groups like 'idiots, minors or married women' who were treated as the wards of the state. The second type of justification for paternalism was in the case of preventing individuals from harmful choices that were detrimental to their long-term interests. Illustration of these regulations were health and safety regulation as well as laws that prevented selling oneself to servitude.

Studies in psychology explain human behaviour through psychological and physiological needs on the one extreme and social institutions on the other. One of the options against direct paternalism is the idea of 'planned behaviour'. Ajzen (1991)[22] demonstrates how the theory of planned behaviour is a useful conceptual framework to predict and understand particular behaviour in specific contexts. Ajzen uses attitudes, subjective norms and perceived control of behaviour as

[21] Camerer, C., ,Issacharoff, S., Loewenstein, G. ,O' Donoghue, T. & Rabin, R. (2003). Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism". *University of Pennsylvania Law Review*, 151 (3), 1211-1254.

[22] Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50 (2), 179-211.

variables to understand behavioural intentions that could predict actual behaviour. He uses a combination of behavioural intentions and perceived control of behaviour to explain variance of behaviour.

Another conceptual frame that some scholars propose attempts to understand irrationality. Jones (2001)[23] has argued that although behavioural insights have implied that there is scope for law to modify its architecture, it is less clear how to design law behaviourally. He proposes three perspectives as a directive. The first step is to develop a theoretical foundation that can adequately encompass both rational and irrational behaviour. One way to do it is to partner both economics and behavioural economics with behavioural biology. Behavioural biology provides important methodological tools, robust theories, and data, useful in gaining deeper insights into the evolutionary forces that shape and influence all behaviour. Second, he proposes that a substantial and important subset of the irrationalities we have long ascribed to cognitive defect should be ascribed, instead, to cognitive design. Those irrationalities are likely to be products of 'time-shifted rationality',i.e. the temporal mismatch between the environment in which natural selection shaped the brain to function and differentiate and the modern environments that technology has only recently enabled human mind to understand.

Third, time-shifted rationality logically implies a principle, which can help us to better explain and predict the comparative difficulties legal frames may encounter in attempting to shift different behaviours. This aids in affording us a framework for estimating the relative steepness of demand

[23] Jones, O.D. (2001). Time-Shifted Rationality and the Law of Law's Leverage: Behavioral Economics Meets Behavioral Biology. *North Western University Law Review*, 95 (2), 1141-1206.

curves for various behaviours regulated by law. Thus, it gives an entirely new, modern, and biologically informed perspective on the underlying architecture of law, explaining why some of the larger features have developed as they have, and helping to differentiate between more probable and less probable features of future legal systems.

The idea of choice architecture in which behavioural responses can be anticipated has been proposed and discussed in detail in behavioural economics (Thaler & Sunstein, 2008[24]; Thaler, 2015)[25]. Thaler and Sunstein (2008)[26] have proposed choice architecture from the social and political priming frameworks that work with difficult choices and unpredictability. They describe the context in which behavioural priming or 'nudges' is beneficial. Their main argument is that in the contexts in which the benefits are in the present and the costs in the future, there is an explicit degree of difficulty in choosing various policy options. In such cases, the scope of using nudge to elicit desirable behaviour is greater. A choice architecture can be created by expecting specific errors and creating design mechanism enabling people to be less error prone. The implicit assumption of choice architecture is that there is a linear pathway from mapping choices to welfare.

[24] Thaler, R.H. & Sunstein, C.R. (2008). *Nudge: Improving decisions about health, wealth and happiness*. New Haven: Yale University Press.

[25] Thaler, R.H. (2015). *Misbehaving: The making of behavioural economics*. London: Penguin Allen Lane.

[26] Thaler, R.H. & Sunstein, C.R. (2008). *Nudge: Improving decisions about health, wealth and happiness*. New Haven: Yale University Press.

Thaler and Sunstein (2008)[27] have named their program 'libertarian paternalism' to bring out the element of freedom of choice in the nudging framework as well as the aspect of paternalism of the policy maker. Toward the end of their work, they qualify their concept with a caveat that choice architecture is best left to the guiding principle that policy designs should help the least sophisticated people, while imposing the least possible costs on the most sophisticated. They call it 'asymmetric paternalism' (Thaler & Sunstein, 2008)[28].

Camerer *et al.* (2003)[29] look into 'asymmetric paternalism' as a form of paternalistic regulation. Their definition is that 'a regulation is asymmetrically paternalistic if it creates large benefits for those who make errors, while imposing little or no harm on those who are fully rational'. They begin with the assumption that the true costs of various options in a decision setting can be assessed. Secondly, they assume that the true costs of various errors can be ascertained. Finally, they assume that individuals are boundedly rational in a given situation. Within this framework, the authors illustrate how policies can be framed that maximize benefits for the boundedly rational with minimum costs imposed on the fully rational.

[27] Ibid, p, 4

[28] Ibid, p, 249

[29] Camerer, C., ,Issacharoff, S., Loewenstein, G. ,O' Donoghue, T. & Rabin, R. (2003). Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism". *University of Pennsylvania Law Review*, 151 (3), 1211-1254.

Lipsey and Lancaster (1956)[30] proposed the theorem of the second best in cases of deviations from the perfect market situations. They argued that the second-best solution in a situation in which the best solution is not possible may involve other deviations from the conditions that are usually deemed to be optimal. Loewenstein, John and Volpp (2013)[31] propose asymmetric paternalism in the context of decision errors on the premise of the theorem of the second best. They examine cognitive errors like default bias, loss aversion, present-based references, self-serving fairness bias, nonlinear probability weighting, peanuts effects, narrow bracketing, projection bias (hot and cold empathy gaps) and over-optimism. Their argument is that the same cognitive biases can be used to make the correct decisions in specific choice architecture frameworks. For example, default bias can be exploited in savings program by default opt-in option. Similarly, Greenberg (2005)[32] had shown that framing and mental accounting of insurance schemes can be used to effectively reduce driving among consumers. Charitable giving can be enhanced by manipulating anchoring frameworks.

Recent development in economics have provided new contexts for paternalism by examining regulatory frameworks. Amir and Lobel (2008)[33] have examined the idea of choice architecture

[30] Lipsey, R.G. & Lancaster, K. (1956). The general theory of second best. *Review of Economics Studies*, 24 (1), 11-32.

[31] Loewenstein, G., John, L. & Volpp, K.G. (2013). Using decision errors to help people help themselves. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 361-379). Princeton: Princeton University Press.

[32] Greenberg, A. (2005). *Applying mental accounting concepts in designing pay-per-mile auto insurance products*. Federal Highway Administration, Office of policy, Washington, D.C.

[33] Amir, O. & Lobel, O. (2008). Stumble, Predict, Nudge: How Behavioral Economics Informs Law and Policy. *Columbia Law Review*, 108 (8), 2098-2137.

and paternalistic interventions to analyze predictability in human decision making and behavioural regulatory options available to policy. They suggest that some types of behavioural insights may be better translated into law and policy reforms than others. While behavioural insights can improve regulatory efficiency in systems with minimal intervention, these systems entail costs, distributional effects, macro coordination problems, and are inevitably value driven. Moreover, policy nudges serve merely as a first stage regulation whereas, more coercive measures are required at later stages. The idea of choice architecture is then related to the growing body of regulatory studies collectively termed 'new governance'.

Camerer *et al*. (2003)[34] have discussed how the regulation of individual behaviour by institutions like the state can take one of the three forms. Primarily, regulations may be enacted with redistributive concerns of transferring wealth from the rich to the poor. An example of such regulation is taxation. In the second case, regulations may aim to increase net social benefits in case of a market failure like externalities due to public goods. An example of regulation of this kind is taxation to create public good infrastructure like roads. Finally, there may also be 'paternalistic' regulations that seek to encourage individuals to make rational decisions in the face of cognitive limitations.

There are various studies that have brought out the limitations of behavioural choice architecture. Examining retirement savings, consumer credit, and environmental protection, Bubb and Pildes

[34] Camerer, C., ,Issacharoff, S., Loewenstein, G. ,O' Donoghue, T. & Rabin, R. (2003). Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism". *University of Pennsylvania Law Review*, 151 (3), 1211-1254.

(2014)[35] analyze the social-scientific dimension of behavioural economics and recognize two categories of limitations. First, behavioural economics often artificially excludes traditional regulatory tools, such as direct mandates, from its analysis of policy options. It has also neglected the ways in which behavioural failures interact with traditional market failures and the implications of this policy design. Second, behavioural economics does not properly evaluate how its own regulatory tools actually function on ground. Nudges and choice architecture that behavioural economists have proposed might fail in many circumstances. The default rules so central to behavioural economics are better viewed as preserving the formality of choice for some, while for many individuals, functioning as effective mandates. The view that people can always rationally opt out has led policymakers to set these powerful defaults at the wrong levels, resulting in counterproductive policies.

A number of studies have examined how behavioural policy given in choice architecture or through nudges work on ground. Disney, Le Grand and Atkinson (2013)[36] have examined intrinsic behavioural motivation and concluded that behavioural incentives have a way of crowding in or crowding out intrinsic motivation. In their study, they demonstrate that charging on environmental bad behaviour such as the use of plastic bags crowd in intrinsic motivation to discard plastic bag not only in the store concerned, but also across the behavioural spectrum. Slovic and Väastfjäll

[35] Bubb, R. & Pildes, R.H. (2014). How Behavioral Economics Trims Its Sails and Why. Harvard Law Review, 127 (1), 1593-1678.

[36] Disney, K., Le Grand, J. & Atkinson, G. (2013). From irresponsible knaves to responsible knights for just 5p: behavioural public policy and the environment. In (Ed.) A. Oliver, *Behavioural Public Policy* (pp. 69-87). Cambridge: Cambridge University Press.

(2013)[37] have examined psychic numbing or the situations in which large scale events alter predictable psychological responses. They conclude the need to educate moral intuitions to potential clients. Sah, Cain and Loewenstein (2013)[38] have looked into the perverse effects of some behavioural goods like disclosure and transparency. Examining disclosure of information, the authors observe that having information is different from knowing what to do with it. From the point of view of the advisors, three consequences have been empirically observed when there was disclosure. First, there was strategic exaggeration, i.e., consciously exaggerating the bias in advice when disclosure was present. Second, disclosure creates 'caveat emptor' in the minds of the advisors that they are 'morally licensed' to behave less morally in the subsequent situations after disclosure. In fact, Cain et al. (2005[39]; 2011)[40] give empirical evidence that disclosure leads to conflicted advice by the advisers subsequently. Dolan (2013)[41] has examined financial behaviour in changing contexts through behavioural tools such as messenger, incentives, norms, defaults,

[37] Slovic, P. & Väastfjäll, D. (2013). The more who die, the less we care: psychic numbing and genocide. In (Ed.) A. Oliver, *Behavioural Public Policy* (pp. 94-109). Cambridge: Cambridge University Press.

[38] Sah, S., Cain, D.M. & Loewenstein, G. (2013). Confession one's sins but still committing them: transparency and the failure of disclosure. In (Ed.) A. Oliver, *Behavioural Public Policy* (pp. 148-159). Cambridge: Cambridge University Press.

[39] Cain, D.M., Loewenstein, G. & Moore, D.A. (2005). The dirt on coming clean: Perverse effects of disclosing conflicts of interest. *The Journal of Legal Studies*, 34 (1), 1-25.

[40] Cain, D.M., Loewenstein, G. & Moore, D.A. (2011). When sunlight fails to disinfect: Understanding the perverse effects of disclosing conflicts of interest. *Journal of Consumer Research*, 37 (5), 836-857.

[41] Dolan, P. (2013). Influencing the financial behaviour of individuals: the mindspace way. In (Ed.) A. Oliver, *Behavioural Public Policy* (pp. 191-208). Cambridge: Cambridge University Press.

salience, priming, affect and commitment. His conclusion is two-fold- (i) existing frameworks leave a substantial proportion of significance in variance with actually observed behaviour, and (ii) recent empirical studies bring evidence that even subtle changes in environment alters behaviour.

Barr, Mullainathan and Shafir (2013)[42] have brought out the context and decisional conflict as well as mental frames of accounting and attention deficits. They argue that institutions have a central role in informing thought and action of individuals. They analyze two types of financial regulations- home mortgage and credit card. In order to debias borrowers, full information disclosure, sticky opt-out mortgage regulation and ex-post standards-based truth in lending would be more effective than non-behaviourally induced regulation. In addition, institutions can also restructure relations between brokers and borrowers. Similarly, good credit card behaviour can be elicited through framing, salience in disclosures, opt-out payment for credit cards and regulation in late fees.

Thierer (2016)[43] has critiqued nudging and choice architecture based on the premise that risk and uncertainty has great value in learning outcomes. Explaining with the illustration of risk encouragement and growth of entrepreneurship in the European and American policy environment, Thierer argues that failing instills 'risk-coping strategies' in individuals and a

[42] Barr, M.S., Mullainathan, S. & Shafir, E. (2013). Behaviourally informed regulation. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 440-464). Princeton: Princeton University Press.

[43] Thierer, A. (2016). Failing better: What we learn by confronting risk and uncertainty. In (Ed.) S. Abdukadirov, *Nudge Theory in Action: Behavioural Design in Policy and Markets* (pp.65-94). Cham: Palgrave Macmillan.

'surplus of safety precaution' must be avoided. Abdukadirov (2016)[44] follows up the conceptual framework of nudge to ask the important question, who should design the nudge. Categorizing nudges as 'market-based' and 'regulatory', the author examines the grey areas where uncertainties prevent an effective design of nudges. For example, in areas like fuel use and energy there are uncertainties regarding how bias plays out. At the second level, there are scenarios in which the results of the lab emerge very differently in the real world. This has been termed as 'the scalability problem' by Mullainathan (Abdukadirov 2016)[45]. The information about the environment in which nudges operate is not transferred from the users to designers and this has been termed as 'sticky information'.

Under these conditions of varying real-world conditions, regulatory nudges by the government and market nudges by private firms have been compared. Abdukadirov (2016)[46] argues that market nudges have the potential to diversify due to the properties of 'customization' and competition. Critiquing nudge from another angle, Beggs (2016)[47] argues that both the government and the private sector have the opportunity to do either a 'pareto nudge' that is aimed at increasing efficiency or a 'rent-seeking nudge'. One of the core insights of this differentiation is that there

[44] Abdukadirov, S. (2016). Who should nudge. In (Ed.) S. Abdukadirov, *Nudge Theory in Action: Behavioural Design in Policy and Markets* (pp.159-192). Cham: Palgrave Macmillan.

[45] Ibid, p, 179

[46] Abdukadirov, S. (2016). Who should nudge. In (Ed.) S. Abdukadirov, *Nudge Theory in Action: Behavioural Design in Policy and Markets* (pp.159-192). Cham: Palgrave Macmillan.

[47] Beggs, J.N. (2016). Private-Sector nudging: The good, the bad and the uncertain. In (Ed.) S. Abdukadirov, *Nudge Theory in Action: Behavioural Design in Policy and Markets* (pp.125-158). Cham: Palgrave Macmillan.

may be nudges which are beneficial to the individuals but not profitable to a private firm. This leads to a public-good type of situation. Therefore, there is a lot of scope for government institutions to act as the 'nudger of the last resort'. However, choice architecture framework like nudging requires that the institutions that deal with nudges reflect on the long-term preferences of the individuals, focus on individuals who are not self-aware and deal with situations in which a nudge can replace a more distortionary or expensive policy option like a tax or subsidy.

Choice Architecture as Public Policy

Policy tools are techniques the government uses to achieve policy goals. Public policy formulation begins with policy goals which often use policy directives and policy opportunities to make target populations comply with the goals and engage in other forms of coproduction to promote socially desired results. The resulting citizen participation is the new feeder for new policies and an enactment of value allocation in society. As early as 1975, Van Meter and Van Horn[48] had discussed their seminal work on differentiating policy from performance and understanding how policies are effective on ground. They identified six factors in the process that converts policy into performance. They were (i) an environment that stimulated officials to perform; (ii) demands and resources that carry stimuli from the environment to policy makers; (iii) conversion process, which included the formal and informal structures and procedures of government, that transformed demands and resources into public policies; (iv) the actual policies that represented the formal goals, intentions, or statements of government officials; (v) the performance of the policy as it is

[48] Van Meter, D.S. & Van Horn, C.E. (1975). The policy implementation process: A conceptual Framework. *Administration & Society*, 6 (4), 445-488.

actually delivered to clients; and (vi) the feedback of policies and performances to the environment. Clearly, the emphasis was on the interaction between the receptive environment and actual policy process.

Schneider and Ingram (1990)[49] have argued that policy tools act as independent variables, initiating a chain of effects that have important political consequences. They present a framework of policy tools on the basis of their underlying motivational strategies. According to them, there are five kinds of policy tools that have a bearing on the behaviour of participants. First, 'authority tools' rely on the inherent legitimacy found in hierarchical arrangements. Second, 'incentive tools' assume that individuals are utility maximizers who will change their behaviour in accord with changes in the net tangible payoffs offered by the situation. The third category of 'capacity tools' assume that individuals may lack information, resources, skills, and may rely on decision heuristics (shortcuts or rules of thumb), but that these biases and deficiencies can be corrected by policy. The fourth type of tools called 'symbolic and hortatory tools' assume individuals are motivated from within, and that policy can induce the desired behaviour by manipulating symbols and influencing values. Finally, 'learning tools' assume that agents and targets do not know what needs to be done, or what is possible to do, and that policy tools should be used to promote learning, consensus building, and lay the foundation for improved policy. Public policies can be described in terms of their underlying behavioural assumptions, and variables can be created indicating the extent to which the policies rest upon different assumptions.

[49] Schneider, A. & Ingram, H. (1990). Behavioral Assumptions of Policy Tools. *The Journal of Politics*, 52 (2), 510-529.

Behavioural economics can be used to design effective prescriptive programs for important economic decisions. Thaler and Benartzi (2004)[50] have demonstrated with the 'save more tomorrow' plan that people commit in advance to allocating a portion of their future salary increases toward retirement savings. As firms switch from 'defined-benefit plans' to 'defined-contribution plans', employees bear more responsibility for making decisions about how much to save. The employees who fail to join the plan or who participate at a very low level save at less than the predicted life cycle savings rates. Behavioural explanations by Thaler and Benartzi (2004)[51] for this behaviour is bounded rationality and self-control.

Dorward, Kydd, Morrison and Poulton (2005)[52] have analyzed markets from the new institutional economics perspective to recommend policy reforms in a developmental context. They argue that stakeholder groups for the poor can be improved by focusing on non-standard institutional arrangement that neoclassical economics do not pay attention to. Furthermore, they argue that non-standard institutional arrangement and understanding policy process are essential to mitigate 'low-equilibrium trap' situations in which a majority of the poor spend their decision-making environment in.

[50] Thaler, R.H. & Benartzi, S. (2004). Save More Tomorrow™: Using Behavioral Economics to Increase Employee Saving. *Journal of Political Economy*, 112 (S1), S164-S187.

[51] Ibid, p, S170

[52] Dorward, A., Kydd, J., Morrison, J. & Poulton, C. (2005). Institutions, Market and Economic co-ordination: Linking developing policy to theory and practice. *Development & Change*, 36 (1), 1-25.

Bernheim and Rangel (2005)[53] have applied insights from behavioural economics to problems of savings, addiction and public goods. With the case of personal savings plan in the American context, they bring out behavioural problems like limited planning skills, tendency to self-reported errors and difference in consumption pattern close to retirement as significant factors that deviate from neoclassical assumptions about savings behaviour. The importance of default options, professional financial managers, social cues and intrinsic motivation are taken as factors that could improve personal savings rate. Similarly, issues of self-control and recidivism significantly affect addiction behaviour in individuals, making addiction a 'decision process malfunction'. The authors prescribe policies such as supply disruption, policies affecting cues and self-control and eliminating counterproductive disincentives. In the case of public provision, the neutrality of the public good, the assumption that the wealthy must contribute more, the problem of public provision and distribution affect policy implementation. The alternatives would include looking at non-standard preferences and distribution issues in public goods provisioning.

Babcock, Congdon, Katz and Mullainathan (2012)[54] have shown how behavioural responses that explain realistic economic choices can be applied in designing labour policies in the American context. Reviewing select labour market policies such as unemployment compensation, employment services and job search assistance, they bring out how insights from behavioural economics help understand realistic responses to procrastination, complexity and labour market

[53] Bernheim, B. D., & Rangel, A. (2005). *Behavioral public economics: Welfare and policy analysis with non-standard decision-makers* (No. w11518). National Bureau of Economic Research.

[54] Babcock, L., Congdon, W.J., Katz, L.F. and Mullainathan, S. (2012). Notes on behavioral economics and labor market policy. *IZA Journal of Labour Policy*, 1 (2), https://doi.org/10.1186/2193-9004-1-2

expectation. For example, behavioural barriers to unemployment benefits include systematic bias and imperfect self-control. Besides explaining actual behaviour, design implications follow from this insight. Choices of job application based on such biased application of prior reference and biased wage expectation might lead to subsequent lower paid jobs. In this context, an effective wage-insurance structure upon re-employment might be to effect partial or full insurance that declines over time over job growth rates.

Tyler (2013)[55] undertook micro-level exploration of the behaviour of people within an organization with respect to two types of motivations- instrumental and social. His argument was that instrumental motivations such as environmental contingencies, investment, dependence, distributive fairness and instrumental trust were at the centre of self-interested behaviour. Social motivations such as attitude, values, social identity indicators, procedural justice and motive-based trust were the basis of co-operation. The social motivation indicators were empirically distinct from instrumental motivations, consistent over time and influenced co-operative behaviour. Tyler claims that co-operation is intrinsic and driven by compliance and achievement of group goals. The implication of this field study is the importance of organizational design in setting attitude, values and identity creation.

A concept that has interested scholars is the idea of bias at the individual, systemic and expert levels. Pronin and Schmidt (2013)[56] have analyzed bias into four different kinds- self enhancing,

[55] Tyler, T. (2013). The psychology of cooperation: Implications for Public Policy. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 77-90). Princeton: Princeton University Press.

[56] Pronin, E. & Schmidt, K. (2013). Claims and denials of bias and their implications for policy. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 195-216). Princeton: Princeton University Press.

self- interested, group-induced and cognitive. The importance of categorizing biases lay in the fact that often, behaviourally there was a tendency to deny bias, confront naïve realism and have unconscious bias. As a result, in real-life situations there were both ethical lapses and conflict. The authors propose possible solutions such as perspective taking, disclosure norms and demanding objectivity. In a study of behavioural assumptions of employment law in the American context, Jolls (2013)[57] finds that rationality, will power and self-interest are bounded and these limitations permeate various employment legislations of wage payment, pension, social security and age discrimination. Jolls focus on fairness dynamic in employment relations by which employers pay wages above employees' reservation wage in exchange for increased efforts. But Jolls brings out the exemption categories of domestic employees and independent contractors to claim that there is a bias in the assumptions that underlie fairness dynamic. This bias presupposes that if employees behave appropriately without legal regulation, then markets should be left alone (Jolls, 2013)[58]. Brest (2013)[59] have also examined the question of mechanism to debias policy makers themselves. Categorizing policy makers as individuals, counselors and policy makers, Brest looks at biases in adjudication, legislation and implementation of policies. In adjudicative fact finding and procedures, there are cognitive biases like anchoring, hindsight bias and confirmation bias that come into play. In legislation, trusting clinical rather than statistical prediction, availability bias,

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[57] Jolls, C. (2013). Behavioural economics analysis of employment law. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 217-230). Princeton: Princeton University Press.

[58] Ibid, p, 273

[59] Brest, P. (2013). Quis custodiet ipsos custodes? Debiasing the policymakers themselves. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 481-493). Princeton: Princeton University Press.

affect heuristic, stereotyping and overconfidence distort rational law making. Similarly, at the decision-making stage, policy makers also wrestle with choice overload, context and value dependence, cognitive myopia, escalation of commitment and group dynamics.

The role of the expert or policy maker has also come under the scanner. Fischoff and Eggers (2013)[60] have examined competence of age-wise consumers, citizens and medically informed consent to understand the competency of intended beneficiaries of policy. Through a method of normative, descriptive and prescriptive analysis, the authors attempt educating policy beneficiaries through the involvement of subject-matter experts, decision analysts, social scientists and designers. Ubel (2013)[61] examined the role of expert help that people resort to, when they are taking important decisions that are 'preference sensitive'. Preference sensitive decisions are those in which the right choice depends on person's specific preferences regarding risk and options. With the help of structured decision making in health care decisions, Ubel (2013)[62] found out that knowledge does not prevent individuals from exerting biased choices. He argued that the additional criteria for judging good decisions are the presence of expected utility criterion, reducing mispredictions, happiness criterion, invariance criterion and correlational validity. Invariance criterion proposes that the decisions should not change if pros and cons of the

[60] Fischhoff, B. & Eggers, S.L. (2013). Questions of competence: The duty to inform and the limits to choice. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 217-230). Princeton: Princeton University Press.

[61] Ubel, P. (2013). Beyond comprehension: Figuring out whether decision aids improve people's decisions. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 351-360). Princeton: Princeton University Press.

[62] Ibid, p, 356

alternative choices change. Correlational validity means that an individual participant's choices should match their situational demands. For example, an individual in an advanced stage of cancer should opt for a more aggressive treatment method than those in the initial stages. Finally, the individuals should have stable time preference and adherence to the options that they have taken.

Sunstein (2013)[63] uses the conceptual framework of 'misfearing' to inform the impact of cost benefit analysis. Misfearing happens when individuals are afraid of trivial tasks and neglect serious ones (Sunstein, 2013)[64]. Sunstein points out that availability heuristic, informational and reputational cascade, and emotional and probability neglect are the reasons why people succumb to misfearing. Sunstein proposes cost benefit analysis on the grounds of cognitive misfunction, as a tool of regulation.

In a seminal study on financial market participation and decision making, Benartzi, Peleg and Thaler (2013)[65] examine the behavioural limitations such as hyperbolic discounting, inertia and nominal loss aversion that negatively affect asset allocation funds, equity market participation, retirement date funds and lifetime investment patterns. They propose choice architecture as a policy prescription against inertia and errors in savings decisions. The default option in choice architecture, for example, helps employees who take no action to still save for retirement as long

[63] Sunstein, C.R. (2013). If misfearing is the problem, is cost-benefit analysis the solution? In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 231-244). Princeton: Princeton University Press.

[64] Ibid, p, 221

[65] Benartzi, S., Peleg, E. & Thaler, R.H. (2013). Choice architecture and retirement savings plan. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 217-230). Princeton: Princeton University Press.

as the employer follows the prescription of automatically enrolling the employees to the plan and escalating their deferral rates periodically (Benartzi, Peleg & Thaler, 2013)[66]. Johnson and Goldstein (2013)[67] have examined at default choices in decisions regarding organ donation, retirement savings, insurance, internet private policy and sex education policies in American context. They classify defaults as benign, random, personalized, persistent and smart defaults. They argue that default options significantly reduce effort through implied endorsement and sending reference for action. Thaler, Sunstein and Balz (2013)[68] have analyzed choice architecture as a frame to pre-empt expected errors, give feedback, structure welfare in choices and include incentives in a choice architecture.

Environmental problems are those that evoke less visceral reactions than others. In an earlier work, Sunstein (2006)[69] had shown that people's affective reaction to risk did not match the objective assessment of risks that statistically demonstrated the unpredictability of the outcomes or likelihood of adverse consequences. In psychology, Slovic (1997)[70] had called them 'dread' risks

[66] Ibid, p, 261

[67] Johnson, E.J. & Goldstein, D.G. (2013). Decisions by default. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 417-426). Princeton: Princeton University Press.

[68] Thaler, R.H., Sunstein, C.R. & Balz, J.P. (2013). Choice Architecture. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 428-439). Princeton: Princeton University Press.

[69] Sunstein, C.R. (2006). The availability heuristic, intuitive cost-benefit analysis, and climate change. *Climatic change*, 77 (1-2), 195-210.

[70] Slovic, P. (1997). Trust, emotion, sex, politics, and science: Surveying the risk assessment battlefield. In M. Bazerman, D. Messick, A. Tembrunsel, and K. Wade Benzini (Eds.), *Psychological perspectives to environmental and ethical issues of management* (pp. 277-313). San Francisco: Jossey-Bass.

and 'unknown' risks. Individual reaction on environmental problem was delayed because the risk was in the future and the probability of adverse consequences seemed negligible at an individual level. Weber and Linderman (2007)[71] had distinguished three forms of decision modes namely calculation-based (where analytical reasoning was used), affect based (on immediate holistic affective reaction) and recognition-based (depending on rules, laws and regulation). Colloquially terming these as decision by the head, heart and the book, the authors discussed how each of these modes can be triggered by modifying the importance and desirability of these goals. Using behavioural insights, Weber (2013)[72] examines how environmental problems can evoke action-based decisions. He uses social comparison and regret, mental accounting and framing as possible cognitive bias that can be effectively used in presenting environmental issues. Similarly, he suggests that shifting the decision-making unit from individuals to groups can have a positive effect on environmental issues. In another study on risk assessment and behaviour in natural catastrophes, Kunreuther, Meyer & Michel-Kerjan (2013)[73] point out the gap between investment and mitigation gap. Heuristics in budgeting, temporal planning, underweighting the future, underestimating the risk, affecting forecasting risks, learning failures, social norms and interdependencies, the authors examine strategies for overcoming bias by looking at long term

[71] Weber, E.U. & Linderman, P.G. (2007). From institution to analysis: Making decisions with our head, our heart or by the book. In (Eds.) H. Plessner, C. Betsch, and T.Betsch, *Intuition in Judgment and Decision Making* (pp. 191-208). Mahwah, New Jersey: Lawrence Erlbaum.

[72] Weber, E.U. (2013). Doing the right thing willingly: Using the insights of behavioural decision research for better environmental decisons. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 380-397). Princeton: Princeton University Press.

[73] Kunreuther, H., Meyer, R. & Michel-Kerjan, E. (2013). Overcoming decision biases to reduce losses from natural catastrophes. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 398-416). Princeton: Princeton University Press.

insurance and mitigation loans, tax incentives and zoning ordinance that incorporate and communicate environment risk.

Behavioural Development Economics

The applications of behavioural insights have special significance in understanding decision making in the context of poverty. Kanbur (2002)[74] anticipated the three main turns in mainstream economics that shifted the conceptual analysis in the recent decades. He observed that behavioural economics based on psychological empiricism and development and distributional economics based on micro foundations redefined three questions - the foundations of poverty and inequality studies and delivery of services. In his 2003 paper[75], he elaborates on the changing paradigm of development economics that increasingly analyzes decision making within a psychological paradigm in microstudies. He cites how insights from behavioural applications over and above rational and informational framework may be useful in understanding informal arrangements and supposedly short-term decisions of poor people or informal workers in agriculture.

Amir *et al.* (2005)[76] identified a few areas of economics in which behavioural insights would have an impact on policy prescription. They came up with cases where there was a problem of

[74] Kanbur, R. (2002). *Conceptual Challenges in Poverty and Inequality: One Development Economist's Perspective*. Introductory remarks at the Cornell Conference on Conceptual Challenges in Poverty and Inequality, April 16-17, Cornell.

[75] Kanbur, R. (2003). Behavioral Development Economics. Accessed 29 December 2017. Retrieved from, http://www.albacharia.ma/xmlui/bitstream/handle/123456789/32052/Stig-Kanbur.pdf?sequence=1

[76] Amir, O., Ariely, D., Cooke, A., Dunning, D., Epley, N., Gneezy,U., Koszegi, B., Lichtenstein, D., Mazar, N., Mullainathan, S., Prelec, D., Shafir, E. & Silva, J. (2005). Psychology, Behavioral Economics, and Public Policy. *Marketing Letters*, 16 (3/4), 443-454.

anchoring, framing, hot-cold emotional gap, addiction issues, interventions regarding financial and public health habits as probable research fields. They also proposed process routes by which behavioural insights can be incorporated into the policy. Their first suggestion was 'grassroots' approach through which community behaviour is changed to reflect the behavioural insight. The second and third method is to make behavioural insights a part of core economic policy and law.

Bertrand, Mullainathan and Shafir (2004[77]; 2006)[78] have shown that poor people tend to make similar kinds of decision errors but the circumstance of poverty impose greater costs on these errors than in other situations. In addition to this, people who are better-off are operating in a system that strives to reduce behavioural errors through no-fee options, reminders and default options where as poor people face institutional, social and psychological barriers that make their economic decision-making overwhelming. The authors use four factors in the conceptual framework to understand low participation of poor people in the American context. The first is the concept of mental construal. Behavioural sciences reveal that people do not respond to objective stimuli but mental representations of actual conditions which do not render a one-to-one correspondence (Bertrand, Mullainathan & Shafir 2004)[79]. Therefore, many well-intentioned interventions can fail because they have been misunderstood by the intended beneficiaries. The

[77] Bertrand, M., Mullainathan, S. & Shafir, E. (2004). A Behavioral-Economics View of Poverty. *American Economic Review*, 94 (2), 419-423.

[78] Bertrand, M., Mullainathan, S. & Shafir, E. (2006). Behavioral Economics and Marketing in Aid of Decision Making among the Poor. Journal of Public Policy & Marketing, 25 (1), 8-23.

[79] Bertrand, M., Mullainathan, S. & Shafir, E. (2004). A Behavioral-Economics View of Poverty. *American Economic Review*, 94 (2), 419-423.

key to success in policy delivery is not only conveying the correct information, but the correct mental construal as well.

Shah, Mullainathan and Shafir (2012)[80] have demonstrated how scarcity affects cognitive performance. From empirical studies, they observe that scarcity changes the allocation of attention by emphasizing some matters more deeply and neglecting others. This can explain behavioural tendencies like over borrowing. They argue that scarcity-induced focus is not myopia, nor does it necessarily imply steeper discount rates. The poor often save for the future, not by setting aside a generic amount but by saving up for specific expenses. Understanding this behavioural trait of the poor has policy implications. For example, interventions that draw people's attention to specific future needs should be particularly effective at increasing savings.

Mullainathan and Shafir (2013)[81] analyze the decision-making contexts of the poor to bring out the environment of poverty that fosters certain cognitive limitations. They argue that context dependence, mental construal, mental accounting, channel factors and identity significantly affect the behavioural performance of the poor. Institutions, they argue, specifically shape defaults, behaviour and implicit planning. Some of the non-institutional characteristics in the financial life of the poor are the presence of the economic slack by which the poor easily cut back on consumption. Secondly, the poor do not have a buffer-stock savings despite high volatility. The

[80] Shah, A.K., Mullainathan, S. & Shafir, E. (2012). Some Consequences of Having Too Little. *Science,* 338 (6107), 682-685.

[81] Mullainathan, S. & Shafir, E. (2013). Decision making and policy in the contexts of poverty. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 217-230). Princeton: Princeton University Press.

authors argue that decision under scarcity, therefore, suffer from limited cognitive resources, mental load, stress and tunneling and depleted resources and limited self-control.

Datta and Mullainathan (2014)[82] have looked at design of development policies to include behavioural fixes in agrarian context. They suggest parameters like mental frame suggestions to deal with inattentiveness and self-control problems. Kuriakose (2016)[83] has argued that infrastructure and specific social norms are important components of behavioural policy design in a development context like that of India.

The second conceptual framework is the power of situational influence on personality traits. A number of psychological experiments have shown the relationship between external situational impacts and its consequences on behavioural choices (Milgram 1963[84]; Darley & Bateson 1973)[85]. The third factor is the presence or absence of a channel that encourages or inhibits behaviour

[82] Datta, S. & Mullainathan, S. (2014). Behavioral design: a new approach to development policy. *Review of Income and Wealth*, 60 (1), 7-35.

[83] Kuriakose, F. (2016, November 4). Going beyond technological fixes. *The Hindu: Business Line*. Accessed on 1 December 2017, retrieved from, http://www.thehindubusinessline.com/opinion/behavioural-economics-for-effective-policy-making/article9301206.ece

[84] Milgram, S. (1963). Behavioral Study of obedience. *The Journal of Abnormal and Social Psychology, 67*(4), 371-378.

[85] Darley, J. M., & Batson, C. D. (1973). " From Jerusalem to Jericho": A study of situational and dispositional variables in helping behavior. *Journal of personality and social psychology*, *27*(1), 100-108.

(Lewin 1951[86]; Leventhal, Singer & Jones 1965)[87]. The fourth set of factors are the cognitive principles of behavioural economics such as risk seeking in times of loss (Kahneman & Tversky 1979)[88], loss aversion (Tversky & Kahneman 1991)[89] and mental accounting (Thaler 1985)[90]. These characteristics go against the assumptions of neoclassical economics. For example, mental accounting is a practice that contradicts the idea that money is fungible. Due to such cognitive barriers, behavioural policy should take into account processes like creating correct channels of communication, appealing to the right identities and creating helpful infrastructure to process information.

The third concept that is much studied in behavioural developmental economics is the idea of rationality that is influenced by the environment. Smith (2005)[91] has theorized on the difference between the rationalities of wealth maximization and that of survival. He argues that the first concept of a rational order derived from the standard socioeconomic science models is an example

[86] Lewin, K. (1951). *Field Theory in Social Science*. New York: Harper.

[87] Leventhal, H., Singer, R. & Jones, S. (1965). Effects of Fear and Specificity of Recommendation upon Attitudes and Behaviour. *Journal of Personality and Social Psychology*, 2 (2), 20-29.

[88] Kahneman, D. & Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica*, 47 (2), 263-91.

[89] Tversky, A. and Kahneman, D. (1991). Loss Aversion in Riskless Choice: A Reference Dependent Model. *Quarterly Journal of Economics*, 106 (4), 1039-1061.

[90] Thaler, R. H. (1985). Mental Accounting and Consumer Choice. *Marketing Science*, 4 (3), 199-214.

[91] Smith, V.L. (2005). Behavioral economics research and the foundations of economics. *The Journal of Socio-Economics,* 34 (2), 135–150.

of what Hayek has called 'constructivism', which stems particularly from philosophers who believed and argued that all worthwhile social institutions were and ought to be created by conscious deductive processes of human reason. In the 17th century, its proponent was Descartes while in the 19th century, Bentham and John Stuart Mill were among the leading constructivists. Constructivism used reason to deliberately create rules of action, and designed human socioeconomic institutions that yielded outcomes deemed preferable, given particular circumstances, relative to those produced by alternative arrangements. The shortcoming of constructivism was that human institutions and most decision making was not guided only or even primarily by constructivism. Emergent arrangements, even if initially constructivist in form must have survival properties that take account of opportunity costs and environmental challenges invisible to our modeling efforts.

Smith argues that these considerations led to the second concept of a rational social order, *i.e.*, an ecological system, which emerges out of cultural and biological evolutionary processes, home grown principles of action, norms, traditions, and 'morality'. Ecological processes help in the process of selection. For example, in experimental economics revealed processes such as the continuous double auction (CDA) emerge in numerous studies of existing market institutions. People in these experiments are led to promote group welfare enhancing social ends that are not part of their original intention. This principle is supported by hundreds of experiments whose environments and institutions (sealed bid, posted offer and others besides CDA) may exceed the capacity of formal game-theoretic analysis to articulate predictive models. But they do not exceed the functional capacity of collectives of incompletely informed human decision makers, whose

autonomic mental algorithms coordinate behaviour through the rules of the institutions and social algorithm to generate high levels of measured performance.

Smith (2005)[92] concludes that both kinds of rationality have influenced the design and interpretation of experiments in economics. In other words, experimental market economics and behavioural economics are in principle complementary. Experimental economists study market performance given individual valuations, while cognitive psychologists study the performance consistency of individual decision making.

Drawing on thirty in-depth interviews with leading policy executives, and case studies that reflect the application of 'Behaviour Change' policies on the design and constitution of British streets, Whitehead, Rhys and Pykett (2011)[93] claim that current strategies are predicated on a partial reading of new behavioural theories, leading to the construction of public policies that seek to arbitrarily decouple the rational and emotional components of human decision making with deleterious social and political consequences. Their argument is that if humans are seen as slaves of their emotional selves, it appears that only those choice architects who design public policy can be trusted to design the rational default environments in which we are to live (with, of course, the exception of the `rational elite' for whom these policies are not really meant in the first place). It

[92] Smith, V.L. (2005). Behavioral economics research and the foundations of economics. *The Journal of Socio-Economics,* 34 (2), 135–150.

[93] Whitehead, M., Jones, R., & Pykett, J. (2011). Governing irrationality, or a more than rational government? Reflections on the rescientisation of decision making in British public policy. *Environment and Planning A: Economy and Space*, 43 (12), 2819-2837.

is this conceit that lies at the root of both the democratic shortcomings of Behaviour Change policies, and its unfortunate psychographic designation of irrational social groupings.

The fourth aspect that has been examined by various studies is the idea of 'psychological levers' and the environment. Miller and Prentice (2013)[94] have looked at the psychological levers of behaviour. Relying on Lewin's theory of motivation, the authors argue that behaviour occurs in a 'force-field', with opposing pressures on an individual. For instance, pressures that push an individual towards a goal or outcome is called 'approach motivation' where as pressures that push a person away from an action is called avoidance motivation. The authors begin policy prescription by asking two questions - what is the behavioural target of this policy and what is its psychological targets? Social norm marketing and calibrating counterintuitive aspects of policies apparent in cases of taxes and subsidies are the examples that they provide to design policies that would trigger behavioural change. In policy design analysis, Garcia and Cohen (2013)[95] look at circumstances where identity is a central concern in psycho-sociological approach in a 'social tension system' in which forces in a dynamic state of action remain stable over a long time (Garcia & Cohen, 2013)[96]. While intervening in identity related process in classroom performance, for instance, the timing, psychology and related effects become very important considerations.

[94] Miller, D.T. & Prentice, D.A. (2013). Psychological levers of behavioural change. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 217-230). Princeton: Princeton University Press.

[95] Garcia, J. & Cohen, G.L. (2013). Social psychology approach to behavioural intervention. In (Ed.) E. Shafir, *Behavioural Foundations of Public Policy* (pp. 217-230). Princeton: Princeton University Press.

[96] Ibid, p, 329

Decision making varies significantly when done individually and in group. Both formal and informal institutions play an important role in the policy environment in a developing context. Cardenas and Carpenter (2008)[97] have studied from field experiments in cross-national developing contexts to understand the role of formal and informal institutions in enhancing cooperative behaviour. They test the groups in cooperation, trust and reciprocity, fairness and altruism and time preference and risk. Social norms, social sanctioning, and group composition affect cooperation by exerting informal rules. Where formal rules exist, social cooperation is less.

Studies of behavioural applications in public health have faulted the assumption of aggregation of individual evidence to a group (Hoddinott, Allan, Avenell & Britten 2010)[98]. Studying specific health interventions, they argue that behaviour change interventions delivered in a group setting are complex adaptive social processes with interactions between the group leader, participants, and the wider community and environment. Therefore, ecological models of health improvement, which embrace the complex relationship between behaviour, systems and the environment may be more relevant than an individual approach to behaviour change.

Kooreman and Prast (2010)[99] studied public health choices such as organ donations and lifetime savings through the behavioural lens in the case of the Netherlands. They demonstrate that policies with more choices and competition evoke consumer confusion and choice paralysis. The authors

[97] Cardenas, J.C. & Carpenter, J. (2008). Behavioural Development Economics: Lessons from Field Labs in the Developing World. *The Journal of Development Studies*, 44 (3), 311-338.

[98] Hoddinott, P. Allan, K. Avenell, A. & Britten, J. (2010). Group interventions to improve health outcomes: A framework for their design and delivery. *BMC Public Health*, 10 (800), 2-9.

[99] Kooreman, P. & Prast, H (2010). What does behavioral economics mean for policy? Challenges to savings and health policies in the Netherlands. *De Economist*, 158 (2). 101–122.

also suggest that policy initiatives based soft-paternalism should be preceded by an analysis of costs and benefits and on design that recognizes consumer heterogeneity. They explain how pilot programs could be an effective way forward to gauge policy effectiveness.

Baickar, Congdon and Mullainathan (2012)[100] use the psychology of decision making to health insurance in the American context. They argue that psychological insights simplify both the nature of the problem (including barriers to enrollment and socially optimal coverage patterns) and the effectiveness of different policy solutions (including overall take-up and targeting of particular populations). For example, employer depended insurance and reference dependent prescription lead to low take-up of insurance cover because of commitment issue and free-rider problems. Fewer choice options and decision inertia plague these insurance policies although the provisions of these policies are beneficial to the poor sections. Simple behavioural design solution like nudging, selection and non-group insurance may be more effective.

Michie *et al.* (2008)[101] attempted a taxonomy of behavioural techniques and linked it to theoretically linked behavioural changes. Their process was to review available behavioural techniques, map them into behavioural determinants in meta-analysis. They concluded that there were 10 identifiable theoretical constructs informed by psychology and 137 techniques despite the shortcoming that they began with no definition of what a technique is. Michie, Straalen and West

[100] Baicker, K., Congdon, W.J. & Mullainathan, S. (2012). Insurance Coverage and Take-Up: Lessons from Behavioral Economics. *The Milbank Quarterly*, 90 (1), 107-134.

[101] Michie, S., Johnston, M., Francis, J., Hardeman, W. & Eccles, M. (2008). From Theory to Intervention: Mapping Theoretically Derived Behavioural Determinants to Behaviour Change Techniques. *Applied Psychology: An International Review*, *57* (4), 660–680.

(2011)[102] have conceptualized a behaviour change wheel to identify the framework of behavioural change interventions based on reliability test in public health interventions. According to the authors, a 'behavioural system' was composed of three conditions- (i) capability, (ii) opportunity, and (iii) motivation. The authors also proposed nine interventions that could come in when one or more of the conditions are in deficit and seven type of policies that would enable the interventions.

Several studies that have used empirical observation and lab experiments in the field have observed the psychological dilemmas that the poor people are subjected to, due to their financial constraints. Cognitive resources play an important role in economic behaviour because they facilitate economic deliberation and global decision-making. Orwell (1937)[103] traveled to the north of England during the Great Depression to learn about the lives of the poor and emphasized the difficult budget decisions the poor had to make about what not to buy. He described it as the 'psychological adjustment' inherent in the dilemmas of the poor, necessary to avoid 'continued agonies of despair'. In her history of poor and pregnant women in nineteenth-century Paris, Fuchs (1992)[104] explains how 'women made choices, albeit without adequate information, without many options, and without much planning' which led them to resort to infanticide or child abandonment.

[102] Michie, S., Straalen, M.M. & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, 6 (42). https://doi.org/10.1186/1748-5908-6-42

[103] Orwell, G. (1937). *The Road to Wigan Pier*. London: Penguin.

[104] Fuchs, R. G. (1992). *Poor and pregnant in Paris: strategies for survival in the nineteenth century*. New Brunswick: Rutgers University Press.

Burks, Carpenter, Götte, and Rustichini (2009)[105] found that in addition to choosing larger, later payments in the lab, truck drivers with better performance on cognitive tests are more likely to keep their job long enough to avoid incurring a costly debt for training. Collins, Morduch, Rutherford, and Ruthven (2009)[106] collected detailed 'financial diaries' from poor households in Bangladesh, India, and South Africa, documenting the complexity and difficulty of the intertemporal financial decisions that the poor must make to manage their small and irregular incomes.

Temptation goods are defined to be the set of goods that generate positive utility for the self that consumes them, but not for any previous self that anticipates that they will be consumed in the future. In their work comparing temptation good and decision making in poor, Banerjee and Mullainathan (2010)[107] argue that the relation between temptations and the level of consumption plays a key role in explaining the observed behaviours of the poor. The assumption of declining temptations, which says that the fraction of the marginal dollar that is spent on temptation goods decreases with overall consumption, has a number of striking implications for the investment, savings, borrowing and risk-taking behaviour of the poor, which would not arise if temptations were either non-declining or entirely absent.

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[105] Burks, S. V., Carpenter, J. P., Götte, L. & Rustichini, A. (2009). Cognitive skills affect economic preferences, strategic behavior, and job attachment. *Proceedings of the National Academy of Sciences of the United States of America*, 106 (19), 7745–7750.

[106] Collins, D., Morduch, J., Rutherford, S. & Ruthven, O. (2009). *Portfolios of the Poor: How the World's Poor Live on $2 a Day*. Princeton: Princeton University Press.

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In a field experiment among pension recipients in Cape Town, consumption declines less steeply across the pension month among participants who show more cognitive ability on a working-memory test (Spears, 2012)[108]. Spears (2011)[109] based on three randomized and partially randomized control experiments demonstrated that poverty is associated with diminished behavioural control.

Mani, Mullainathan, Shafir and Zhao (2013)[110] have demonstrated through cognitive experiments that poverty significantly reduces cognitive performance. In a set of two experiments, thought stimuli about finances were given to poor and well-off participants. The poor participants showed significantly less capability than the rich. Similarly, in the second experiment with a set of farmers, the same participants exhibited increased cognitive performance after their harvest when they were richer than before the harvest. The magnitude of impact on the 'cognitive load' that poverty imposes is significantly high as shown by sleep researchers. Statistical average in a population equates financial concerns as having a pressure equal to losing a night of sleep or approximately 13 IQ points.

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On the psychology of poverty, Haushofer and Fehr (2014)[111] argue that poverty causes stress and negative affective states which lead to short-sighted and risk-averse decision-making, by limiting attention and favoring habitual behaviours at the expense of goal-directed ones. These relationships constitute a feedback loop that contributes to the perpetuation of poverty. On policies to counter poverty effects, they propose three methods. The first is to target poverty directly through mechanisms like cash transfers. The second is to target its psychological consequences, which can be through psychotherapeutic interventions. This is the least studied behavioural intervention. The third is to target the economic behaviours that result from them, which have been combated by behavioural economists to an extent.

Conclusion

This article examined the shortcomings of neoclassical assumptions regarding choices and decision making by individuals. The assumptions of revealed preferences and rationality as utility maximization were critiqued based on empirical evidence. Behavioural economics, that developed out of psychological examination of choices and decision making modified the neoclassical assumptions by bringing in cognitive limitations of human rationality and proposed frameworks such as choice architecture to nudge individuals towards utility maximization. However, the methodology of neoclassical and behavioural economics remain the same.

Within the framework of new psychological variables, behavioural economics was examined as regulatory policy and public policy. As regulatory policy, behavioural consequences are different when applied by a public authority like the state and an institution like the market. While markets provide customization and competition, public institution takes into account externalities. As

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public policy, behavioural insights have been implemented in lab conditions and pilot projects to combat various types of cognitive limitations. Studies have been conducted on biases, the role of experts, decision making as individuals and in groups. However, there have also been criticism against behavioural economics on two grounds. The first is that behavioural results from lab conditions play out very differently in the field due to various reasons. The second line of critique is because there is genuine difficulty in implementing asymmetric paternalism as a systematic method of policy under all circumstances.

It is in this context, that the third part of the article (the first part deals with critiquing neoclassical model and the second part discusses aspects of behavioural economics) dealt with a special field of enquiry within the discipline of behavioural economics called behavioural developmental economics. Various studies have shown the cognitive burden that a condition of scarcity like poverty imposes on individual decision-making capabilities. This acute cognitive limitation calls for sensitive and insightful policy architecture in which decision making in poverty can be better understood and enhanced towards welfare maximizing goals.