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Abstract

Thus far psychological input has been used in economics mainly to highlight the cognitive imperfections of market participants. However, cognitive psychology offers many findings that may be instrumental in emphasizing the limits of government intervention. I survey psychological literature and propose some concepts that may be relevant to the political economy of government regulation.

Introduction

A substantial body of scholarship on the crossroads of law, economics and psychology has emerged in recent decades as a reaction to the behavioral assumptions of standard neo-classical economics. Psychologists have found numerous examples of departures of real people's behavior from the typical microeconomic concept of rationality. The application of such findings to the analysis of market behavior in various situations - from ordinary people making decisions about purchasing insurance or choosing a pension plan, to sophisticated investors systematically making inferior decisions about financial markets - has been the main pattern of the growing discipline of behavioral economics or behavioral law and economics.

Notably, the field has been largely limited to the discussion of *market* participants. For example, Mullainathan and Thaler (2000) define behavioral economics as "the combination of psychology and economics that investigates what happens *in markets* in which some of the agents display human limitations and complications" (emphasis mine). Due to the focus on markets alone, as well as policy implications of the work of the most prominent authors in the field, behavioral economics has come to be seen as a somewhat ideological enterprise. The obvious answer to deficiencies exposed by market participants, have been policy measures designed by psychologically informed regulators to rectify choices made by market participants. Since behavioral economics can inform policy experts about the cognitive deficiencies of ordinary people, that calls for increased government interference in rectifying these deficiencies. Intervention is justified on the grounds that by constraining or steering individual choices, experts may align our decisions with our true preferences and thus increase our well-being. In this vain, policy oriented economists and lawyers have come up with a number of proposals for additional government regulation everywhere from health policy to financial markets (Camerer et al, 2003; Thaler and Sunstein, 2008; Akerlof and Shiller 2009).

Economists who disagree with paternalist policy conclusions have challenged the entire enterprise of behavioral economics. Critics of the behavioral approach claim that many discoveries of behavioral economics are already included in mainstream economic analysis; argued that market forces already successfully weed out wrong judgment; pointed to the inability of behavioral regulators to know the true preferences of individuals; and warned of the danger of slippery slopes of regulatory intervention (Posner 1998, Mitchell 2002, Rachlinski 2003, Rizzo and Whitman 2009, Rizzo and Whitman 2009a). Also, psychologists have expressed reservations about the relevance of behavioral economics to the real world. Since human rationality evolved not to solve formal rationality tests but to deal with real world problems, the evidence of irrationality found in classroom experiments does not necessarily mean that our real world decisions are suboptimal - in fact, the use of simple heuristics rather than rational analysis may improve our decision making in everyday situations (Cosmides and Tooby, 1994; Gigerenzer, 2008).

The aim of this paper, however, is not to assess the validity of behavioral economics itself, but to show that association of behavioral economics with one kind of policy conclusions has been misplaced. Whatever the other merits or limitations of behavioral economics may be, the issue this paper deals with is only its one-sidedness - its nearly exclusive focus on market participants and its neglect of policymakers who are supposed to remedy the fail-

ures of the markets. Rarely have behavioral arguments been used to question the knowledge and rationality of policymakers and regulators, and the reason for this neglect is not in the lack of utilizable psychological research. Cognitive psychology in fact offers many findings that are equally applicable to other participants in policymaking process.

In mainstream economics literature there is a near complete absence of the concern that regulatory design might suffer from the lack of competence. Among the critics of regulation, the dominant concerns are that regulation may unnecessarily stifle market transactions and thus negatively impact economic growth, or that regulation may be designed to benefit organized interest groups. In a recent analysis, Shleifer (2010) argues that regulation exists because it is an efficient solution in cases where a court system fails to resolve contract and tort disputes; and in proposing this, effectively assumes away the possibility of faulty regulation. Shleifer (2005) specifically discusses possible inefficiencies of that which may arise from imperfect regulation, pointing to the standard public choice and interest group arguments, as well as to the history of colonial transplantation of institutions that might be less than perfectly suitable for local conditions. The possibility of regulatory error is not considered as a potential factor of inefficiency. While the assumption of government benevolence is challenged by interest group arguments, regulatory omniscience is tacitly assumed.

In behavioral economics literature, there have been some limited attempts to extend behavioral reasoning to government behavior. Kuran and Sunstein (1999) write about availability cascades in regulation, self-reinforcing cycles of excessive risk regulation and excessive risk perception spurred by availability bias. Sunstein (2000) pleads for a sober use of cost-benefit analysis as a remedy for widespread biases that might otherwise drive regulation. Guthrie, Rachlinski and Wistrich (2001) find that judges are not immune to some standard cognitive illusions, including anchoring, hindsight bias, egocentrism, representativeness bias, and framing effect. Hirshleifer (2008) points to the biases that financial regulation may face, such as salience and vividness effects, overconfidence, xenophobia, scapegoating and others. These are, however, isolated and limited attempts. More importantly, with the partial exception of Hirshleifer (2008), they do not argue that the possibility of successful intervention is fundamentally limited by cognitive factors, but rather a plea for the use of behavioral economics as an instrument to improve the existing intervention.

Before turning to specific biases of importance for government intervention, it should be said that the most important limitation of government regulators' ability does not come from cutting-edge psychological research, but from economics and economic epistemology. Hayek (1945) argued that the relevant knowledge is highly decentralized, while centralized technical and scientific knowledge is not of much help in solving the problem of continuing allocation of resource among alternative uses. The kind of knowledge that the market economy uses is the knowledge of myriad participants in the market process. Such knowledge is in fact generated only through the market process, and does not even exist independently of the acting market participants, because it is not separable from their actions. Governments that try to supplant the market process are thus faced with an insurmountable epistemic limitation. Cognitive psychology, therefore, does not answer the question as to why governments are unable to efficiently manage the economy. The answer to that goes far beyond cognitive limitations, and it lies in the nature of knowledge that is relevant for the market process.

The idea of central government allocation of resources has been discredited, and the emphasis is now on a government's role in defining the rules of the game that will lead private action towards some presupposed social goals. However, even this more limited mode of regulatory intervention does not escape the problem of error and ignorance. In the remainder of the paper, I will propose several specific cognitive biases that lead to regulatory error. These phenomena have been recognized and tested by psychologists, but their uses in the context of policymaking decisions have not been considered.

Sources of regulatory error

Action bias

The decision to engage in regulation may be itself a product of an impulsive reaction, which in other areas of behavior has been called “action bias”. Action bias has been defined as a tendency to overreact in the face of risks and uncertainties (Patt and Zeckhauser, 2000.) Confronted with risks and uncertainties, cognitive mechanisms push people to either overly react, or to fail to react at all. Of these, failure to act is more likely to occur when we are totally unfamiliar with the situation, while overreaction frequently occurs when we are familiar with events around us. Even though inaction is the optimal response to an event, we decide to act nevertheless, see the first obvious course of action and decide take it.

Another instance where action bias is especially likely is when the relevant actors are able to in some way obtain credit for responding to the risk. Whether the credit comes from self-assessment, from others, or from the general public, the possibility of taking credit for action increases the likelihood action bias (Patt and Zeckhauser, 2000).

A recent study detects action bias among elite soccer goalkeepers (Bar Eli et al, 2007). A study of a large number of soccer penalty kicks suggests that, given the average behavior of kickers, the optimal strategy for goalkeepers is to simply stay in place. In reality, however, even experienced goalkeepers much more often tend to jump to one side, left or right, to try to save the goal. Clearly, faced with a familiar but uncertain situation, goalkeepers exhibit an action bias at the price of diminishing their chances to save the goal. Further, as audience, coaches and teammates are all watching the act, the possibility of taking credit for action is increased. Action bias works as expected.

This gives us reasons to speculate whether action bias plays some role in the behavior of politicians, policymakers and regulators. They are frequently faced with unexpected but basically familiar events, and are in the environment where credit may be earned from the general public, media and voters, for taking action. Government actions have more complex origins than a simple bias towards doing something, but some recent examples show that there is some space for action bias in explaining them. After the collapse of Enron, the regulators in the United States quickly reacted with introducing stringent corporate conduct regulation, the Sarbanes-Oxley Act. The net effect of the Act has arguably been negative, as burdensome costs were imposed on corporations, after which many investors moved to European and Asian markets instead (Rezzy, 2007). Judging from consequences, it is likely that the regulators overreacted to the crisis.¹

As Robert Higgs (1987) shows, different types of crises have been the principal engine of the growth of government in the 20th century. That crises are such a fertile ground for growth of regulation is partly a consequence of the unwarranted impulse of regulators and voters that a crisis necessarily needs a response.

Motivated reasoning

Another cognitive mechanism that may play a role in determining the willingness of regulators to take action is related to the incentives that surreptitiously play a role in our reasoning. Psychologists have long argued that our reasoning is not independent from our goals and motives. “Motivated reasoning” is the label that Kunda (1990) gave to the rationalization of preferred opinions, or our tendency to arrive, by seemingly purely rational reasoning, to the opinions that we prefer for other motives. Economists have called a comparable concept “preferences over beliefs” (Dickens and Akerlof, 1982), while in folk psychology a similar phenomenon is known as “wishful thinking”. Neuroscientists have also found evidence of motivational input in our reasoning - the study of the neural correlates of motivated reasoning in political judgments finds that reasoning is associated with the activation of the parts of the cerebral cortex that are connected with emotions, and not

¹ Similarly, after the financial crisis of 2008/09, governments as well as the general public in most countries demanded some response - and it arrived in forms of macroeconomic measures and new financial regulation.

with the parts normally used for cold reasoning. The conclusions about the logic of certain statements were reached with the help of preferences for political personalities that gave the statements (Westen et al., 2006).

We may safely assume that it is in regulators' utility function to exert more extensive control over market exchange and increase the influence of their positions. When deliberating upon regulatory action, regulators would be expected, under the influence of motivated reasoning, to bend their thinking towards more stringent regulation that increases their own discretionary powers and control over markets. Importantly, the claim based on motivated reasoning is *not* that regulators' taste for excessive regulation is the product of brazen attempts to increase self influence, as public choice theory would have it. Rather, cognitive psychology suggests that it is an honest contention, coming from some common cognitive properties that impact our reasoning. We do not follow incentives but reason - however, reasoning itself is directed by incentives. On a meta-cognitive level, we are not aware of the existence of relevant motives that influence our thinking.

Motivated reasoning presumes that a bias towards regulation is not limited only to regulators. Some classical liberal authors have argued that intellectuals tend to subscribe to policies that happen to increase their own, if not material benefit, then status and importance of their work. Nozick (1986) claimed that intellectuals prefer an ordered society that reminds them of school, the place where they were held in the greatest esteem. Intellectuals have a great belief in the value of intellectual work, while markets, on the other hand, do not reward intellectual work as much as they reward entrepreneurship, innovation and risk-taking. Mises's (1949/1996) argued that economists, aware that the usefulness of their expertise depends on the existence of the interventionist state, become sympathetic to interventionism themselves. Both Nozick's and Mises's accounts seem to implicitly rely on the concept of motivated reasoning. Like regulators, many intellectuals believe what is convenient for them to believe. The fact that government intervention requires employment of skill and expertise means that, with all other things equal, the existence of motivated reasoning predicts that intellectuals, like regulators themselves, would have a bias toward government intervention.

Focusing illusion

The focusing illusion is a bias that appears when people consider the impact of one factor on the overall situation and overestimate its importance (Kahneman et al, 2006). By focusing on one visible factor, we tend to overplay it and disregard the impact of everything else. This is in turn related to the well-established idea of behavioral economics that we systematically overestimate the likelihood of events that come easily to mind. Using the so-called "availability heuristic", we assign extra importance to prominent events or those that we most easily recall at the given moment. After the September 11th tragedy, for example, people became overly cautious about terrorist attacks while downplaying other risks. Strict airport security regulations increased the cost of flying and shifted passengers towards driving; but since driving is on average a riskier means of transportation than flying, the effect of tighter airport security was the increased total number of deaths from other accidents (reference).

A recent example of the focusing illusion is the too-big-to-fail policy, which goes back several decades but has been increasingly invoked lately in the USA and Europe. A bailout of a large company is a very tangible benefit, but the cost, being dispersed among the taxpayers, is much less evident. Even less visible than direct material costs to taxpayers are the costs related to efficiency losses from supporting the less efficient firm, opportunity costs that come as the process of creative destruction is distracted, and the potential costs associated with the creation of moral hazard.

Stigler (1971) wrote about the influence of interest groups in designing and enforcing regulation, arguing that regulatory agencies may be "captured" by special interests. Instead of advancing public interest which they are designed for, they under the influence of interest groups end up protecting special interest at the public expense. However, regulators may have engaged in recent financial sector bailouts not because they are corrupt or have a direct material stake in it but rather because they cognitively internalize the objectives of

the interest group. Willem Buiter (2008) argued that this happens because regulators come from the same professional or social circles, and name this phenomenon “cognitive regulatory capture”.

Buiter’s cognitive capture argument in fact demonstrates the existence the focusing illusion in financial regulation. Regulators may simply be deluded that they are doing the right thing because they are unable to see the wider context. By concentrating their attention on the financial system, regulators may disregard that the well-being of the financial system is not the only, or even the most important thing in the economy.

That focusing on one problem is a common distraction in policymaking is not a new idea. Frederic Bastiat (1996/1848) famously wrote about our tendency to judge policies by focusing on obvious benefits, while losing from sight the unseen costs. But the insights of cognitive psychology allow us to infer that Bastiat’s problem of the disregard for the unseen consequences as opposed to the visible ones may be so prevalent because it is rooted in our cognitive capacities.

Affect heuristic

There is a large body of evidence in psychology and neurology that our reasoning capacities are closely intertwined with emotions. Cognitive psychologists have argued that even in situations commonly thought of as dispassionate, when we believe that we arrive to a judgment using merely cognitive and reasoning capacities, our judgment is to a great extent the product of affect (Zajonc, 1980). Moreover, emotions are not merely a distracting factor that impacts reasoning but rather an integral element of reasoning. Neurologist Antonio D’Amasio (1994) finds that patients who for external physical reasons, such as surgical removal of brain tumors, lose certain emotional faculties also lose some basic reasoning abilities.

We also use emotions as cognitive shortcuts or heuristics. Heuristics are cognitive mechanisms that help us make decisions and judgments quicker, by omitting a large majority of factors linked to the decision and focusing only on a few major elements. Slovic et al (2002) define “affect heuristic” as the influence of the perceived goodness or badness of intent on our judgment of the act.

Although long recognized, the role of the affect heuristic has not generally been exploited in decision theory, and even less so in political economy. Evidence from several experiments, however, indicates that it should be. Finucane et al (2000) examine the reasons behind the observed negative correlation of risks and benefits of certain activities. The correlation between risks and benefits ought to be positive - we are ready to take on a risky activity only if our benefits from it are relatively high. However, the inverse correlation points to the additional element involved in assessments. Our feelings towards different activities influence our judgments of their risks and benefits. If feelings towards an activity - such as smoking or air travel - are negative, then we estimate the risk involved in them to be higher, and benefits from them lower. Conversely, if the affective reaction to solar energy is approval, we tend to overstate the benefits and underrate the risks involved in it.

As is the case with other heuristics, emotions are in most cases a useful and reliable cognitive shortcut. It is faster and easier to rely on the affective impression, than to find out and assess all related costs and benefits. For example, the emotion of fear can identify danger before any rational analysis can do it. We fear a wolf on the affective level, and not because we thought about the risks involved in the average face off with a wolf. And this fear is justified and useful, as it serves as a shortcut to the rational decision to escape from danger. The problem, however, emerges when heuristics are employed out of the proper context. People also, on an affective level, fear flying in an airplane, even though the odds of dying in a plane crash are far smaller than the odds of dying in a car accident. In the environments that we are not evolutionary prepared for, emotional reasoning misleads us.

What is the role of the affect heuristic in political economy? It is present whenever policies are judged, by voters and regulators alike, on their emotional appeal rather than on the rational analysis of consequences. In a complex society, and market economy in particular,

the connection between individual intentions and collective results is deceitful. Beneficial social results are not really intended by anyone. But when the affect heuristic is employed, it is hard to understand that good results may come from the self-interested behavior of profit-seeking individuals.

Political scientist Jeffrey Friedman (2005) identifies “intention heuristic”, which may be a special case of the affect heuristic as discussed by Slovic et al (2002). Friedman (2005) notes that the public and regulators often judge policies based on their proclaimed intentions rather than real consequences. The intention heuristic is a judgment based on the assumption that from good intentions flow good results, and from bad intentions, bad results. Again, like other heuristics, judging based on intentions may be useful in many situations, in ordinary interpersonal interactions or on the societal level, but it is highly deceivable outside the context for which it has evolved.

Since the 18th century, economists have argued that in the extended market order, individual intentions are, contrary to our intuition, disconnected from aggregate outcomes. Our natural understanding of society is that we get goods and services because society is cooperative, and not because it is competitive. But Bernard de Mandeville pointed out that what are private vices, such as greed or selfishness, may amount to public virtues because of the beneficial consequences they create on the aggregate level. Adam Smith (1994 [1776], p. 15) explained that “it is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own self-interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages.” This point is, however, not well established in our intuition, and may be expected from policymakers to mistakenly judge the goodness or badness of intentions, rather than their effects.

When a policy area is emotionally charged, affective focus on the goodness or badness of the proclaimed intentions is likely to trump the evidence of real effects, trade-offs and unintended consequences of a policy. Such is the case, for instance, with minimum wage legislation. The guaranteed minimum wage is designed to help low earning workers, but a simple principle of supply and demand tells economists that such legislation in fact has, on average, adverse effects. By artificially keeping the wage above the market clearing level, minimum wage legislation increases the level of unemployment, as many of the workers that would otherwise work for a wage smaller than the new legal minimum now become or remain unemployed. That this policy enjoys a substantial public support across national borders despite adverse consequences is explainable by the role of the affect heuristic in forming policy judgments. Health policy is another striking example of an emotionally charged area, and the treatment of healthcare is accordingly different, even though there are no plausible reasons why provision of health care should be treated differently than provision of any other services on the market. Hanson (2008) links the calls for increased government intervention in healthcare to our desire to show that we care. Further, the Americans with Disabilities Act, with an admirable intention to help people with disabilities find employment or keep their jobs, ended up having the entirely opposite outcome. By increasing the costs of firing people with disabilities, the Americans with Disabilities Act also unwittingly increased the costs of hiring. Unemployment rates for people with disabilities actually increased after the introduction of the Act (Acemoglu and Angrist, 2001; Peltzman, 2007). This result, however, does not seem to reach the regulators nor the electorate. Similarly, welfare programs may in fact have perverse long-term consequences for the groups that they are designed to help (e. g. Sowell, 1995). The efficacy of foreign aid programs in promoting development has been questioned (e. g. Easterly, 2006). However, the evidence of consequences is rarely sufficient to discredit a program based on good intentions.

Illusions of competence

A group of cognitive biases based on overconfidence suggests that the appeal for regulation may be coupled with a feeling that we have sufficient knowledge and understanding of the market economy to conceive of regulation that may improve its performance. Overconfidence is an illusion that our personal abilities, including our knowledge, are better than they in fact are. Numerous experiments have shown that we regularly overestimate the

measure of our own knowledge (Fischhoff, Slovic and Lichtenstein, 1977). When people are asked to guess the probability that their answers in simple tests of factual knowledge are correct, they appear overconfident and systematically overestimate the level of their knowledge. When estimating their competence in a discipline, a large majority of people believe that they are above average - which is, of course, a statistical impossibility (e. g. Brown, 1986). Behavioral economists have pointed out that investors in the market are overconfident in their predictions of future trends, which results in more trading than it would be rational.

Overconfidence is not limited to the knowledge of facts or to perception of our predictive abilities but extends to perceptions of comprehension, competence, and understanding of stories and phenomena. Students in experiments feel that they understand the material better than they do before going to the test, and even the objective test results do not easily convince them that they had an inflated estimate of their own understanding. A previous self-assessment of the level of comprehension of a text is a poor predictor of the actual level of comprehension (Jacoby, Bjork and Kelley, 1994).

In the context of political economy, overconfidence takes the form of the contention of regulators that they fully understand the problems they face and are able to design optimal solutions for them. One type of overconfidence particularly relevant to the problems of market economy is what the psychologists Rozenblit and Keil named the illusion of explanatory depth (IOED). Rozenblit and Keil (2002) showed, in a series of experiments, that people systematically overestimate their understanding of complex phenomena. We falsely believe that we understand the causes, effects and inner mechanics of different things, events or processes much better than we actually do. Participants in the experiments testing for this illusion would consistently report a certain level of understanding of the given phenomena, before hearing an expert explanation of the same. Only after finding out the true explanation would they realize that their understanding was poor.²

Rozenblit and Keil (2002) argue that the IOED is a by-product of knowing something more general or more difficult to articulate about the phenomena. The illusion occurs when we have general, superficial knowledge about some obvious patterns, and confuse that with insight about the nature and mechanics of the phenomenon. We rely on visible parts to construct an understanding of how things work, and that understanding is, in cases of complex phenomena, in fact very shallow in comparison to the true one. Such mistaken intuition about the completeness of our understanding makes us feel that we understand something in far greater depth than we really do. A somewhat different possibility is that we might be confusing the levels of explanations, when there are parallel explanations on different levels of understanding. We may understand the immediate causes of an event but not know what is behind these causes, and so on, further and further to root causes. In the IOED, we see the visible cause and consequence mechanism, understand the immediate level of explanation, and mistakenly believe that we understand it at a much deeper level.

In any case, as Rozenblit and Keil (2002) maintain, we recognize skeletal patterns on the surface and confuse that with a deeper understanding. Consistent with that, the illusion is more robust when the subject of explanations has some conspicuous mechanisms that cover the inner causes. An everyday manifestation of the IOED is that people vastly underestimate the work and knowledge involved in the construction of ordinary everyday devices - such as a hammer or a pencil. Such devices, that most of us see as simple and easy to make, have in fact come about either by a more complicated engineering processes than we would think, or have been developed by ordinary people only after a long process of subsequent improvements by many individuals. Behind most ordinary devices lies either

² For example, people often believe that they understand the basic physics and mechanics behind a helicopter flight. But when faced with a specific question that tests the depth of their understanding - such as to explain how a helicopter can switch from hovering in place to flying forward - the subjects are unable to answer. Only after facing difficulties with their own and hearing an expert explanation, participants would realize that they had been overconfident.

a substantial theoretical engineering knowledge or perhaps practical knowledge accumulated over time by trial and error.³

Based on this, we can conjecture that, besides the belief in their own knowledge and expertise, which is related to other forms of overconfidence, regulators exceedingly believe that they fully comprehend the problem in front of them. Regulators overconfidently believe that they understand how markets exactly work, and that their understanding of the markets is appropriate and sufficient to enable them to competently conceive the policies that would improve the working of market or lead it towards some desired outcomes.

Market economy is precisely a type of phenomenon that is most likely to fall under the IOED. It is a complex order, whose skeletal patterns are recognizable on the surface. While we think we have a good understanding of how the market economy works, the causal relationships in it are in fact far more complicated - more numerous and less determinable than we usually think. Even those causal relationships in the economy that are fairly known to economists and social scientists, are stochastic rather than deterministic. We can with some certainty predict direction of the effects of different causes, but our ability to predict the magnitude of the effects is very limited. Moreover, our knowledge is reduced to a few large and visible effects, while there are many other causalities that we cannot reliably predict. These are the unintended consequences that, due to the complexity of market structures, play an extremely important role. But it is exactly our limited knowledge and limited understanding that make these consequences so surprising to us. We are far from being able to account for all the consequences that may result from interference in the market order. But on the surface, the economy appears manageable, and that is why it is likely regulators are under the illusion that they fully understand its inner mechanisms. Under the IOED regulators are taking the complexity of the problem they are facing too lightly, and overestimate their ability to conceive the regulation that reaches the desired outcomes.

The problem of overconfidence may even be worse if we consider the so-called Dunning-Krueger effect - the association of the lower level of competence with mistaken judgment about competence. The Socratic notion that knowledge entails the awareness of the limits of one's knowledge has found confirmation in some psychological experiments. For example, novices in physics are less accurate than experts in assessing how difficult a specific physics problem is (Chi et al. 1982). Similarly, novices in tennis are not as good as experts in judging whether plays were successful or not (McPherson and Thomas, 1989). Dunning and Krueger's experiments (1999) show that not only do experts know more about a subject, but they are also better in recognizing the limits of their knowledge. Novices have weaker meta-cognitive skills than experts.

This is not a universal rule - for example, not many people claim expertise in quantum physics. When a subject is totally unfamiliar to us, we are cognizant of our incompetence. Also, if benchmark of expertise is simple, observable and measurable (such as basketball skills), that may defeat our illusion of competence. But Dunning and Krueger (1999) argue that domains characteristic for showing overconfidence are those in which we have some, but not sufficient, knowledge. These conditions, in turn, are similar to the conditions needed for the appearance of overconfidence in general, including the IOED. The market economy fits precisely as a type of domain that brings the illusion of competence into play,

³ It is related to the argument about regulation we are developing here that economists were on a good path in realizing the complexity of production at least since Smith (1776). In the famous essay "I, Pencil", Leonard Read (1958) thoroughly explains how difficult it is to make a simple, wooden, lead pencil without division of labor and coordination in the marketplace.

as most people have *some* knowledge about the economy and are able to form somewhat informed opinions about it.⁴

If it is true that market economy is a complex system whose complexity is systematically underappreciated, the Dunning-Krueger effect would imply that the self-selected are in fact the less competent among us. Planners and regulators will be self-selected from the individuals that are most likely to believe in the ability to comprehend and improve the complex system of market economy. This possibility should not be too surprising - Adam Smith (1776) already saw the illusion of competence when he wrote that "the statesman who should attempt to direct private people in what manner they ought to employ their capitals would not only load himself with most unnecessary attention but assume an authority which could safely be trusted to no council and senate whatever, and which would nowhere be so dangerous as in the hands of man who have folly and presumption enough to fancy himself fit to exercise it."

Therefore, it appears that beyond the issue of regulators' limited cognitive abilities, there is a problem on a meta-cognitive level, in regulators' beliefs that they understand how markets work and that they can control it in order to achieve the desired outcomes. In other words, regulators are not merely ignorant but also unaware of their ignorance. The complexity of the market order is one problem for regulators, but cognitive illusions that make them believe that they understand complex orders are an additional difficulty. They work under what Kirzner (1973) called radical ignorance. Kirzner used this term in the argument that entrepreneurs in the market are faced with more than stochastic ignorance. Instead, they are in sheer or radical ignorance, which is the situation in which they are not aware that there are things that they do not know about. Cognitive illusions foster regulators' feelings that they understand very well the workings of the market economy, when in fact their understanding is severely limited. But the illusion leads them to act as if they knew all relevant variables and as if they could contemplate a perfect regulatory response.

That our cognitive abilities are not nearly sufficient to capture the complexity of economic order was sensed before by economists, starting from and the Spanish scholastics of the School of Salamanca who argued that the market price depended on so many specific circumstances that it could never be known to man but only to God (Hayek, 1974). Scottish Enlightenment philosophers such as David Hume, Adam Ferguson, and Adam Smith understood the complex structure of not only the market but all social relationships. They argued that social order is far too complicated to be fully comprehended by reason, and repeatedly pointed out that the success of the market economy was not the result of a conscious design but rather came about spontaneously through decentralized human action. Economic progress is not a preconceived outcome but happens through spontaneous coordination of a multitude of actions, with a certain, in Adam Ferguson's words, "blindness to the future".⁵ Our knowledge and understanding of the world is inferior to the knowledge accumulated in the evolved and long lasting institutions. At least one tradition within the modern political economy came to appreciate the arguments about the complexity of market order and the limits of reason to comprehend it. Economists such as Bastiat, Menger, Mises, Hayek and Buchanan have all pointed out the self-coordinating features of market transactions and realized that the possibility of centralized coercive action to improve such an order are limited. As we have seen, these arguments are consistent with some recent experimental evidence of cognitive psychology.

⁴ Cognitive psychologists have only recently formulated tried to deal with the issue of meta-cognition and competence, but traces of Dunning-Krueger effect may be found in speculative statements ever since Socrates. Charles Darwin (1871, p. 3) wrote that "ignorance more frequently begets confidence than does knowledge" and Karl Popper (1963, p. 38) argued that "The more we learn about the world, and the deeper our learning, the more conscious, specific, and articulate will be our knowledge of what we do not know, our knowledge of our ignorance".

⁵ Ferguson (1966), p. 122.

Conclusion

The unequal cognitive standards to which modern behavioral and mainstream neoclassical economics subject regulators and market participants are especially striking once it is realized that participants on the market in fact face much *lower* standards of knowledge compared to what regulators need. As Hayek (1945) points out, a market price contains an immense amount of information that no one individually knows. However, an entrepreneur need not understand the reasons for higher prices of tin, nor know that there are supply and demand forces behind the higher prices of tin; all he needs are the basic cognitive skills of recognizing the change in price and adjusting behavior to the changed price. Moreover, as Alchian (1950) argued, market participants do not even need to be rational maximizers for markets to function. If market participants behaved randomly, the evolutionary process would favor those that happen to allocate resources more efficiently.

In the absence of a similar competitive mechanism, the assessment of regulation is left to the political process. However, political markets are less efficient than economic markets and inferior regulatory practices do not get weeded out as easily. For political markets to function, voters need to know about an issue, to assign significance to it, to understand the relevant causes and consequences, judge the results of a policy in comparison with uncertain counterfactuals, and vote accordingly. For example, the results of various government regulations have not received wide acclaim in empirical academic literature. Clifford Winston (2006, p. 11) conducts a comprehensive survey of scholarly assessments of regulatory policies and reports “a surprising degree of consensus about the paucity of major policy successes in correcting a market failure efficiently.” Hahn and Tetlock (2008) show that economic analysis has not improved the quality of regulatory decisions in practice. Nevertheless, the rise of the regulatory state still largely meets public approval (e. g. Miller, 2007). This persistent practice of regulation despite the lack of evidence that the effects have been net positive, indicates that we are dealing with an embedded illusion about the difficulty of regulatory tasks, rather than with occasional mistakes.

Market economy is a complex system in which agents continually change their behavior to adapt to new incentives. The adverse unintended consequences are pervasive across regulatory areas, and yet when they are recognized, the typical policy answers are new attempts to fix the omissions of the previous regulation. But every attempt to improve the previous policy must also be based on the illusion that the problem is well understood, perhaps better now than in the previous situation. The illusion is shared not only by regulators themselves, but among all who support the optimistic view of the possibility of successful regulation. That is the opposite of the recognition that there is something wrong with the very idea that we can successfully intervene in the market order because our ability to comprehend all the consequences is limited, as economists from Smith to Hayek would argue. Thus regulation remains in a continuous change towards the purported perfection, but the illusion that we know how to steer markets is alive and well, and makes the prospects of the overall reduction of regulation slim.

Cognitive psychology shows that epistemological optimism is unwarranted and offers plenty of evidence that undermines the omniscient regulator assumption. Furthermore, while cognitive findings refute the omniscience assumption, meta-cognitive findings explain why the assumption is so prevalent in the first place. This is important because most cognitive defects are, in principle, manageable. If the existence of a bias or misplaced heuristic is shown, the psychologically informed expert regulator may incorporate the new result and proceed with regulatory design, with new, improved tools. But meta-cognitive arguments, those that claim the pervasiveness of overconfidence and overestimation of our understanding, point to our inability to recognize the limits of our knowledge. If that is true, then our ignorance is fundamental, that is, resistant to rectification by an even higher expert.

The list of cognitive biases that applies to the issues of regulation is certainly much longer than what was suggested here and the political economy of government intervention could further benefit from psychological input in both the positive and normative way. On the positive side, cognitive biases help explain the propensity to regulate, regulators’ internal justifications for it, and the direction in which regulation is likely to move. In this prelimi-

nary account, it argues that our biases probably carry the level of regulation beyond the optimal level. On the normative side, the input of cognitive psychology calls for a more careful approach to regulation. It reminds us of human fallibility, and jointly with the economics of collective decision-making warns us that government intervention is the area where such mistakes are more likely to occur than in private decisions. It calls for a humbler approach to government intervention, especially on the ground that we are less smart and the market order is more complicated than it appears on the surface.

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