

Assumptions in Economics*

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Abstract: Any scientific discipline, any theory, formal or informal, rests on assumptions. These assumptions matter, and in the case of social sciences, influence our vision of society and our policy recommendations. This essay reviews and comments on assumptions most commonly made by economists -methodological individualism vs. socially determined preferences, consequentialism, utility comparisons- and discusses their attitudes toward the market and ethical choices.

Keywords: methodological individualism, consequentialism, socially determined preferences, ethics and markets, role of theory in economics.

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I. What economists do

As with most academic disciplines, research in economics builds on a combination of theory and empirical evidence. Theory provides the conceptual framework. It is also the key to understanding the data. Without a theory – that is, without a system of interpretation – data is at best a set of interesting observations and correlations, without clear implications for economic policy. Conversely, a theory is enriched by empirical evidence, which may invalidate its hypotheses or conclusions and thus can improve or overturn it. That empirical work has expanded to dominate mainstream economics is actually good news for theory, due to their complementarity.

For readers trained in science, the analogy with modeling in engineering may prove useful. Economists start with a real-world problem, whether it is already well identified or a new question posed by public or private decision makers. The engineer's quest is driven by some goal, such as energy efficiency, speed, low-maintenance, sustainability, manufacturing cost concerns, or most likely a combination of these. The economist is driven by some goal as well: social welfare is the most common one, but normative analysis may be associated by other goals. There is perhaps more discretion in economics in specifying the goals, as one might argue that those in engineering may be broadly supplied by profit considerations¹. In any case, there is a large literature in philosophy and economics on alternative welfare criteria, and for the purpose of this discussion we will just assume that the analyst has settled on one.

Like in engineering, little can be done without theory². Economists therefore identify the substantive core of the problem in order to focus on the essentials: Is the market concentrated? What are the informational asymmetries or externalities? Can we count on extended relationships (across time or within a social network), or alternatively on binding contracts to generate proper social behavior? Could image concerns suffice to counteract socially detrimental material incentives in the specified realm of activity? Etc, etc. The theoretical model is said to be ad-hoc: it is never an exact representation of the truth, but a simplification thereof, and its conclusions can never explain reality as a whole. There is always a trade-off between a theoretical model describing behavior in a detailed and realistic way, and the much greater difficulty of analyzing such a model in its generality.

The economist's construction of a model needs a description of the agents (or "players")' goals as well as hypotheses about their behavior. For example, we can assume, as a first approximation, that capitalist enterprises seek to maximize their profits so as to satisfy their shareholders. This calculation is, of course, intertemporal: It is often in the long-term interest of the firm to sacrifice short-term gains – for example, establish trust by respecting the interests of employees, suppliers,

¹ Unless the firm engages in corporate social responsibility (see Chapter 7 of *Economics for the common good* for an economic view of this concept), or is plagued with agency problems.

² There are exceptions of course. Big data analysis allows Netflix or Amazon to predict which movie or book you will like. No theory as to why you will like them is a priori needed for this. But big data without theory and causality analysis has clear limits, such as a poor performance when the data set does not account for changed circumstances, and a low ability to build public policy on big data analysis only. More on this below.

or customers and spend money on equipment or maintenance - in order to reap profits in the long term. If necessary, we can refine the simplistic hypothesis of profit maximization thanks to an enormous bodies of knowledge about the governance of business and about the effects of the (necessarily imperfect, and occasionally perverse) incentives offered to CEOs and boards of directors.

Similarly, we can first posit that consumers act in a rational manner – i.e., in their best interests, whatever they have been assumed to be – given the limited information available to them. Once again, we can refine this basic analysis thanks to recent research into behavior that exhibits limited or bounded rationality. We can also add imperfect self-control when relevant (overconsumption of drugs, gambling, unhealthy foods, under-savings, etc). Finally, we need to model the way in which multiple actors, for example competitors in a market, interact. For this, game theory is key.

Even a good model may have limited predictive power for (at least) two reasons that are absent in physical sciences: self-fulfilling phenomena and behavioral uncertainty. First, economists, and more generally social scientists, have long emphasized that “strategic complementarities” may result from the interdependence of behaviors: In the same way that revolts require coordination among rebels to have a chance to succeed, that building a house near an airport proves profitable only if others also do (thereby creating a political opposition to the expansion of the airport), economic agents often have stronger incentives to adopt a behavior when other agents also do; this applies to many economic strategies such as attacking a currency, and to many behaviors subject to social norms. However, while the multiplicity of “self-confirming behaviors”/“equilibria” rightly fascinates social scientists, it also hinders prediction. Second, economic agents often exhibit behavioral biases; while many such biases have been embodied into economic models in the last 30 years, we also know that agents are very heterogeneous with respect to such biases, and we have limited information about the distribution of biases in the population.

II. Utilitarian and consequentialist bent

Economics, like all human and social sciences, is both positive and normative. It attempts at documenting, describing, predicting and understanding individual behaviors and social patterns, especially in the realm of economic interactions. This activity already covers a rich set of approaches, depending on how deep one wants to go into the understanding of the phenomena. Take big data; many of its successful contributions so far have been concerned with predicting individual tastes for a movie or a piece of music, traffic flows, the spread of viruses, what we are looking for on a search engine. Much of the associated effort has focused on correlation, not causation. This black box approach is fine for such applications. But for a number of public policies it is not: we need to know why we are acting in a specific way, not only how we act.

This is where the normative dimension enters. While economics, like all human and social sciences, is about making the world a better place, it, perhaps with the exception of philosophy, has a more normative focus than the others. Perhaps is this due to the strong involvement of economists in economic policy design. But regardless of the reason for this obsession with normative implications, the normative dimension, which for me is central, requires making value judgments on how to evaluate policies.

It is fair to say that most (but not all) of the economics literature adheres to the utilitarian paradigm. It starts from individual preferences, either posited or revealed, builds from there predictions about behavior (using game theory) and draws normative implications.

Do economists always respect individual preferences?

Economists do not always respect preferences. Besides the obvious point that people's actions may hurt others (externalities), there is a concern that people also do not necessarily act in their own self-interest. Not only because of the equally-obvious point that people may be poorly informed about the consequences of their actions (a point that has been amply studied in the last half-century as a branch of information economics), but also because they may fail to stand for their long-term interests (internalities), as has been stressed for centuries by other social scientists, most notably philosophers and psychologists. When temptation is strong and self-control weak, the individual may privilege their short-run pleasure over the long-term consequences. Economists have studied this and their conclusions are probably in tune with those of most policymakers and other social scientists, advocating a rather paternalistic approach to the shortage of savings (heavily subsidized or forced onto people³ in most countries) or the over-consumption of alcohol, drugs, tobacco, gambling or unhealthy food. Still, even for consumptions marred by self-control problems, there is a sense in which economists respect preferences: they distinguish between the short-term, impulsive self and the long-term one (one who rationally looks at his/her interest, unaffected by temptation), and stand for the latter.

Comparing utilities

Much of economic evaluation is implicitly based on the idea of the veil of ignorance, a concept dating back several centuries in philosophy. The veil-of-ignorance thought experiment allows us to transform an interpersonal comparison of utilities into a single person's one: behind the veil of ignorance, I could be you or me, and therefore in order to assess policy I have to put myself in your shoes as well as mine, and more generally to figure out in what kind of society I would like to live in if I were not yet assigned a specific position within it.

Economists strive to find "Pareto improvements", policies that benefit all. This generally requires compensating the losers of a specific policy move either through money or other policy moves that benefit them. Unfortunately, such comprehensive policy moves rarely exist as most policies are designed in a silo approach and involve choices that hurt some people while benefiting others.

³ Through pay-as-you-go pension schemes or mandatory health insurance for instance.

This raises the issue of how to weigh the gains of winners and the losses of losers. This assessment is usually made by looking at monetary equivalents of those gains or losses (how much would winners be willing to pay for this policy to materialize, and losers be willing to pay to avoid it).

Philosophers have long reflected on our reluctance to confront these utilitarian calculations. One of the most famous philosophical dilemmas of this type is the trolley problem: Would we be prepared to push someone under a tram to derail it, if that meant that five people further down the line would be saved?⁴ Or, to put the dilemma another way, would a surgeon be prepared to kill someone in good health to save five people who will die if they do not receive an immediate organ transplant? Or what would we do if asked to choose between saving our own child from drowning and saving five others, if saving all of them were infeasible? These hypothetical choices make most people uncomfortable; when forced to make a choice, they often argue that they would not sacrifice one life to save five others⁵. Yet behind the veil of ignorance, we are five times more likely to be among the beneficiaries of such choices than to be the victim.

In a few years, driverless cars will appear on our roads. This is a good thing. Our streets and roads will be much safer, and our travel time more pleasant. But our societies will have to make some morally sensitive choices. Suppose that I am driving my car alone, and I find myself in a rare situation in which I cannot avoid an accident. My choice is limited to two options: sacrificing myself by steering into the ditch, or killing five pedestrians who are on the road. Today the driver makes this kind of decision in a split of a second. Tomorrow, it will be an algorithm installed in the car, programmed in advance to react dispassionately to the situation. The algorithm will make the decision one way or the other. Would I prefer a car that would sacrifice its driver, or one that would run down five pedestrians? Intuitively, I would perceive the first car/software as more “moral,” but which car would I choose for myself? Behind the veil of ignorance my chance of being one of the pedestrians is five times greater than my chance of being the driver of the car, so I would pick the car that would create fewer victims. This is indeed what most subjects pick as the “moral choice”. But things would be very different if I was choosing a car in real life. I would have to decide whether I am prepared to make this kind of ethical choice explicitly. In experiments, many people who are faced with this question refuse to allow the choice to be dictated by the state. As shown by Bonnefon et al⁶, here is a clash between our abstract ethical position (which

⁴ Of course, for answers to this question to make sense, people must answer the question actually asked and not alter its content by adding questions that naturally come to mind, such as “But are we really sure that we need to kill this person in order to save the five others?”. For example, any answer to the question of “whether we would be willing to let a terrorist be tortured in order to find out where he put the bomb, thereby saving numerous innocent lives” must abstract from the obvious agency concern that granting the right to torture would enable sadistic or biased law enforcers to abuse this power; rather, for the philosopher’s question to make sense, one must abstract from reality and assume that a benevolent social planner or judge is in charge of enforcing the process that results from whatever is our philosophical choice. For an alternative reason for why the utilitarian decision may not be appealing in such dilemmas, see my discussion paper with Roland Bénabou on “Laws and Norms”.

⁵ Their choice depends on how the problem is framed, though.

⁶ Bonnefon, J.F., Rahwan, I., and A. Shariff (2016) “The Social Dilemma of Autonomous Vehicles”, *Science*, 352: 1573-1576.

here differs from our position in relation to the trolley problem) and our actual stance, which is driven by our self-interest as a driver.

The veil of ignorance analysis does not always put the majority's viewpoint ahead of the minority's interests. Actually, it underlies much of the constitutional safeguards protecting religious, ethnic or other minorities. We want to prevent a majority from oppressing (understand "imposing high costs on") a minority because it does not like the latter's sexual orientation, racial types or religious beliefs. Scholars may prefer to invoke the notion of liberty to vindicate such protection of minorities, but somehow some rough cost-benefit analysis necessarily plays a role in deciding which minorities are protected and which are not: the minorities who like to drink while driving or to assault others are not protected by the law despite the fact that their freedom is impaired by laws prohibiting such behaviors. Somehow, we (perhaps unknowingly) assess that discrimination and violence against sexual or ethnic minorities is very costly to the latter while bringing minor benefits to the perpetuating majority (or benefits we assess as immoral), while the reverse is true in the case of drunk drivers or violent individuals. All cases in between these two may be considered, giving rise to pragmatic choices (a social event or party enables a group of people to enjoy life while creating noise pollution affecting a broader set of people). Again, the question posed by the veil of ignorance is: "in what society would I like to live in, if I did not yet know the position that I will occupy in that society?"

Consequentialism

Economists look first, but not only at consequences. Most of them would not be shocked by, or probably, I submit, would adhere to philosopher Peter Singer's views on impact investment⁷. Singer offers some perhaps unsettling recommendations such as the desirability for a talented graduate wanting to devote his/her life to others to choose to be a trader rather than a social worker. As a trader, the argument goes, the graduate can make a big salary (while of course acting as a whistleblower for some unethical behaviors), give 90% of it to charitable causes and thereby have a much bigger impact on society than by becoming a social worker, an occupation for which there are many substitutes (who indeed will be able to operate thanks to the charitable gifts).

Whether you agree with this particular position or not, Singer makes an indisputable point: people are too preoccupied with their own self- and social image and too little with the good they actually deliver. In this respect, his anti-posturing views fit well with those of Adam Smith⁸. His utilitarian point of view has deep implications for public policy (e.g. health or military choices), and not only for the definition of our moral choices.

Another case in point is the publication in a leading economics journal of an article⁹ on ivory trade, recommending that an NGO that confiscates ivory resell this ivory on the market. Let's suppose an NGO confiscates ivory from traffickers who kill endangered elephants for their tusks. The NGO

⁷ Peter Singer (2015) *The Most Good You Can Do*, Yale University Press.

⁸ *The Theory of Moral Sentiments* (1759).

⁹ Michael Kremer and Charles Morcom in "Elephants," *American Economic Review*, (2000) 90: 212–234.

has to choose between destroying the ivory or selling it discreetly on the market. The immediate reaction of many is that the latter choice is reprehensible.... But let us think the issue over.

The NGO would receive revenue from selling the ivory, which it could use to provide more resources to detect and investigate, or to provide additional vehicles to limit the traffic in ivory. Selling the ivory might also have the immediate effect of lowering its price. The price would be a little lower if not much was sold, and a lot lower if a lot of ivory was put on the market. Traffickers are economically rational actors: they consider how much money they can make from their activity and consider the risks they take (in this case, prison or meeting armed police). If the price of ivory falls, it would therefore discourage some of them from killing elephants.

Given this, would the NGO's sale of ivory be immoral? Possibly. A conspicuous sale by an organization with a respectable reputation might legitimize the trade for potential buyers who would otherwise feel guilty about their desire to purchase ivory – hence my emphasis on a “discreet sale” in this scenario. But at the very least, we ought to think twice before we condemn the choice of selling the ivory, especially since doing so would not prevent the government from exercising its sovereign authority to prosecute poachers or retailers of ivory or rhinoceros horn, or from communicating to the public the importance of protecting endangered animals in the hope of changing the accepted social norms.

A last illustration of the same point is supplied by our attitudes to the Clean Development Mechanism (CDM) that was instituted at the Kyoto 1997 environmental summit. To make it simple, if a company in a rich country, say Europe, provided funds to save a forest in Indonesia from deforestation, it could get a credit for an equivalent amount of CO₂ using the price in the European tradable emission permits market. The CDM was a well-meaning policy, trying to both bring money to less developed regions of the world, and combat pollution using a market-based mechanism. Alas, it ignored general equilibrium effects: the absence of deforestation- a good news for the environment- leads to a rise in the price of wood or soy (depending on why this forest was about to be cut), encouraging deforestation elsewhere. More generally, the lesson is that one must look at consequences, not symbols. A socially responsible citizen who would have put money into a fund of CDM actions would have had little impact on global warming, despite an apparently green behavior.

Economists of course do not assert that intentions do not matter. If I shoot at you but miss you because of poor shooting skills¹⁰ or a distraction, I still intended to kill you. You (and society) should draw the consequences of my act, even though no physical harm resulted from it; and in fact you would. More generally, signaling has been a central topic in economics for the last half century. And we do have solid experimental evidence that intentions matter¹¹. But note the route for apparently deviating from a consequence-based approach: even though the action had no

¹⁰ Especially if I am overoptimistic about these shooting skills.

¹¹ A large literature in experimental economics studies the information conveyed by behavior; see e.g. Armin Falk and Michael Kosfeld, “The Hidden Costs of Control,” *American Economic Review*, 2006, vol. 96, no. 5, pp. 1611–1630.

physical consequence, there has been some learning. And the trust that existed between you and me, or that of society in me has evaporated.

What about inequality? Do we care only about their magnitude and consequences, or do we care also about their source? A few comments are here in order. First, inequality can be viewed as a market failure: there is no reason why the market will deliver the income and wealth distribution that one would have wished behind the veil of ignorance: just like in the realms of equal opportunity and health coverage, the market is likely to deliver “too little insurance” against life's mishaps.

Second, an economist will not view all forms of inequality in the same way: regardless of their views on/aversion to inequality, the economist will probably have less aversion to income that is obtained from innovating and bringing socially useful products and services to the market than to income that is gained through lobbying, connections, self-dealing, corruption, abuse of dominant position etc. In the former case, inequality will have at least a redeeming feature, that of being an incentive for the creation of social well-being; in the latter case, inequality is bad along all dimensions (behind-veil-of-ignorance insurance against income realizations and impact on behavior)¹². This distinction might seem to violate consequentialism, but it does not. Consequences include the impact of social rewards on incentives to create or destroy social value. And so the source of inequality matters to a consequentialist.

This being said, identifying inequality with income and wealth differences (or even their implications in terms of access to education, health care and other amenities, as well as to information) is too narrow. They are also linked to social status; and while economists have made some progress in embodying social status in their analyses, they still have much to learn from philosophers, sociologists and other social scientists who also have been concerned with inequality for a long time.

Finally, there has been little work in economics to reconcile consequentialism with the notion of incommensurability of all goods dear to Durkheim¹³. This is an area in which more research is warranted¹⁴.

¹² Similarly, many economists will view inequality from inheritance differently from identical inequality stemming from one's own hard work. This distinction may be captured from a consequentialist viewpoint by looking at differences in welfare at birth, as in Emmanuel Farhi and Ivan Werning's classic articles “Progressive Estate Taxation” (2010), *The Quarterly Journal of Economics*, 125: 635–673, and “Inequality and Social Discounting,” (2007), *Journal of Political Economy*, 115: 365-402.

¹³ Emile Durkheim *The Elementary Forms of the Religious Life*, 2nd edition, London: Allen and Unwin, 1976, original work: 1925.

¹⁴ Roland Bénabou and I briefly touch on this issue in “Identity, Morals and Taboos: Beliefs as Assets,” *Quarterly Journal of Economics*, (2011) 126: 805-855, and “Over My Dead Body: Bargaining and the Price of Dignity,” *American Economic Review, Papers and Proceedings*, (2009) 99: 459-465.

III. Methodological individualism vs. social construction of preferences

A more significant difference between economists and other human and social scientists is the extent to which they on average adhere to the principle of methodological individualism, according to which the incentives and behavior of individuals must be the starting point for understanding the behavior of the groups they belong to.

Economists are of course not oblivious of social interactions (nor are they accused of being so). Indeed game theory, the conceptual tool to study such interactions has been central in economics for at least 40 or 50 years. Game theory, combined with field and lab experiments allow economists to see how individuals are affected by others and in turn affect them. People

- learn from, and mimic each other;
- influence each other through formal incentives and the more implicit demands they formulate;
- yield to conformism and fashions, behave gregariously, and succumb to groupthink;
- have substantial image concerns, that make them want to look good, generous, beautiful or intelligent, because they look for desirable jobs and partners or simply because they seek the esteem of others (and of themselves); these image concerns may be a foundation for the role of social norms in determining behavior, but is certainly not the only one;
- inherit stereotypes, either as a result of the past collective behavior of their peers or because of prejudices;
- invest in identities¹⁵;
- are actors in complex webs of organizational hierarchies or societies.

The fact that humans are social animals provides another source of context-dependent behavior. But even in social isolation, our behavior may be affected by apparently irrelevant cues. An economist who aims at making sense of context-dependent behavior may want to take the point of view that at the moment of decision-making only a small fraction of what we know comes back to awareness; and so any apparently irrelevant cue may remind us of something else that will influence our decision, or put differently alter our beliefs. Experimental economists have recently provided much evidence showing that reminding people of their identity (e.g. gender or ethnic group) or values (e.g. reading the Ten Commandments) affects behavior, even though such reminders would seem to have no new informational value. Another reason why apparently irrelevant information matters is that it in fact may contain information about alternative choices: I may prefer A to B when confronted with a {A, B} choice, but choose B when offered a choice in {A, B, C}, even though this may seem to violate the axiom of independence of irrelevant alternatives: the presence of C may say something regarding whether A or B is best for me¹⁶.

¹⁵ For a view of identity as a belief about oneself, see my paper with Roland Bénabou “Identity, Morals and Taboos. Beliefs as Assets,” *Quarterly Journal of Economics*, 2011, vol. 126, no. 2, pp. 805–855.

¹⁶ Emir Kamenica (2008) “Contextual Inference in Markets: On the Informational Content of Product Lines”, *American Economic Review*, 98: 2127–2149.

Social life multiplies the number of cues that we are confronted with, and it is therefore not surprising that, beyond the direct influence exerted by our peers' norms and demands, our behavior is heavily context-dependent.

A fair characterization of most contemporary economics is that *it views preferences as socially influenced, but not socially constructed*¹⁷. Somehow, the economist assumes that there are deep preferences; for instance, the individual prefers to create a good impression of themselves- how much will depend on the social context, for instance one behaves differently in the company of strangers one will never encounter again and among people one has incentives to impress-; and if some "anomaly" arises- the individual deliberately tries to generate a poor image-, some explanation is looked for rather than just say that "it can go either way". But one should admit that this is an assumption (no direct evidence for the existence of these deep preferences exists), and conversely one should not conclude from the heterogeneity of behavior in different social contexts that such deep preferences do not exist. In the end, the proof of the pudding is in the eating: which approach has the most predictive power and enables policy analysis?

Whether right or wrong, the economists' attitude is indeed closely related to their normative emphasis. To be able to draw policy implications, a paradigm must be parsimonious- at the risk of being simplistic- and not allow too many degrees of freedom. Otherwise, "anything goes". Most economists therefore would agree with the statement that "culture matters", but would feel uncomfortable with attributing differences in behavior among social groups simply to "it's cultural". Put differently, the challenge is to understand why in the end one social group converged on a specific norm of behavior and the other not, for example how history, context or group dynamics led group members to adopt certain beliefs, identities and norms. This is not an easy task, but a normative approach seems to require moving away from a black-box approach.

IV Worshipping markets?

Starting with Adam Smith, economists have noted the virtues of markets; markets bring some allocative efficiency (the price mechanism selects the most efficient producers, and directs goods and services toward the consumers with the highest willingness to pay for them), incentives (a competitive market creates high-powered incentives to reduce cost and to offer more attractive products), and integrity (the State cannot mingle in an arbitrary way into the allocation process).

Yet many economists' attention is turned to market failures, trying to understand why markets may fail and what to do about it. There are externalities, as when I pollute the air or a river. There is market power, on the goods and services side as well as possibly on the labor side. Information

¹⁷ At one extreme of the spectrum is situationism (according to Wikipedia "Situationism is the theory that changes in human behavior are factors of the situation rather than the traits a person possesses. Behavior is believed to be influenced by external, situational factors rather than internal traits or motivations.") Another extreme view would hold that individual traits are all that matter to predict behavior. Very few scholars would hold either position.

may be asymmetric among parties, leading to various phenomena such as market freezes, credit rationing or fraudulent behavior. And, as we have noted, even inequality can be considered a market failure, as the distribution of income generated by the market has no reason to coincide with that we would like to be confronted with behind the veil of ignorance.

All these market failures motivate policy interventions; illustrations include:

- antitrust and public utility regulation to prevent abuses of dominant position (market power),
- consumer protection to remedy our informational shortage (we are unable to monitor the bank in which we have our deposit, our insurance company, the food safety along the supply chain leading to the restaurant we have dinner at, understand the full implications of the consent we give to share our data when we visit a website; neither would it be desirable that we did such monitoring even if we had the expertise and access to the relevant data, due to the public good feature of such monitoring),
- redistribution, universal health coverage, and universal access to a good education, policies that all are de facto insurance policies against the vicissitudes of life, and that we would long for behind the veil of ignorance.

V. Ethics and markets

Whether markets promote the common good has been the object of a time-honored debate. Montesquieu and many 18th century thinkers viewed markets as creating trust among otherwise unrelated individuals. Today (and ironically, given that almost all economies in the world now obey some form of market mechanism), public opinion, politicians and religious leaders often express a strong distrust of markets, which, they feel, promote unethical behavior.

And indeed it is easy to point at the many examples where the profit motive has led to rather unpalatable behaviors: excessive risk taking in finance (the 2008 financial crisis) or in manufacturing (using cheap components or cutting on maintenance at the risk of casualties or environmental disasters), environmental damages, abuses of loopholes (corporate tax optimization, opioids, car manufacturers' environmental tests), outright fraud or misrepresentation, etc.

The market is a specific type of incentive, and that is in fact incentives that are under attack. There is no question that incentives in the form of money, promotion or just glory, may lead humans to sacrifice the common good and promote self-interest. Indeed many misbehaviors occur in contexts that most would not think of as being classical market environments. The terrible environmental mismanagement of the Soviet bloc is a case in point. The many examples of fraud in science or simply sloppy craftsmanship to publish noticeable research ahead of others and put one's name on an invention or idea, is another.

Forgoing markets and incentives would be throwing the baby with the bathwater. But we need to be wary of their potential impact on behavior. This is an old lesson in regulatory economics. The introduction of incentives for regulated firms has to go hand in hand with a stricter monitoring of maintenance and safety procedure (think about nuclear plants or a railroad network): incentives promote low costs and prices as well as innovation, but they also lead firms to cut corners. More generally, an economic system must pay attention not to create wrong incentives as has been the case for the regulation of the banking system. It is unavoidable that unscrupulous actors lose no time in stepping into a breach opened up by the regulation. While many view markets and regulation as alternatives, they really are complements; markets need smart regulation to fulfill their potential.

Institutions must also contribute to reduce the occurrence of such behaviors. One of the most damaging corporate behaviors is short-termism. The latter is often created by wrong incentives, ones that reward short-term performance rather than longer-term one. It is easy to see what kind of biases such schemes (which clash with the classical economics' vision of value as being intertemporal value) may induce. Here the governance is key in the enforcement of deferred compensation.

Finally, let me say a few words about a specific criticism of incentives in markets and organizations. Bad behavior is often "justified" by the "replacement excuse"¹⁸: "If I don't do it, someone else will". This excuse is used by countries to vindicate their selling weapons or nuclear technology to a dictatorial regime. It was used by some Nazis to rationalize their participation in the Holocaust. Perhaps less dramatically, it is used routinely by doctors who over-prescribe opioids or provide certificates for sick-leave days to healthy employees, by firms that corrupt government officials, or by newspapers that violate celebrities' right to privacy. The replacement excuse, together with "I was only following orders" one, are two of the most powerful rationalizations of socially detrimental behaviors. Social scientists must engage in more research in order to understand how incentives and excuses impact behavior in alternative institutional contexts (markets, hierarchies etc).

VI. Concluding comment

Any scientific discipline, any theory (formal or informal) rests on assumptions. And these assumptions do matter. I do not subscribe to Friedman's view¹⁹ that in the end only conclusions/predictions matter. There are several reasons for that. First, normative analysis

¹⁸ Only recently have economists started to devote attention to this mechanism. See e.g., Bartling, B., and Y. Ozdemir (2017) "The Limits to Moral Erosion in Markets: Social Norms and the Replacement Excuse," mimeo; Dufwenberg, M., P. Heidhues, P., Kirchsteiger, G., Riedel, F. and J. Sobel (2011) "Other-Regarding Preferences in General Equilibrium," *Review of Economic Studies*, 78: 613-639; Falk, A., and N. Szech (2017) "Diffusion of Being Pivotal and Immoral Outcomes," under revision at *Review of Economic Studies*; Dewatripont, M. and J. Tirole (2019) "Ethics, Markets and Organizations", mimeo.

¹⁹ Milton Friedman (1953), *Essays in Positive Economics*. Chicago: University of Chicago Press.

requires some conceptualization of why agents adopt (or do not adopt) certain types of behavior. Second, data are most often imperfect and assumptions are then informative about the plausibility of an analysis: the analysis might offer a good fit for the sample at hand, but should be treated with circumspection if it is highly dependent on²⁰ assumptions that we know are unlikely to hold. Third, and a closely related point, the environment may change: a war may break out, the USSR may disintegrate, the telecommunications industry may be deregulated, a new privacy law may be enacted, etc; data are not available for the new environment generated by the change in the law, the geopolitical situation, the technology or the social norm. We must extrapolate using existing knowledge, but how? Our thinking is then guided by our theory, and whatever empirical knowledge is not affected by the change in environment.

The process of explicating assumptions is crucial. It allows us to understand whether these assumptions are made for mere analytical convenience or to the contrary drive the very conclusions we want to highlight. Clearly stating our assumptions enables others to adhere, reject or propose improvements to these assumptions. This is part of the scientific method.

²⁰ Note that I use “is highly dependent on” rather than “makes”. An analysis often makes simplifying and unrealistic assumptions for tractability (for example, “there is a continuum of firms or consumers” to capture the inability of economic agents to impact the terms of trade or to be able to use the law of large numbers (instead of its messy approximations) when there are numerous players on their side of the market: we know that the assumption is plainly wrong, and at the same time have little concern about making it as many studies have shown that quasi-competitive behavior results from a low market concentration and that the law of large number holds approximately in finite samples; so nothing essential will be introduced or missed when making this “unrealistic assumption”.