ROGER MYERSON'S MECHANISM DESIGN AND HIS VIEWS ON HAYEK: A REINTERPRETATION OF MORAL HAZARD AND ADVERSE SELECTION

Christoph Klein
Universidad Rey Juan Carlos
c.klein@alumnos.urj.es

1. Introduction

In a conversation with 2018 Nobel Prize laureate Paul Romer, the podcast host Russ Roberts (2019) states that "one of the things that economic training does for you is that it allows you to see the possibility of non-zero sum, which is radical." He stressed further that non–zero sum thinking goes against our hardwired common-sense view. Indeed, not only do common sense views underpin static policy approaches based on given endowments of resources and wealth, but they continue to shape economic theory. This paper argues that by looking at market *results*, much of the economic literature misrepresents the true function of moral hazard and adverse selection in the dynamic market *process*, which is embedded in a world of uncertainty and imperfect knowledge. In this dynamic world, moral hazard and adverse selection do not represent problems in the sense of market failures to be rectified by nonmarket players, but essential signaling devices for market participants to adjust their economic plans and institutions.

In contrast, externalities, or market failures, are the lifeblood of the newer economic theories of mechanism design and incomplete contracts. For the purposes of this paper, I particularly draw on Roger B. Myerson's Nobel Prize lecture, given in December 2007, in which he claims that the "new concepts" and "new conceptual tools" underpinning mechanism design "allow us to analyze questions about efficient institutions that were beyond the analytical reach of economic theory in Hayek's day." The entire body of mechanism design rests on the notion of incentive-compatible behavior and allocatively efficient institutions. The basic idea is that in the face of externalities, people in given institutions do not behave in incentive-compatible ways and thus cannot reach the best possible resource allocation. By designing a mechanism that incorporates people's true information, designers can induce them to act in an incentive-compatible way.

In the second section, I give an overview and critique of the common textbook understanding of moral hazard and adverse selection. In section 3, I argue that moral hazard and adverse selection belong to the wider group of economic externalities that, rather than indicating market failure, fulfill crucial signaling functions in the market process. They constitute the already-designed (built-in) incentive mechanism that provides market participants with exactly the information required to mitigate the negative externalities they are incurring.[1] In sections 4 and 5, I contrast the notions of incentives and incentive compatibility as understood by prominent scholars of mechanism and contract design with a Hayekian understanding of the market as a process and communication device that continuously reveals new information to market participants. Before reaching my conclusions, I argue in section 6 that the theoretical basis of Myerson and other prominent scholars such as Hart, Holmström and Hurwicz, which underpins their understanding of alleged "incentive constraints," presupposes normative judgments of what the *best* or a *better* resource allocation is. As a consequence, any policy proposal, whether premised on judgments of a fairer resource allocation or on judgments of a more incentive-compatible mechanism to achieve a fairer resource allocation, has to respond to the challenge of how to overcome the planner's knowledge problem posed by Hayek (1945) in "The Use of Knowledge in Society."

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[1] Negative externalities are real costs borne by individual market entities, in the form of either psychic losses felt by consumers or accounting losses incurred by firms.

2. Moral Hazard and Adverse Selection as Market Failures

Adverse selection and moral hazard belong to the wider group of market failures attributed to inefficiencies in exchange processes. According to Arrow (1953), in the context of insurance, these inefficiencies are a result of incomplete markets in that insurance offerings do not cover all possible states of nature. Markets are also incomplete in the case of high transaction costs (Coase 1937) and informational asymmetries in principal–agent settings (Akerlof 1970; Stiglitz 1989), the latter of which plays a large role in contract theory and the economic theory of incentives.

The term "moral hazard" originated in connection with insurance policies to describe a behavior of policyholders that evinces a lack of incentive to take care of insured objects despite what the insurer expects as implied in the latter's terms and conditions and premium policy. Pauly (1968) was one of the first to stress that moral hazard has little to do with morality or ethical behavior. In their history of the term, Rowell and Connelly (2012) argue that the connotation associated with the term has changed from the normatively charged accusation of immoral behavior in the older insurance literature to today's value-free understanding in the social sciences as a result of incentives. That said, even from the insurer's perspective the hazard is actually not of a moral but a financial nature in that unexpected behavior is a threat to the financial viability of the insurance business.

Viewed from the perspective of newly insured individuals, they act morally as long as their actions conform to the terms and conditions of the insurance policy. Should they behave carelessly, the insurer will incur an unexpected cost, which may compel it to increase its premiums. This, however, will work only as long as other policyholders participating in the pool are willing to bear the cost of increased premiums and, more crucially, as long as such externalities cannot be mitigated in a cost-efficient way. It lies in the nature of competitive markets that solutions are found when "careless" behavior leads to enough losses to threaten a business.[2]

Let us start with some quotations from Samuelson and Nordhaus's famous textbook *Economics* (2010, 217) to learn what the standard reading of moral hazard and adverse selection entails. First, "moral hazard is at work when insurance increases risky behavior and thereby changes the probability of loss." Only when insurance markets "are not contaminated by moral hazard" can insurance markets function efficiently. The problem with this line of reasoning is that the comparison of a potential client's behavior before and after the signing of an insurance policy is meaningless. For the insurer, only the behavior of the insured person is relevant in order to ascertain its premium policy and the pertinent terms and conditions. It is irrelevant how a hypothetical person would have behaved (or has behaved) without insurance. By deviating from what entrepreneurs expect, consumers fuel the competitive process to bring about better solutions (and reject existing ones).

Adverse selection, according to Samuelson and Nordhaus, "arises when the people with the highest risk are also those who are most likely to buy the insurance. Adverse selection can lead to a market where only the people with the highest risks are insured, or even to a situation where there is no market at all." Here it is not a change of behavior but an informational asymmetry that makes the market fail. Three points invalidate this reading of the market. First, every market launches with some customers who have a relatively high willingness to pay for a new service. The "highest risk" is the very reason the potential policyholders are willing to pay a high premium (which in their opinion is just right). Second, of course it is the market participant with the highest willingness to pay that gets served first. If a particular market offering is just for a very few—say in the case of insurance against tsunamis—then there is probably a good reason. Third, if a product has the potential to become commoditized, we seem to have evidence that entrepreneurs will furnish the market with a wide variety of competitive offerings. This also means that the "no market" may well be the best *market* outcome.

Insurers face the same problem as all other firms. They have to gauge what quality of service consumers expect at various price points (or within a certain price range). The entrepreneur's task is to discover these actual price points and not hypothetical ones. In fact, all markets always fail. In the car market, currently manufacturers only produce new cars at prices higher than $8,000; so only the persons demanding the highest quality get served, while billions of people still have to walk or use public transport. By 2016, approximately

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[2] One, often very good, "solution" is that the business—understood as a legal entity—closes down. Legal proceedings often result in assets being reallocated to more productive uses, either by selling to the highest bidder or by recapitalizing an existing entity.

one billion passenger cars were registered.[3] This means that only 20 percent of the roughly five billion adults worldwide own a car. Certainly, cars could be produced for well below $8,000 if such things as airbags, air conditioning, traction control, hi-fi speakers, and electronic gadgets were not included. But the incentives governing the structure of production, which includes labor, pension funds, and the tax collector, yield a different solution.

The frequent claim that moral hazard systematically leads to people to externalize the cost of their reckless behavior, decreases investment levels, or even causes a socially useful service to disappear[4] is belied by experience. The fact that car insurance exists and is affordable by everybody seems to indicate that insurers have been able to find the right balance between the value of giving insurance holders the right incentives and the cost of contractual internalization mechanisms that limit their losses. Mechanisms such as excess payments and monitoring schemes—for example, keeping records of customer risk profiles—are working effectively.[5] The reciprocal nature of exchange already provides the incentives that naturally align the goal of entrepreneurs (profit) and the goal of consumers (value).

3.   Negative Externalities in a Non–Zero Sum World

In most of the economic literature, negative externalities are deprecated as market failures. I suggest a different reading—namely, to understand them as market signals. James Buchanan (1962) defines externality as "the cost or benefit that affects a party who did not choose to incur that cost or benefit." In the case of negative[6] externalities, it is the result of actions that damage other people. But, over the last two hundred years, society has benefited on balance from positive and negative externalities (including technological and other knowledge-related ones) when we consider such indicators as the doubling of life expectancy, material prosperity, less toil, and freedom of choice.

No doubt people produce quite a range of unwanted effects in their daily economizing and interaction via anonymous markets. Negative externalities abound that make our lives difficult. We are used to coping with the unpleasant side effects of daily traffic jams and noisy city centers. It happens also that on our well-deserved Christmas break our management decides to install the next release of a software program. Or, thanks to Basel III regulation, as director of a little retail bank you have to cope with the ensuing accounting mess. Yet the opportunity to solve problems through our labor emanates from these circumstances. When subsistence-based societies begin to industrialize, the formal unemployment rate is high because the division of labor is primitive. People have too few positive and negative externalities on which to capitalize. They don't have enough problems to solve. Other people must first create the problems, which result from their and others' often-conflicting ambitions and plans. This more generic exposition of the genesis of economic "problems" guides this paper's understanding of externalities.

In figure 1, I first distinguish between decentralized markets and "local societies." Local societies rely on direct exchange or subsistence production within stable institutions. With given resources and capabilities—in a zero-sum game—stable institutions align people's actions to ensure survival. In contrast, today's economic systems require institutions to be malleable in order to respond to our circumstances' continuous change,

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[3] http://www.statista.com/statistics/281134/number-of-vehicles-in-use-worldwide/.

[4] See for instance Samuelson and Nordhaus (2010, 217) or Romer (2012, 444).

[5] The terms of today's insurance policies stipulate that the premium adjusts in line with the insured driver's claim history. Should a reckless driver attempt to hide the nature of her driving—for instance, by moving to another insurer—she will fail as her claim record will be shared between the two insurance companies. This is an example in which cooperation in competitive markets creates socially useful institutions and incentive mechanisms that minimize the externalities associated with unwanted behavior. As a response to the institutional needs of society, this example supports Hayek's (1988) notion of *emergent order*.

[6] With their morbid fixation on the negative and failing elements of markets, economic orthodoxy exhibits a unique psychological condition. The manifold positive externalities are either not worth mentioning or, if they are, also constitute a failure because they are not positive enough—for instance, in the case of private infrastructure. Or they are a failure because billions of people prefer the offerings of one specific firm—for example, Google, Facebook, Microsoft. With the equilibrium carrot dangling in front of their noses, economists have been chasing nirvana (Demsetz 1972) for more than a hundred years while ordinary people see externalities—both negative and positive—simply as part of their life.

which is primarily driven by our pursuit of prosperity. Of course, even in the most progressive and flexible market systems, most institutions are fairly stable. Though we cannot know concretely the economic future, we usually have a solid idea of what we can do and expect tomorrow. Institutions provide the *backdrop of certainty* in this otherwise-uncertain world. Shackle (1965, 1972) and Lachmann (1976, 1986) coined the term "kaleidic world" to denote not only that in real markets economic equilibriums are not achievable, but that even the idea of a tendency toward equilibrium might be unwarranted.[7]

Figure 1: Scheme of Externalities
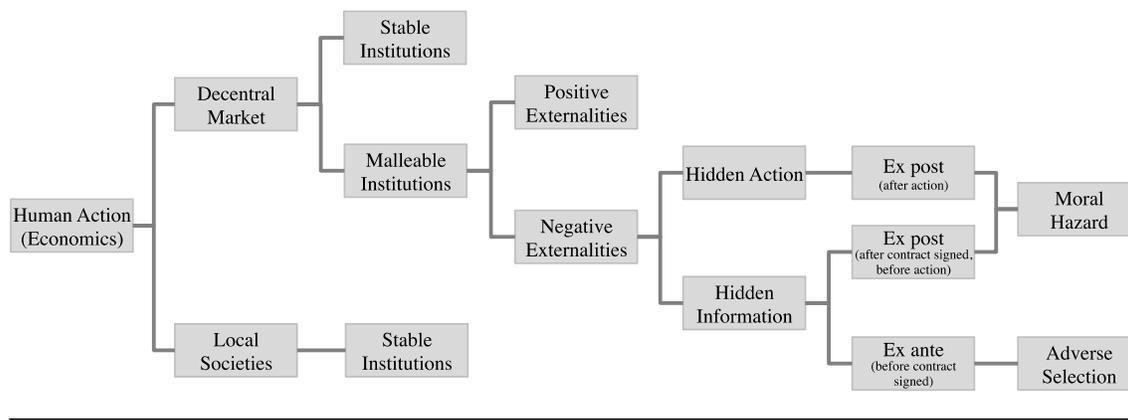
For a non–zero sum economic trajectory to unfold, some existing production structures or behavioral patterns have to be disrupted. It is unimaginable to have a widespread increase in prosperity, such as one induced by technological progress, without many institutional arrangements being—often radically—affected. If you think this is an exaggeration, I invite you to take field trips to any of the low-income rural regions of India, Benin, or Angola, where the institutional change required to accommodate decentralized production systems is not so much a (much lamented) auxiliary result of brutal market forces as a deliberate choice of people in search of a better life.[8] It goes without saying that the process abounds with negative externalities. Since the behavioral patterns that decentralized markets reward are often at odds with traditional ways of economizing in tribal societies, the right institutions must be created on the go.

3.1. Hidden Action versus Hidden Information

According to Arrow (1985), and as further refined by Hart and Holmström (1987), the negative externalities of moral hazard and adverse selection arise as a consequence of either hidden actions or hidden information. In an exchange situation backed by an implicit or explicit contract, moral hazard occurs when one person deviates from the course of action expected by his trading partner (for example, as implied in the contract). This constitutes a hidden action not because he tries to conceal his actions (as in the cases of fraud and theft) but because his actions are not aligned with the goals of the other contracting party. This "alignment

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[7] Some of the more equilibrium-minded economists consider this understanding of the world to be *nihilist*. They, however, ignore that Lachmann in particular stressed the stabilizing element of institutions. See Foss and Garzarelli (2007). Given a hypothetical set of possible economic allocations, this means that the institutional setup along with the prevailing structure of knowledge (another point Lachmann stresses) puts a natural constraint on realizable economic outcomes.

[8] In fact, traditional institutions do not adapt so much as they are left behind when younger people migrate to economic centers. It is urban dwellers that seek to adapt to the prevailing institutional environment for a host of reasons. To meet the requirements imposed by (formal) job markets and to promote their kids' educational efforts are two of the most important reasons to adapt.

problem" has become the famous subject of principal–agent theory. The employer–employee and shareholder–manager relationships are two well-researched examples. Externalities arise because it is impossible to establish contracts that account for all possible eventualities. Even if it were technically possible, the cost of monitoring would not justify establishing such contracts. So principals always have to muddle through given that agents usually have a better understanding of what they are doing on a day-to-day basis. This is also referred to as information asymmetry, a concept that serves as a catch-all explanation for many types of market failure (Akerlof 1970; Spence 1973; Stiglitz 1961).

In situations of hidden information, negative externalities result not from deviations from an expected course of action but from a lack of information about the qualitative characteristics of goods and people. We can distinguish two forms of hidden information. In the first form, the principal's agreement to a contract might have been premised on an erroneous ex ante understanding of the agent's "true type"—for example, the fit of an employee for a job or the effort the employee is willing to expend. If the employee realizes she is not the type the employer was looking for, then she has an incentive to hide this information (assuming she wants to keep the post). Myerson (2007) stresses that the information only becomes asymmetric ex post. The employee tries to prevent the principal from learning that the symmetric information ex ante is in fact untrue, at which point the informational asymmetry would be revealed ex post. Since this behavior is hidden action, it is also moral hazard.

Adverse selection, in contrast, is a situation of asymmetric information ex ante—for instance, when the employee hides her true type before the contract is signed. In such situations, the incentive constraint concerns the employee's hidden information and not her hidden action (Myerson 2007). Adverse selection is said to be present when sellers have information about a good's quality that buyers don't have. The important point is that buyers would not buy the good at the prevailing price (or not at all) if they knew the true type. Akerlof (1970), for example, identifies the market for used cars, or lemons, as rife with adverse selection. A variety of studies have contested this conclusion on empirical and logical grounds. For instance, Sultan (2008) concludes that used cars do not have higher maintenance costs than new cars. And used-car markets for all quality levels continue to exist. Though many lemons surely exist, contractual mechanisms such as extended motor plans (from the original manufacturer) and other types of warranty and certification mechanisms deal with the problem effectively (assuming buyers are willing to hedge against their lack of knowledge at a cost).

Certainly, negative externalities can be viewed as unwanted effects emanating from situations of exchange. Just as certainly, they fulfill an important role in revealing costs to market participants that may or may not induce them to do something about them. Since negative externalities are an ex post result suffered by some people and caused by the ex-ante incentives of others to gain from trade, the question arises whether these incentives are compatible with the goals of all parties to the exchange. In other words, the behavior of some people—the underlying rules of the game—might be incentive incompatible with achieving first-best resource allocations.

4. Incentives and Incentive Compatibility

Hurwicz (1972) was the first to systematically deal with the question of when and under which conditions institutions are incentive compatible. "In doing so," Myerson (2007) holds, "he took a long step beyond Hayek in advancing our ability to analyze the fundamental problems of institutions." By including *incentive constraints*, the horizon of economics was expanded beyond the view of *resource constraints*. Myerson claims that the analysis of *incentive efficiency* has yielded a "new framework for economic analysis" that provides the discipline with a conceptual tool for evaluating the *rules* (institutions) by which resources are allocated (and not only the allocations themselves). With the help of these tools, as quoted in the abstract, economic theory was now able to "analyze questions about efficient institutions that were beyond the analytical reach of economic theory in Hayek's day."

It is probably fair to say that Hayek never looked for these tools. Moreover, given Hayek's theory of emergent order (particularly in 1988), he would also have seen no use for such tools. Spontaneous action brings about the institutions required for the members of society to accomplish their goals. Also, given Hayek's deeper insight that human decisions and choice are error prone, he would not have denied that the cost of wrong choices could be significant. This cost, however, creates the very incentive for market participants to search for better solutions. It goes without saying that Hayek considered nonmarket solutions much more costly because

of the unavoidable calculation problems that emanate from all attempts to overrule the market incentive mechanism.

The vantage point of orthodox economics is not one of idiosyncratic error that can be rectified but one of system failure. According to the second theorem of Paretian welfare economics, different Pareto-optimal resource allocations can be achieved by reallocating initial endowments in an existing institutional setting. For instance, a central agency could reshuffle initial wealth and let the market take over. In the case of negative externalities, however, the market mechanism itself fails and is not capable of rectifying the problem. That is, the incentives of the people are not compatible with the best potential resource allocation, thus justifying public intervention. The toolset of mechanism design fills this void by looking at (and possibly devising) the allocation mechanism "that specifies how resource allocations should depend on people's information" (Myerson 2007).

As an example, Myerson states that in the case of adverse selection problems, socialist institutional design may be better suited to "elicit honest reports of hidden information" on the basis that "socialism *allows* individuals to have *less* property rights" (Myerson 2007, italics added), which is to say that people become more honest if you make them poorer. The reader is left wondering what these "honest reports" actually entail and who decides the criterion for determining what counts as honest. Perhaps a less normatively charged starting point is simply to assume that people have a well-justified incentive to guard and utilize their information as they deem fit. Then it is also fair to assume there is a world of difference between strategizing, on the one hand, and cheating, on the other.

4.1. Skin in the Game versus Mechanistic Incentives

As for cheating, societies have been ingenious in finding mechanisms to prevent systematic dishonesty and fraud (at least what dishonesty and fraud is still around). The success of today's division of labor is the success of having found mechanisms that sanction systematically chaotic and predatory behavior in effective ways. The effectiveness of sanctioning arises from the fact that reckless actions people choose in their pursuit of individual benefits entail an opportunity cost in the form of an impaired wealth This is the famous skin in the game that people always and inevitably[9] have when they contemplate exchange.

To have skin in the game means we draw on our position of wealth when we act. This works in a twofold way. First, our asset base allows us to buy things and invest. Companies with a high equity ratio get cheaper credit; consumers with a sizeable financial asset base need less equity when financing a house. Second, wealth serves as a testimonial of a person's successful and honest dealings in the past, through which it serves as collateral for our trading partners. To have skin in the game means our wealth position becomes collateralized. The wealth position of a seller of services—that is, financial assets, reputation, or expert knowledge—which underpins the credibility of his selling proposition serves to mitigate risk for the buyer at the same time. We cannot contemplate the possibility of a mutually beneficial exchange—value—without understanding its reciprocal nature as implied in the skin-in-the-game mechanism.

In contrast, mechanism design theory rests on a notion of incentives that is tied to observable variables, mostly payouts that serve as a proxy for resource allocations. According to *Merriam-Webster*, an incentive is "*something* that incites or has a tendency to incite to determination or action." In mechanism design models, incentive-compatible action is usually evaluated based on specific payout and probability profiles. In Cournot-Nash games, for instance, dominant strategies lead to worse outcomes than a cooperative approach and are held to illustrate the defectiveness of competitive action. The way mechanism design models are built mostly follows the same template. The players—usually two of them—face a choice of two outcomes represented by a matrix that is constructed in such a way that the payout numbers allow one to investigate whether the institutional rules (under which the actors choose) induce incentive-compatible or incentive-incompatible behavior. The question I want to raise is whether it is a sound theoretical starting point to regard payout numbers as "something" that suffices to make claims about incentive compatibility.

Two answers, both in the negative, tackle the question from two entirely different perspectives. First, if a fictitious mediator has full knowledge of the trading partners' pre-exchange position (their skills, financial wealth, reputation, past achievements) and their goals, then she also knows that the observed payout numbers

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[9] Since it is impossible to not put skin in the game when engaging with other people, as this would imply the separation of action and actor, skin in the game can be viewed as a praxeological category of human action as proposed by Mises (1949).

themselves do not contain sufficient information to be fully indicative of incentive-compatible behavior. Given a proposed payout scheme, in which the payouts may be higher for the one than the other, high for both players, or low for both of them, the mediator understands the benefit part of the incentive equation but not the benefits in relation to the trading parties' cost calculus when they put their wealth at stake. The latter kind of judgment requires the mediator to have full information about the trading partners' cost–benefit profiles.[10]

To attain this information, the mediator also needs to understand the psychological states that have been shaped by trading partners' past actions, successes, and failures, and those states at the same time hold the key to understanding the partners' ambitions and strategies. This implies that the mediator understands also what the trading partners are thinking when they reconcile all of the above information. A payout number is naked information, whereas the grasping of incentive-compatible behavior presupposes knowledge about the "something" that incites and governs action. This "something," then, must be indicative of value. Hence what we mean when we say that people have incentives and act based on them is that they want to become better off by applying their means prudently (so as to not impair their wealth position).

This leads us to the second answer: an observer cannot know the incentives of other people. I would even go as far as to say that to speak of "knowing incentives" is a contradiction in terms since value cannot be known, only imagined and experienced individually. The notion of incentive—"something that incites action," an impulse or a stimulus—cannot be directly observed. What we can observe are results—that is, prices and quantities. And we can form conjectures about what compelled people to act one way and not another. When we say we are trying to understand the incentives of somebody, this means we are contextualizing an action based on what we think a person wants and what he is willing to give up in return. Incentive, then, is something that guides people when they consider an exchange in order to achieve a state that does not (yet) exist but could. Numbers—for example, prices, incomes, returns, quantities, performance indicators such as megabytes per second—are not indicative of value. They are outcomes of past actions (that is, valuations).

The main theoretical defect of mechanism design theory is that the applied mathematical models do not represent the full scope of economic decision-making; they are based on fictitious payout numbers that cannot represent value and thus are unable to inform a mediator whether the observed resource allocation is compatible with people's incentives. If they mean anything at all, these numbers may be interpreted as alternatively realizable benefits—for instance, a higher or lower income given the choice of two job offers. In real economic life, however, the notion of an alternative implies the occurrence of cost. Cost is the missing category in mechanism design. For this reason, mechanism models neglect the rich psychological content that explains the genesis of incentives in situations of real choice.

To wrap up this section, as early as 1959 Buchanan argued along Hayekian lines that external effects are "fully reflected in the individual choices made for or against the collective action" (1959, 130). The alternative is immediate: if individuals face a "real" nuisance, meaning a nuisance implying an inefficient allocation of resources based on their own judgment, they work toward finding a way to remove it; but if no collective agreement is reached, this means the "presumptive efficiency criterion was wrongly conceived" (1959, 130). The latter statement is a more softly worded version of the nirvana fallacy (Demsetz 1972). The inclination of the economics discipline to judge some observed externalities as problematic or harmful to society is a result of thinking in static terms. When economists wear Paretian blinders, the potentially useful role of market externalities—as a signaling mechanism in dynamic markets—remains outside their range of vision.

## 5.   Externalities: The Market's Built-In Signaling Mechanism

Transacting parties always seek to make up for the various informational gaps prevalent in the market. Among other market signaling devices, externalities serve to reveal the benefits and costs associated with economic action in an uncertain world with imperfect knowledge, asymmetric information, wrong expectations, or simply errors. Externalities are the market's revelation mechanism that shows us where we economize in the interest of all parties involved and where the balance of costs and benefits is such that some, or many, economic actors are unhappy. In this respect, externalities represent exactly those profit-and-loss positions that elude the monetary accounting mechanism as represented by financial statements of legal

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[10] The fact that situations of exchange lead us to consider possible impairment of wealth might be *the* ingenious disciplining mechanism on which our entire civilization rests. In essence, this cognitive mechanism ensures that the cost of reckless behavior is internalized ex ante.

entities. Externalities are to be understood as a shadow accounting mechanism with the help of which market participants complement the natural informational constraints of monetary accounting.

In figure 2, I assume that negative externalities are revealed to market participants, either as financial results or in psychic and physiological nonmonetary categories—for example, noise and the related stress.[11] Many externalities remain unrecognized because of our ignorance of the nature of causal relationships. Of those that are recognized, I differentiate between unacceptable and acceptable externalities. Adverse selection and moral hazard fall into the former category, frictions and market results into the latter. By applying the distinction of acceptable versus unacceptable, it becomes clear that valuation is a deliberate act. While value is a shadow of conduct (Shackle 1972), valuation itself *is* conduct. The goal of ascertaining our economic efforts is to see how we are doing (in relation to our invested wealth. By way of judging our past efforts, at the same time we prepare the field for our future economizing. The costs of adverse selection and moral hazard that we incur indicate in what areas we can do better.

Figure 2: Scheme of "Negative" Market Externalities
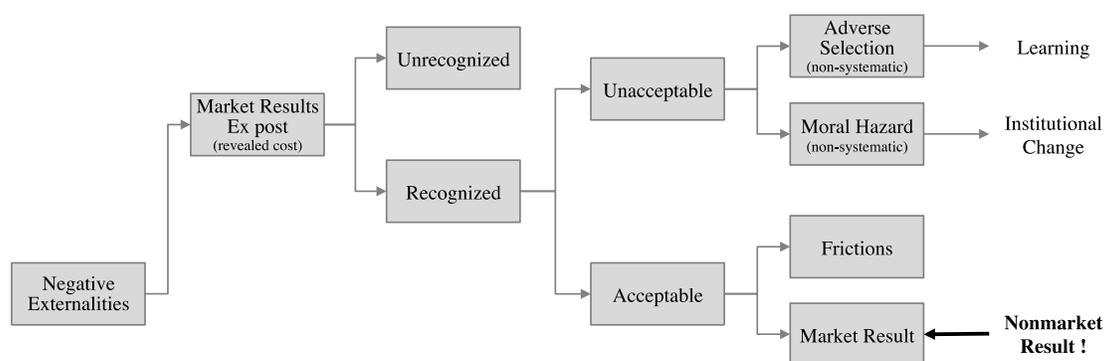
Two crucial, interrelated points are worth stressing. First, in the unhampered market adverse selection and moral hazard are nonsystematic outcomes. Second, they induce a change of behavior. If that were not the case, we would either not recognize an outcome as adverse (which means that we would accept it) or we would succumb to a fatalistic worldview. Adverse selection is one of the market's revelation mechanisms that provides the incentives for learning—for instance, when the insurer learns that its policy attracts the wrong crowd. Moral hazard is more representative of the institutional side of human action, the revelation of which induces us to find solutions that prevent some people from inflicting damage on other people with impunity. In a commercial context, this can simply mean that one party in a transaction seeks to amend the contractual structure when he perceives the allocation of costs and benefits as unfair. In some cases, the extent of unfairness is so evident that an appeal to the legislator leads her to codify what is deemed fair and what is not.

Let us now look at the bottom branch of acceptable market results. By "frictions" I mean all cost categories that are too costly to be avoided. If a firm goes bankrupt, it takes an average of three to six months until employees are rehired. Also, road infrastructure is not designed to accommodate peak traffic. We intuitively understand that the cost of purging those frictions from the market would exceed the benefits by far. Both Coasean transaction costs, which are said to motivate the existence of firms, and the unavoidable damages that our way of economizing inflicts on the natural world are other examples. These frictions fulfill an enormously important signaling role. By imposing costs on us, frictions provide the information to ascertain what is acceptable as a corollary of economizing and what is not.

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[11] By affecting our well-being, the impact of noisy environments also depresses the value of residential property.

This is a complex process. The subjective perception of frictional costs differs vastly across people. Often, the cause-and-effect relationships are not ascertainable in scientifically clear-cut ways. And, of course, it makes a difference who causes frictions and who bears the cost. Thus, in democratic societies people negotiate about the magnitude of cost inflicted and the policies for mitigating the cost through representational bodies, which presupposes that the cause-and-effect relationships, on which any policy proposal has to rest, are understood. What has been accepted as a friction in the past may turn into an unacceptable negative externality at some point of time. While a political proposal to ban cars from city centers would have been political suicide in the 1950s, it might soon win national elections. In figure 2, the formerly accepted friction moves up and becomes either a moral hazard or an adverse selection. The important point, again, is that these "problems" do not just occur to us. We evaluate them and deliberately decide that they *are* problems. Only then are the incentives *created* that guide us to adapt our courses of action—for instance, the course of action following the decision that heavy traffic in cities constitutes an impairment of wealth.

Finally, we find the box "market result" among the accepted negative externalities. What is meant by "accepted" is that market outcomes result from deliberate actions of people pursuing their goals. The statement "This is a market result" carries a favorable normative meaning by expressing that both the material, social, and psychological impact associated with market results and the actions and institutions that underpin them—for example, legislation and conduct—conform to our moral values. Policy making always rests on notions contrary to the above. Market outcomes—say, Microsoft's market share or perceived infrastructure gaps—are evaluated to be detrimental to (or not good enough for) consumers. To the extent that a mediator is able to convince the public that she can introduce a (nonmarket) mechanism that will yield better results, the market might be overridden. All regulatory and antitrust policies follow this reasoning.

5.1. Is Myerson's Mechanism Design about Incentives or Resources?

In the sense just described, any policy action always presupposes the design and application of a mechanism. The difference between the above and mechanism design represented by Myerson and other scholars appears to be that their theory rests on a better understanding of informational asymmetries in principal–agent settings.[12] While the "old" theories of market failure would only look at resource allocations (after the game has been played), contract theory expands the view to the underlying incentive structure given the prevailing institutional setting. Contract theorists insinuate that a more beneficial resource allocation can be achieved when the institutional structure—the rules of the game—can be tweaked in such a way that it reveals the true incentives of the people according to which a different—now incentive compatible—course of action yields the desired result.

In section 3 of his Nobel Prize lecture, Myerson guides us through various buyer–seller games expressed in the form of Nash-payout matrices. Both players are of either the weak or strong type. Depending on the type, the strategies differ in that either a buyer is willing to pay a lot (weak) and the seller charges a high price (strong) or vice versa. The matrix is constructed in such a way that if both parties were of the strong type, no mutually beneficial result would be achieved. Of course, the range of solutions depends on how much the good is actually worth to the parties (which they do not reveal in the marketplace, for good reasons). Myerson introduces a fictitious mediator who "should ask the traders to reveal this information and should formulate a plan of how the terms of trade may depend on what they report. Based on the reported information, the mediator could either recommend that the object should be traded for some specified price, or the mediator could recommend that they should not trade at all."

As a next step, he analyzes whether a mediation plan of "split-the-difference" would achieve a mutually beneficial trade by introducing probabilities to calculate the payout matrix. By allowing the game structure to

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[12] This paper deliberately leaves out a discussion of the *revelation principle*, which plays a crucial role in mechanism design theory. In the context of auctions, mechanism design has rendered useful (indeed mechanic) services—for example, in the case of the famous Vickrey auction. It is probably fair to say that auctions rarely pursue welfare goals—not even in the case of public auctions as the enormous amounts extracted from the telecommunication industry for third generation (UMTS) radio spectrum have shown (€50 billion in Germany alone). In principle, it makes a fundamental difference whether mechanism design is applied in auctions and in private corporate settings or in the public space in order to compel society to truthfully report its private information with a view to social welfare goals.

reflect that traders can misrepresent their types, he shows that honesty does not pay off if the strong type claims to be weak: "For honesty to be an equilibrium in the sense of Nash (1951), it must be that each individual would find honesty to be the best policy when the other is expected to be honest." As a result, the split-the-difference mediation plan is not incentive compatible; an ostensibly better outcome for both parties is not achieved. According to Myerson (2007), "It illustrates how individuals' incentives to bargain for a better price can prevent allocatively efficient trading." As in the one-off prisoners' dilemma, the parties do not communicate and they do not learn through iterative phases of negotiation or repetitive trades. The salient question to raise is whether the strong type would participate in a game when one of the likely outcomes is that he does not get anything. However, as outlined in section 4, this question cannot be answered without understanding the full psychological condition of the trader.

In section 3.6, Myerson draws on Coase's insight that in a world without transaction costs, (frictionless) trade of property rights and resources yields allocative efficiency irrespective of the initial allocation of property rights. Based on this insight, Myerson states that "transactions costs are important for understanding the problems of allocative inefficiency, and we need an analytical theory of where transactions costs come from." He then goes on to define informational incentive constraints, which are implied in the constructed payout matrix given a set of behavioral strategies, as a source of Coasean transaction costs that constitute participation constraints. By "constraint" Myerson (2007) denotes a situation in which the parties that hold the initial property rights do not trade. He arrives at two main conclusions, which I quote in full:

> (i) "We have shown that ex-post allocative efficiency cannot be guaranteed by any incentive-compatible mechanism when the initial owner is the person whose value may be 0 or 80. But if the initial ownership right was assigned instead to the individual whose value may be 20 or 100, so that the roles of seller and buyer are reversed, then it is easy for a mediator to guarantee that the object ends up with the individual who values it most."
> (ii) "Thus, the theory of mechanism design gives us an analytical framework where the initial allocation of property rights can affect the probability of achieving an outcome that is allocatively efficient."

Two interpretations are possible. First, in a bilateral game of two firms, a particular asset might have come to be owned by a company that another company can use more productively. In their landmark paper, Grossman and Hart (1986) explain that ownership of residual rights over assets mitigates inefficiencies associated with underinvestment, which at the same time provides an explanation for vertical integration. Mechanism theory understood this way, also known as the incomplete-contracts approach, may be able to explain certain industrial structures in a non-normative way. Second, in the we-plan-the-society game, the mediator might not like the resource allocation. The reversal of roles as per the proposal under (ii), however, would amount to straightforward expropriation and has nothing to do with a change of the rules of the game. In this case, the idea of incentives would rest on the reallocation of legal titles that achieve the result that conforms to what the mediator preconceived as allocatively efficient.

Conclusion (ii) seems to enhance the second theorem of welfare economics by introducing probabilistic notions of initial resource allocation. Again, Myerson does not talk about institutions but about the allocation of property rights. The surprising conclusion is that in actual fact mechanism design *is* about efficient resource allocation. The procedural difference is that the result is achieved by reverse-engineering efficiency—now incentive efficiency—in terms of the designed mechanism's capability to reach a predetermined resource allocation.[13] This leaves us with the challenge of how to respond to the claim that mechanism design provides a new framework that is "able to analyze questions about efficient institutions that were beyond the analytical reach of economic theory in Hayek's day." As explained above (and in footnote twelve), mechanism design theory might render useful services to choose the suitable auction format to achieve specific outcomes or to better align the incentives of principals and agents in a private corporate context. In both of these examples, it is important to note that only a few players participate in the game and that the cost of failure is borne by the

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[13] Garg et al. (2007) concur with this reading: "In fact, mechanism design can be viewed as reverse engineering of games or equivalently as the art of designing the rules of a game to achieve a specific desired outcome." They stress the applicability of mechanism design in solving decentralized design problems—for example, ad hoc communication networks and grid computing.

participating parties should the implemented incentive mechanism not achieve its goals. If, however, the ambition of mechanism design extends to improving or altering resource allocations of entire societies, then this immediately raises three problems.

First, when a benevolent designer thinks of a mechanism—for instance, one that yields a more equal resource allocation—she has to define what this resource allocation would look like, which obviously presupposes that she knows whether it is actually achievable given the dynamic nature of productive activity. Second, she then must be capable of devising the mechanism that compels people to act honestly based on their true preferences. The idea of people revealing their true preferences presupposes that they know them, that they are communicable, and that there is a normative case for the assumption that people ought to report truth to a public planner. Third, in the case of failure, playing "truth games" on a societal level might (and has) come at an enormous cost. The fact that social engineers do not bear the cost of failure explains the chutzpah with which they advance the most stupefying ideas. The notion of moral hazard seems to be applicable to explain this kind of behavior.

Mechanism design, as Myerson stresses (2007), does not look at resource allocations only but at the allocation mechanism that "specifies how resource allocations *should* depend on people's information" (emphasis added). Based on the assumption that a mechanism exists that incentivizes people to report their true information honestly, the implementation of the mechanism (social plan) then induces the incentive-compatible set of actions so as to arrive at the wanted resource allocation. Applied to the societal level, mechanism theory is Walras restated and conjures up all the problems associated with the central planner's knowledge problem that Mises and Hayek stressed. Hurwicz (1973) recognizes the enormous informational problems that economic theory, and the social planner, faces as soon as the economic system is assumed to be what it is: a dynamic, non–zero sum game producing externalities in the form of indivisibilities in production—or prosperity for that matter. Still, he believes that Lerner (1944) was right in his defense of central planning when he stated that "the necessity of making unreliable estimates is in the nature of the problem and not in the method of solving it. . . . The same estimates and guesses must be made in any economy where knowledge is imperfect and where large decisions have to be made" (198). In other words, it does not matter who makes the mistake.[14]

5.2. The Nirvana Fallacy of Perfect Information

In their concluding section on the applicability of agency models, Hart and Holmström (1987) remark that it would be useful to extend the scope of models beyond static models as static models do not perform well predictively because of the complexity of incentive schemes and the fact that "actions in the [hidden action] model are not observable economic variables" whereas they are observable in hidden-information models. The authors declare levels of investment and employment to be observable variables, which means they offhandedly equate numbers with actions. This type of inadmissible simplification routinely underpins the better part of economics. And it *may well be* the opposite explanation for why Hart and Holström (1987) touch the phenomena that really matter—that is, reputation and implicit contracting—with a barge pole: "Dynamic models also bring attention to reputation effects and long-term explicit and implicit contracting that *may well be* at the center of real-world incentive problems" (emphasis added).[15]

Hart and Holmström (1987) state that most actual contracts are "seriously incomplete." For all that, "if agents could costlessly be induced to internalize the principal's objectives, there would be little reason to study agency . . . each agency model is an incentive problem caused by some form of asymmetric information." This is the authors' way of saying that we do not live in a world of perfect knowledge. Yet Holmström (1979) himself stresses that imperfect information—for instance, that derived from performance monitoring and management accounting systems—"is extensively used in practice to alleviate moral hazard." Thus, people and

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[14] In parentheses, at the end of a lengthy footnote, Hurwicz (1973) hides the following statement: "To make meaningful welfare judgments possible, some underlying values or 'true preferences' would have to be postulated."

[15] This and similar types of rhetorical instruments are found at the end of most theoretical papers. It works to protect authors against the potential objection that they are removed from reality. In that respect, it fulfills a similar function to epilogues in Greek comedies, which were often used to show that the main characters of the plays live a normal and happy life after experiencing the disorder during the play.

organizations do seem to have mechanisms at hand that mitigate the cost of incomplete contracts. On the face of it, there is nothing despicable about looking at markets as rife with information asymmetries and agency issues. Alternatively, one could try a different reading: We confer agency to third parties because we know about the merit of human cooperation. The fact that we do not live in a world of perfect knowledge brings about the incentives we require in order to strike mutually beneficial trades. Asymmetric information, the cause that Hart and Holmström (1987) identify as an "incentive problem," could be understood as a corollary of human diversity with its broad spectrum of capabilities and desires.

Finally, a short note on the Myerson-Satterthwaite theorem (1983), which holds that there is no efficient way for two parties to trade a good when they each have secret and probabilistically varying valuations for it without introducing the risk of forcing one party to trade at a loss. This sounds quite depressing, and indeed, as much as trade benefits people, trading is about the realization of losses. Yet, in our non–zero sum world, people seem to learn and continuously overcome their lack of information (to use another expression for error) as otherwise we would have stopped trading a long time ago. The fact that trading is an ongoing process, not in the form of some contrived one-off or repetitive game but based on constantly changing needs and products, presupposes a principally positive mindset as to our ability to do better. Empirically speaking, it would indeed appear that we have already mechanisms at our disposal, not so much to overcome the generally uncertain nature of human action, but to cope with and learn from our experiences.

If, in contrast to the Myerson-Satterthwaite theorem, we assume for a moment that an efficient way exists to avoid situations in which people trade at a loss, then this means that the need to economize disappears. Hence, humans would cease to be humans. This theorem is one of the many sad economic outputs that only acquires its meaning against the backdrop of an equilibrium world of perfect knowledge—the hallmark of economics in the twentieth century. By comparing real behavior with non-existing ideal states, the theorem can be inducted into the hall of nirvana fallacies (Demsetz 1972). Perhaps even worse, it treats quintessential market signaling devices—externalities—in intellectually shallow and pejorative ways, as if there were no reason why societies incur these costs and as if our intellectual abilities did not allow us to come up with solutions—whether it be with given institutions or amended ones.

As depicted in figure 2, I have explained moral hazard and adverse selection as signals that reveal information about those costs that did not conform to the ex-ante expectations of some parties. A contract is incomplete in the sense that it did not cover the entire scope of possible outcomes ex ante. When one says that a party bears a cost because of asymmetric information, this implies that the party consciously *decides* that a particular outcome *is* a cost inflicted upon her. This is an act of value judgment that precedes any subsequent action. Usually market outcomes are accepted unless third parties such as political representatives declare them as unwanted and have the power to enforce a course of action that supposedly conforms better to the moral convictions of electorates (or what governments want their convictions to be).

6. Two Conclusions

6.1. Incentive Compatibility: A Tautology

When Myerson and other mechanism theoreticians talk about incentive compatibility, they inevitably take a view on resource allocations. The design of a specific mechanism always aims at outcomes that revise existing resource endowments. To that effect, any design—whether architectural, engineering, or socio-economic—presupposes a value judgment about what is the right outcome. Of course it may make a difference whether the result is achieved by a straightforward reallocation of resources (tax and transfer) or by amending the rules of the game with the help of mechanisms. Incentive compatibility, in this regard, is indeed a purely mechanical device to achieve the planner's goal. In contrast, in Hayek's edifice of thought incentive compatibility does not feature because it is a tautology that refers to the self-evident fact that people act on purpose. To infer from observed market outcomes that they are or might be results of incentive incompatibility is to commit a categorical error.

The truth is exactly the other way around: Any observed resource allocation is a result of actions that are incentive compatible ex ante, including those ones that are unwanted or fraudulent. If ex post people regard outcomes as detrimental, then this does not mean that the incentives that guided their actions were not compatible with what they tried to achieve. It merely means that their expectations were not met. The potential reasons are manifold. People might have acted hastily based on wrong information or good information that

they hadn't analyzed prudently or in a timely manner, or the weather may have been bad and a subprime crisis occurred. When it is the role of the mechanism designer to devise an "allocation mechanism that specifies how resource allocations *should depend on* people's information" (Myerson 2007, emphasis added), he might pursue the goal of ruling out certain actions as unlawful (which arguably provides the most widely shared justification for the state). Executives of listed companies that enrich themselves through insider trading or releasing price information to a party in a competitive procurement process are examples that come to mind. In these cases, the role of the mediator would be confined to outlawing certain unwanted behavioral patterns by amending institutions given ethical criteria shared by the members of a society.

6.2. Mechanism Design: A Rhetorical Device

Where does this leave us in terms of the claim that "in this new framework of economic analysis [mechanism theory], we also have new concepts of *incentive efficiency* for evaluating rules by which resources are allocated" (Myerson 2007, italics in original)? The answer is that the mechanism design theory is premised on an ex ante idea of a resource allocation different from the one the market process would entail. This idea rests on a mediator's normative judgment that either the market institutions do not produce the best outcomes for society or that the market outcomes are wrong. When the appeal of mechanism design cannot be established on theoretical grounds, we must look for something else. Here I want to suggest that the appeal of mechanism design and incentive compatibility lies in its narrative power or, to speak in McCloskey's (1986) terms, its persuasive features.[16]

When, in the context of a specific debate on a policy proposal, a politician claims that people have to be induced to act in incentive-compatible ways for their own betterment—that is, to achieve a better resource allocation—this makes her story richer. She can now point to the Amazon rainforest and claim that it is burning because of the ever-increasing meat consumption in Europe. Thus, it is right to constrain the incentives to eat jungle-destroying meat by making Brazilian beef more expensive. Hence by taking away resources from meat eaters and meat producers (thereby raising public revenue), the mediator sets the incentives in such a way that the wanted resource allocation ensues. This rhetorical device—belonging to the category of "we-problem-game metaphors" (McCloskey 1995)—is as old as politics. And it is not only politicians who appeal to our moral sentiments when they sell their political agenda. In large firms, corporate-identity frameworks are among the most important incentive mechanisms to bring employee behavior into alignment with shareholders' goals. Its effectiveness rests on metaphors—for instance, on high-flying notions of *ethical production* rendered by a *big happy family* that will *save the planet*. The detour to reach allocative goals by appealing to the right ethical incentives—as implied in a proposed mechanism—enhances the narrative content of the story.[17]

The two polar ends of the mandate of any public mediator confine her either to the role foreseen for governments in a laissez-faire economy or to the role of a socialist planner who, by upsetting the prevailing ownership structure, attempts to achieve a better resource allocation (which for whatever reason free people equipped with reason are incapable of pursuing and achieving). The claim Myerson (2007) makes in the concluding section of his Nobel Prize speech—that with mechanism design and its focus on incentive

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[16] Mathematized economics continues to enjoy the reputational benefits associated with the methodological rigor of mathematics, which is said to ensure that verbally expressed arguments do not "get lost" when reasoning (Myerson 2007). In addition, mechanism design theory expanded the applicability of mathematical tools so as to make specific skills useful and maybe even to entertain: "Pure theory in economics is similar to the literary genre of fantasy" (McCloskey 1990).

[17] When a mediator implements a mechanism with a particular goal—say, reducing drug abuse by criminalizing the selling and buying of drugs—this might create the incentives that bring about the exact opposite result of what was intended. With the advent of the TOR browser and VPN services, anonymous trading platforms sprung up that protect the trading parties' identities by concealing their IP addresses and geographical locations. As the quality of cocaine can be more reliably assessed on virtual marketplaces, it became purer, for which consumers are willing to pay a price premium (see *Economist* 2016). The ironic twist of the War of Drugs is that it led to the creation of hundreds of new producers of synthetic drugs that imitate the effects of some of the most common drugs at drastically cheaper prices. The enormous variety of new synthetic drugs is giving drug-enforcement administrations a hard time. Before they can outlaw a new drug, they must establish scientific evidence to prove its harmfulness.

constraints we now possess concepts that allow us to better "understand failures of allocative efficiency, showing how such failures may depend on the initial allocation of property rights in a society" and, based thereon, remove incentive constraints to arrive at better allocative results—necessarily presupposes a normative judgment. In the end, Myerson and his peers are discussing the same points that Mises and Hayek on the one side and Lange and Lerner on the other began to discuss hundred years ago. In this respect, they prove Huerta de Soto (1998) right by stressing "the ongoing Methodenstreit of the Austrian school." With mechanism design and notions of incentive compatibility, we may simply have entered another round of the Methodenstreit.

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