

How the Consumer Welfare Standard Solves the Monopoly Prisoner's Dilemma: A Micro-in-Macro Analysis of Market Institutions

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Abstract. This article delves into the ongoing conflict between the total welfare standard and the consumer welfare standard in economic law analysis. This longstanding debate gains heightened significance due to its influence on the activities and institutional structure of antitrust authorities. Our aim is to provide a robust theoretical foundation for the prominence of the consumer welfare standard while contributing to the broader discussion surrounding market regulation. Our core argument is grounded in a micro-founded examination of market allocations, aiming to find common ground with mainstream economics, “the total welfare standards supporter”. From our perspective, the consumer welfare standard emerges as a “rule-in-equilibrium,” a choice that self-interested, rational agents would make to coordinate their behaviour across multiple markets. Crucially, the institutionalization of the consumer welfare standard addresses the Monopoly Prisoner's Dilemma—a social dilemma where participants seek competitive advantages while assuming monopolistic roles. The article introduces the partial-in-general equilibrium analysis or micro-in-macro (MnM) approach, showing that the consumer welfare standard effectively resolves the social dilemma while the total welfare standard. It follows that the consumer welfare standard is not a proxy of the total welfare standard selected to simplify antitrust enforcement; on the contrary, the consumer welfare standard justifies the emergence of antitrust institutions and related market regulation mechanisms.

Keywords: Monopoly Prisoner's Dilemma – Consumer Welfare – Efficiency – Rule-in-Equilibrium – Methodological Individualism

1. Introduction

An allocation of resources is efficient when it maximizes total welfare or consumer welfare only? Economics 101 textbooks normally say it is total welfare (eg. Mankiw 2015; Varian 2010; Cowen and Tabarrok 2011); normally, but not always. Sometimes, even there, the maximized is consumer welfare (Baumol and Blinder 1979). This is not only a problem of introductory textbooks; also more

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advanced, even scientific publications by leading authors, expose this swinging attitude, often within the same text (eg Viscusi, Vernon, and Harmington 2005).¹

The situation is further complicated by the view that what matters is Pareto optimality. And this is all independent of further sub-distinctions, such as whether Pareto optimality is strong (everyone is better off) or weak (at least someone is better off and no one is worse off) or hypothetical (at least someone is better off and no one could be made indifferent) or historical (comparison between previous and successive situation) or counterfactual (comparison with a possible alternative institutional setting). Not to mention, what happens when any of the above notions of efficiency is compounded with any of the normative concepts used in moral, political, legal theory, philosophy or practice, such as fairness, equality, distributive, commutative or corrective justice (eg Hesselink 2021).

This article develops previous work of one of us to put order in this linguistic, conceptual, and normative chaos. Our claim is that:

A market economy is allocative efficient when it maximizes total welfare - general equilibrium framework. A specific market is allocative efficiency when it maximizes the welfare of the actual and potential consumers on that particular market - partial equilibrium framework. The institutionalization of the consumer welfare standard in partial equilibrium solves a particular type of social dilemma, the Monopoly Prisoner's Dilemma: everyone wishes to benefit from other's competitive behaviour while acting as a monopolist.

To see the Monopoly Prisoner's Dilemma, we analyse the market as an institutional setting neither from the purely general nor the purely partial equilibrium perspective. Rather, we look at the interaction between two or more markets and we show that rational self-interested agents have reason to internalize and then institutionalize the following equality norm: in every market, consumers are the sovereign actors and producers are the subject actors. In other words, in every market, consumers are the principals and producers are the subjects. The equality norm of consumer sovereignty can be translated in welfare terms as consumer welfare maximization in a partial equilibrium setting. In fact, as we will show, when one looks at the interplay between two or more markets, it becomes apparent that actors face the conditional cooperation problem typical of social dilemma and epitomized by the Prisoner's Dilemma. To see this, we use an approach we call partial-in-general equilibrium analysis or micro-in-macro (MnM) approach (similarly Miller 2008 and Hédoin 2012)..

Crucially for our understanding of the market as an institutional framework, our MnM approach shows that the total welfare standard is unable to solve this social dilemma as effectively as the

¹ For an in-depth analysis, see Esposito and De Almeida (2018).

consumer welfare standard. In other words, the use of the consumer welfare standard is not, as economically-inclined antitrust scholars describe it, a non-ideal application of the total welfare standard due to practical difficulties in the application of the total welfare standard. Rather, the consumer welfare standard has properties making it better suited to sustain cooperation in a market economy already at the ideal theory level.

2. General and Partial Equilibrium Are Interrelated

One of us has investigated the economic and legal pedigree of the view that a market allocation is efficient when consumer welfare is maximized extensively. In that occasion, it was shown that out of a list of economists whose work has been central to the development of the so-called economic approach to law, only Stigler and Pareto did not show the special concern for the distributive effects detrimental to consumers that is central to the total-consumer welfare disagreement. The whole list included: Adam Smith, Marshall, Pigou, Pareto, Kaldor, Hicks, Knight, Coase and Stigler.

The analysis delivered some surprising results. In particular, Smith (2007 [1776], p. 426) wrote that

Consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to, only so far as it may be necessary for promoting that of the consumer. The maxim is so perfectly self-evident, that it would be absurd to attempt to prove it

If Smith is fully correct, therefore, what we set to claim in this article is absurd; however, we submit that it is neither absurd, neither (at least nowadays) self-evident. In parallel, Hicks used what is now called Kaldor-Hicks efficiency to show that taxing monopoly rents away does not solve ex post the monopoly problem, because consumers are still worse off.

Against this background, only the ‘Chicago Boy’ Stigler (1986; 1987) is a textbook total welfarist. At the same time, Vilfredo Pareto (the Italian eclectic intellectual from whom Pareto efficiency takes the name from), never showed a special concern for the interest of consumers in his works. Hence, the conclusion that Pareto shall be understood as a total welfarist. However, contrary to Stigler, who defended the total welfare standard in a partial equilibrium setting, Pareto (2014[1906-9], p. 175, 196]) used it in a general equilibrium one only, where he labelled the monopolist as “parasites” and “privileged”. Notably, Frank Knight (1967, p. 93), who was a more articulate writer in comparison to Pareto, used similar words of condemnation when he wrote that “The outstanding evil of monopoly is of course the burden under which it places the consumer of paying a higher price”.

An interesting anomaly was also found in the analysis of legal materials concerning EU antitrust and consumer law. In fact, both branches of EU law make a lot more sense in pure efficiency terms if the welfare standard is consumer, rather than total welfare (Esposito 2022, ch 5 and 6). At the same time,

in both EU antitrust and consumer law one finds cases where the justification of the norms to be applied in a specific market are justified in terms of consumer welfare, but the EU internal market as a whole is justified in terms that look closer to the total welfare standard. This becomes especially the case if one exits the context of the First Welfare Theorem and allows for considerations of entitlement (re)allocation to play a role in selecting the ultimate allocative outcome, as the Second Welfare Theorem encapsulates.

The best case to illustrate this is the 2022 judgment of the Court of Justice of the European Union (ECJ), *Servizio Elettrico Nazionale*. The ECJ stated that “the well-being of both intermediary and final consumers must be regarded as the ultimate objective warranting the intervention of competition law”.² Such an explicit statement - second, in our experience, only to above-cited quote from Adam Smith - is noteworthy for two related reasons. The first is that the issue is hardly new. On several occasions, the ECJ already offered similar views, but never with such an emphatic language (Esposito 2022, ch 5). The second is that the ruling was delivered at a time when, especially in the United States, their consumer welfare standard is under attack (eg. Khan 2018). Together, the two reasons suggest that the ECJ felt the need to cast its ballot on this mounting issue.

Be this as it may, in the very same decision, the ECJ also states that the norms of EU competition law “ensure well-being in the European Union”.³ It perhaps by building on statements such as this that Commission staff (probably) wrote a ‘factsheet’⁴ on EU competition policy confidently stating that “Competition policy is thus a key instrument for achieving a free and dynamic internal market and promoting general economic welfare”; yet, discussing the impact of the Digital Markets Act, the factsheet notes that this legal instrument dispenses from proving “the effects of the conduct on consumer welfare”.

The MnM approach solves this incoherence easily. Once one looks at the economy or, even more broadly, the all-things-considered state of affairs relevant to a social welfare function, one is entitled to refer to the outcomes as relevant for society as a whole, the total welfare, and the like. However, when the focus is on one of the markets that are part of the (social-)market economy, the relevant economic standard is that of allocative efficiency, understood as consumer welfare maximization.

3. So We Want an Institution, But What Do We Mean by That?

The debate reconstructed in the previous section clearly illustrates two key points. First, there is a general consensus on the necessity of social institutions to regulate monopolistic behaviour in the

² Judgment of the Court of Justice of 12 May 2022, *Servizio Elettrico Nazionale SpA and Others v Autorità Garante della Concorrenza e del Mercato and Others* (C-377/20, EU:C:2022:379, para 46).

³ *ibid*, para 40.

⁴ <https://www.europarl.europa.eu/factsheets/en/sheet/82/competition-policy>.

market. Second, there is a significant level of uncertainty and disagreement regarding which principles these institutions should adhere to, whether it is CWS or TWS (illustrative, Wilson 2019). Our starting point is that despite the legal academic debate has shown a growing interest for pluralistic approaches in associating values with competition law (eg. Lianos 2018, even recently, CWS remains institutionally stable as a benchmark also beyond Europe (OECD 2023). We attribute this stability to the observation that CWS exhibits the characteristics of an institution according to the conception of rules-in-equilibria. Therefore, it is time to articulate the concept of institutions as rules-in-equilibria, to then show that the CWS is one and, crucially, the TWS is not.

The idea of rules-in-equilibria derives from intertwining two prominent understandings of institutions in contemporary institutional theory: institutions as rules and institutions as equilibria. A longstanding debate opposes these approaches across several disciplines. However, like many other scholars, we believe that the two interpretations are not alternative, but complementary; in other words, we concur, and there is room to combine them to reach a deeper understanding of how institutions work (Aoki 2005, Greif and Kingston 2011, Guala and Hindriks 2015; Hindriks and Guala 2015; Guala 2016). To clarify our positioning, we will briefly describe the two accounts to conclude the sections with the rule-in-equilibrium concept and why it can cast new light on the CWS vs TWS debate.

In general terms, the accounts of institutions as rules and as equilibria recognise the institutions' capability to frame social agents' actions creating durable behaviour regularities and reciprocal expectations in a community. Following the institutions-as-rules view, this property derives from the individuation and the enforcement of a specific behaviour. Thus, following North, institutions appear to be "the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction" (1991, p. 3). However, according to North's definition, constraints alone do not entirely define institutions. This account defines "institutions as durable systems of established and embedded social rules that structure social interactions through prescriptions and incentives rather than rules as such" (Hodgson 2005, p.13; see also Hodgson 2015). Based on this definition, institutions derive from two distinctive social phenomena. 1) The selection of a prescribed behaviour results from the composition of different social interests and power distribution. 2) The enforcement, a constant pressure toward prescribed behaviours through incentives.

Differently in institutions-as-equilibria, the regulatory function derives from institutions' capability to coordinate interdependent strategic action toward specific outcomes. This view sees institutions not as rules of the game but as game equilibria. For example, Schotter (1981, p. 155) argues:

[Institutions] are not rules of the game but rather the alternative equilibrium standards of behaviour or conventions of behaviour that evolve from a given game described by its rules. In other words, for us, institutions are properties of the equilibrium of games

and not properties of the game's description. We care about what the agents do with the rules of the game, not what the rules are.

The strong claim of this second point of view is to internalise enforcement's problems in theory about institutions' creation and reproduction over time. This literature on self-organisation and spontaneous orders provides the essential insight that institutions emerge and are stable in the long run due to their self-enforcing property (Greif and Kingston 2011; Dequech 2013). Following this view, "rules" may serve as coordination devices, providing expected behaviours of others rather than sanction and reward mechanism. The creation of mutual expectations ensures convergence toward certain equilibria among different possibilities and endogenises the enforcement problem since, given stable expectations, no one is interested in deviating from the prescription. A paradigmatic example is the legal enforcement of driving on one side of the road; once the rule is established, people follow it not to avoid the sanction but to coordinate their driving to decry the risk of accidents (Hindriks and Guala 2015)⁵.

Both approaches present relevant shortcomings. As mentioned, institutions-as-rule do not internalise the enforcement problem, assuming it is exogenous and conceptualise it as costs, more precisely as transaction costs. Thus, institutions' performance relates to the relationship between the effects of orienting certain behaviours and the cost of monitoring and incentivising them. In other words, this approach explains long-run institutional stability in terms of "affordable" results. On the contrary, institutions-as-rules internalise enforcing in the explanations of institutional existence and perdurance itself. Following this view, institutions are not a system of sanction but a coordination device capable of moving actors' interaction toward Pareto superior equilibria⁶. However, in this account, institutions exist only in the presence of multiple equilibria, and enforced rules can facilitate coordination towards some of them but cannot affect actors' behaviour in presence of dominant strategies⁷. This is a major theoretical problem, as pointed out by Guala (2016, p.80):

Many social theorists have pointed out that institutions improve the performance of players in games where there is an individual incentive to deviate from the socially optimal rule. A classic case is the prisoner's dilemma game.

Or, in more general terms, institutions are important in social life, not only in allowing smoother coordination but also in providing solutions to the many cases of divergence between individual and collective interests.

⁵ The reasoning can be extended in the presence of complex formal rules and special enforcers such as police and judges. Indeed, on the one hand, these agents' actions are conditioned by expectations, and on the other hand, expectations connected to their actions shape the behaviour of others.

⁶ More precisely rules act as correlations device, able to generate correlated equilibrium. Norms are important for the information (signal) they provide not in terms of sanctioning power.

⁷ In more formal terms when correlated equilibria are possible

Despite the relevant shortcomings as already pointed it is possible to join these two accounts in the more satisfactory conceptualisation of rules-in-equilibria (Hindriks and Guala 2015; Guala and Hindriks 2015; Guala 2016). After all, nothing in the two accounts clearly contradicts or falsifies the other. Combining them is thus a reasonable theoretical move. To have a rules-in-equilibria and so a functional institution stable over time, the following elements must be present:

1) The creation of an enforced norm to address an interaction problem and the selection of preferable outcomes⁸

Following a more formal formulation in the language of institutions-as-equilibria, the norms have the function of reaching a Pareto superior equilibrium in a coordination game.

2) The enforcement must be effective, both in terms of monitoring and incentive, to affect actors' individual perceived outcomes

Formally, enforcement must be compelling enough to make actors consider an alternative to the dominant strategy selected if the institutions did not exist. Indeed only in this case is it possible to convert a cooperation game into a coordination game.

3) The established rule must provide expectations on other agents' behaviours and/or make clearer what is a good interaction outcome and/or represent a reduction of the cognitive complexity related to the interaction.⁹

From a formal perspective, these features of a rule make it work as a coordination device. In other words, rules act as external correlation devices and create a cognitive salience on the wanted outcomes (*ibidem*).

The framework of rules-in-equilibria is handy for casting new light on the TWS vs CWS debate. Indeed, the institutions-as-rules accounts once established the necessity to sanction monopoly does not provide any particular insight on how to do it. Nonetheless, since abusing monopoly is a dominant strategy in market interactions, the institutions-as-equilibria is inapplicable. On the contrary, rule-in-equilibria shows why CWS is more effective in aligning incentives between market operators toward fairer exchanges providing an effective solution to the social dilemma connect to monopolistic behaviours, and we will show why in the following sections.

4. The Monopoly Prisoner's Dilemma: The Distinctive Social Dilemma the MnM Approach Illuminates

A Social dilemma is a social interaction where individual maximizing behaviour leads to Pareto sub-optimal equilibria in the strong sense that each agent would be better off in a different equilibrium

⁹ This reduction affects those directly involved in the exchange and other agents involved in institutional enforcement.

(eg. Schulz, Albers and Mueller 2012). The Prisoner's Dilemma is the epitome of this situation. Both prisoners would be better off if they kept their mouths shut, but because neither can commit to do so, they both end accusing the other and end serving the maximum. Solutions to this dilemma include the existence of informal or formal institutions (the gang threatening them or their families or 'snitches get stiches', their lawyers being partners of the same law firm) and the internalization of social norms (eg. 'I aint no snitch'). Of course, these solutions are typically complementary rather than alternative.

The MnM approach allows us to identify the distinctive prisoner's dilemma actors with market power face and to show that the consumer welfare standard can solve this dilemma while the total welfare standard cannot. We achieve this result in three main steps.

First, we describe the fundamental problem of exchange that motivates the existence of an institution to support cooperative behaviour using an Edgeworth Box. Second, we identify the conditions the CWS and the TWS need to satisfy to be a rule in equilibrium. Third and finally, we show that only the CWS standard has this property.

The Edgeworth-box model is a simple but effective analytical tool to illustrate the social dilemma in a barter illuminated by the MnM approach. Indeed, this model can be easily adapted to describe the tension between the interdependent strategic actions of two agents acting simultaneously as consumers and monopolistic producers. We use it to show the following: perfect information is sufficient to align the incentives in a market exchange between two monopolist producers, who are simultaneously consumers of each other's production. Indeed, symmetrical market power leads to a Pareto-optimal allocation that maximizes total welfare (model 1). However, by introducing information asymmetry regarding the other actor's production, the model converges to a suboptimal allocation (models 2 and 3). This leads to two fundamental conclusions: first, actors are trapped in a prisoner's dilemma situation, and second, it is not possible to maximize total welfare without maximizing the utility of the actors as consumers,

In its standard neoclassical formulation, this model depicts an exchange economy comprising only two commodities, randomly allocated between two consumers. The indifference curves are convex to their respective origins, assuming that the additional consumption of one good leads to diminishing utility. Irrespective of the initial distribution, the two consumers can enhance their utility through exchanges, converging toward a Pareto-optimal distribution along the contract curve, determined by the initial endowment (Humphrey 1996).

This simple setting proves particularly useful in our examination due to two crucial characteristics. Firstly, agents are not mere price takers; instead, their interactions shape the marginal rate of substitution. Secondly, and of utmost importance, this model acknowledges the existence of power

asymmetry within markets, a critical aspect in discussing antitrust issues. Consistently with the connection between consumer markets and principal-agent relationships outlines above, both crucial characteristics can be expressed thanks to the concept of a hidden action the agent/producer can take to the detriment of the principal/consumer.

We can provide a simple example based on the classical Robinson Crusoe economy to clarify our point. On a small island, there are only two agents, Robinson (R) and Friday (F). They control the production of only one resource, water (X1) and coconut (X2), respectively. They manage the production of two distinct resources: water (X1) and coconuts (X2), respectively.

Given:

Identical utility described by the same Cobb-Doglus function:

$$U_R = U_F = X_1^\alpha * X_2^{1-\alpha} ; \text{ with } \alpha = 1/2$$

Marginal rate of substitution identical between the two agents:

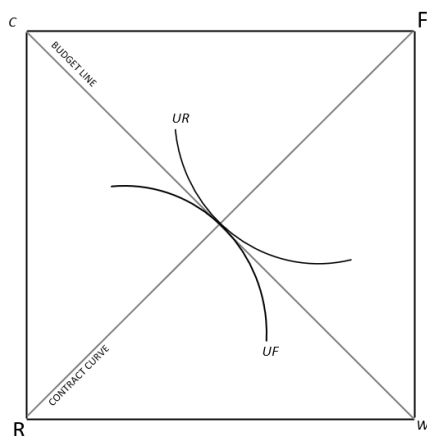
$$MRS = MU_{X_1} / MU_{X_2}; \text{ MRSA} = \text{MRSB} \Rightarrow X_2^A / X_1^A = X_2^B / X_1^B$$

The budget line is described by:

$$(\Omega X_1 - \omega X_1, \Omega X_2 - \omega X_2)$$

Based on this model description, if Robinson and Friday invest the same level of effort into acquiring the resources under their exclusive control, the trade would equal the distribution of both water and coconuts. To illustrate, we consider a scenario where Robinson and Friday each gather 10 units of their respective goods in a single workday. In this case, the initial allocation would be $\omega_R = (10, 0)$ and $\omega_F = (0, 10)$. Through exchange, they would progress towards a distribution of $\omega_R = (5, 5)$ and $\omega_F = (5, 5)$, reaching an equitable distribution of the resources (Fig.1).

Figure 1: Box in case of perfect information



Even when the initial allocation is not symmetrical, trade would still lead to an even split of goods. For instance, let's imagine that Friday only manages to collect 6 units of its controlled good due to an unusually high population of coconut crabs. In such a scenario, the final allocation would become $\omega_R = (5, 3)$ and $\omega_F = (5, 3)$.

Significantly, within this framework, the interactions between two agents with mutual monopolistic control consistently lead to an equal distribution of both resources. This result overcomes the issue of power asymmetry deriving from endowment disparity, as found in the classical Edgeworth box model presentation. The solution not only ensures respect for egalitarian concerns but also is not affected by Deadweight loss. Indeed, in order to reach a Pareto optimum two monopolists exchange all the goods that they are able to produce. However, it is crucial to underline that this scenario remains valid solely in the case of perfect information, ensuring the avoidance of cooperation problems among agents.

In fact, where agents lack knowledge about each other's total production capacity, establishing and adhering to a specific rule is essential to overcome the potential cooperation-related dilemma. As soon as Robinson is unable to tell whether Friday's harvest was poor due to coconut crabs or to the latter's low effort, cooperation is jeopardized. Indeed, Friday may seek to manipulate information about his production to artificially inflate the value of coconuts in their exchange.

To address the strategic interaction problem that emerges when combining monopoly and imperfect information, it becomes imperative to introduce the potential for agents to engage in non-cooperative behaviours, yielding higher utility levels while negatively affecting others. Indeed, the core issue of monopoly lies in the capacity to obtain significantly greater gains than achievable in states of perfect competition equilibrium at the expense of others. Precisely for this reason, a widely shared consensus exists regarding the importance of effective antitrust regulation.

A revision of our initial example is necessary to address this issue clearly and compellingly. Let's consider a scenario in which Robinson significantly deviates from the customary portrayal of being resourceful, resilient, and benevolent. In this alternative narrative, Robinson displays a distinctly self-centred and imperialistic stance. His motivations revolve around personal gain, not necessarily framed in a mutually advantageous relationship with Friday, aiming to enhance their quality of life on the island. On the contrary, he contemplates exploiting the situation.

To allow Robinson to follow this new malicious attitude in our model, we will enable him to perform a hidden action. Concealing part of his endowment, therefore making only a fraction of his labour fruits available for trade, he manages to tilt the exchange to his advantage. Indeed, Robinson's utility depends on the combination of hidden resources and those made available by the exchange; however,

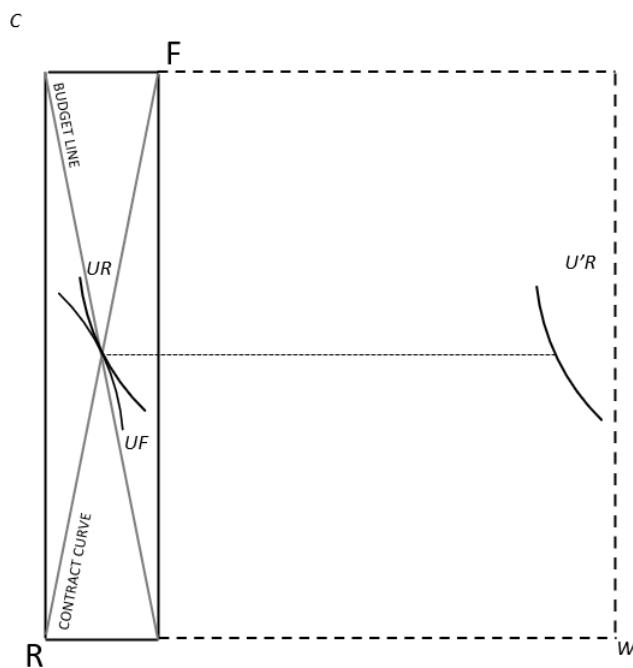
as usual, the exchange rate will depend upon the relative scarcity of the tradable resources perceived simultaneously by both actors.

Let us revisit the scenario of our initial example, wherein Robinson was able to gather 10 units of water and Friday 10 units of coconut. As demonstrated earlier, in the initial model, the equilibrium point is attained through an equitable distribution of resources, yielding $\omega_R = (5, 5)$ and $\omega_F = (5, 5)$. However, in the current context, Robinson can employ a hidden action, concealing a portion of his endowment to manipulate the exchange rate in his favour. The question arises: How much will he cover?

To maximise his utility, Robinson must consider two factors. Firstly, in order to achieve the most advantageous exchange, he should hide as much as is feasible. Secondly, considering the utility functions' characteristics, no party is willing to accept an exchange outcome where they possess 0 units of a particular good. Consequently, the minimum amount for market participation is 2 units of goods. This threshold ensures the retention of at least 1 unit of each good following the exchange process. Opting for a market entrance with only 1 unit would inevitably unveil the existence of additional stashed units, from which he would derive utility.

In this revised scenario, where Robinson brings only 2 out of the 10 units produced to the market, the graphical representation of the Edgeworth box takes on the following configuration (see Fig. 2).

Figure 2 Box in presence of information asymmetry and unilateral hiding



The shift in U'R from UR is attributed to Robinson's augmented utility resulting from hidden goods produced but not introduced to the market. The equilibrium point is reached in an unequal distribution, wherein $\omega_R = (9, 5)$ and $\omega_F = (1, 5)$. This consequence stems from Robinson's market manipulation: by hiding parts of the fruits of his labour (the hidden action), Robinson manages to bend the MRS to his advantage, passing from the original MRS of 1 to an astounding new MRS of 5/1.

Acknowledging that the Edgeworth box adopts a distinct configuration due to reduced tradable goods (contrived scarcity) is crucial. A narrower segment of the box delineates the actual market perceived by both agents (bold line), while a broader region is exclusive to Robinson's perception (bold line in conjunction with the broken line), from which he derives his supplementary utility. This differentiation emerges as a consequence of the asymmetry introduced by market manipulation.

. As in this example when we contemplate antitrust institutions, we often envision the presence of one or more dominant agents exploiting their power to enhance their utility at the expense of others. This is the traditional focus on one market at the time that is typical of antitrust analysis.

However, to grasp why rational agents are willing to implement a CWS institution and ensure its effectiveness, it is more insightful to ponder a scenario where both parties function as monopolists and possess a symmetrical informational advantage concerning the production of the goods under their control.

Returning to our example, imagine that Friday is not the naïve and faithful simple as in the original story. Quite the opposite, he is acute and experienced in dealing with deceitful merchants. Distrustful of Robinson's claims about his daily water production, he replicates Robinson's reasoning and concludes that he is better off by 8 out of the 10 units he produces.

With this in mind, we can revisit the specifications of our model, accounting for the potential for both actors to engage in hidden actions.:

Identical utility described by the same Cobb-Douglas function:

$$UR = UF = (X_1 + X_{H1})^\alpha * (X_2 + X_{H2})^{1-\alpha}; \text{ with } \alpha = 1/2$$

Marginal rate of substitution identical between the two agents :

$$MRS = MU_{x1}/MU_{x2}; \text{ MRSA} = \text{MRSB} \Rightarrow (X_2^A + X_{H2}^B)/(X_1^A + X_{H1}^B) = (X_2^B + X_{H2}^A)/(X_{1B} + X_{H1A})$$

That, considering the respective monopoly, can be simplified in:

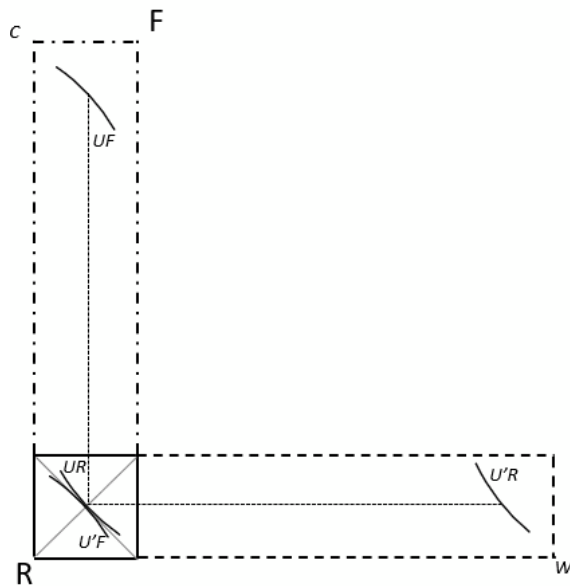
$$MRS = MU_{x1}/MU_{x2}; \text{ MRSA} = \text{MRSB} \Rightarrow X_2^A/(X_1^A - X_{H1}^A) = (X_2^B - X_{H2}^B)/X_1^B$$

The budget line is described by:

$$(\Omega_{X1} - \omega_{XH1} - \omega_{X1}, \Omega_{X2} - \omega_{XH2} - \omega_{X2})$$

The graphical representation is the following (Fig. 3):

Figure 3: Box in presence of information asymmetry and bilateral hiding



As the previous example, the shifts in $U'R$ from UR and in $U'F$ from UF derive from the augmented utility resulting from hidden goods produced but not introduced to the market. Notice that the box acquires an even more complex structure, in which a narrower segment thereof delineates the actual market perceived by both agents (bold line), while a broader region is exclusive to Robinson's perception (bold line in conjunction with the broken line) and another one represents the Friday possible market perception (bold line in conjunction with the dotted line). Given the construction of the Edgeworth box, the MRS obtained is 1/1, and the equilibrium imply the following distribution: $R=(9,1)$ and $F=(1,9)$. This division of resources represents an equivalent allocation but also a Pareto inferior equilibrium compared to the one achievable if no one performs hidden action. Indeed, given the rate of substitution of 1, both agents are willing to continue exchange until the equal distribution of (5,5) is reached. feasible, the Pareto optimal allocation requires sharing information about their true production level, which requires addressing the bilateral moral hazard. Indeed, despite actor's willingness to exchange more, Robinson and Friday face a social dilemma. Even when one actor is willing to exchange additional units of goods, under standard rationality assumptions, the other consistently refrains from revealing any further units of his hidden endowment to manipulate the marginal rate of substitution in his favour. This situation means Robinson and Friday are stuck in a suboptimal equilibrium.

We can examine this problem by looking simultaneously at individual preference order and total welfare in a mirrored principal-agent problem. Based on our analysis, three allocative results are particularly interesting in this regard. In one case, both actors operate as honest agents of the other

and perform the maximum possible effort in production and exchange (bringing all the units to the market). In this situation, they reach an equilibrium that is a Pareto optimal level of individual benefit. In fact, higher levels of individual utility cannot be obtained through exchange without at least one actor behaving dishonestly (hiding units). This leads to two main scenarios.

In the second scenario, one of the two actors continues to exercise maximum effort while the other exerts the minimum possible effort (hiding all the possible resources), knowing that he would still profit from a favourable exchange rate. In this case, the result is an extremely unequal distribution, in which the betrayer obtains the maximum possible amount of the goods he does not control in exchange for the minimum possible fraction of his production.

Lastly, there is the case in which both decide to perform the minimum possible productive effort. In this case, they reach a specular distribution, but the allocation for the single agent is extremely unbalanced toward the good he controls. This implies that both have suffered a sharp decrease in their utility with respect to the allocation, where both exercise maximum effort.

More precisely, actor one Robison produced 10 units of water agent and actor two Friday produced 10 units of coconut.

Given identical utility described by the same Cobb-Douglas function:

$$UR = UF = (X1 + XH1)^\alpha * (X2 + XH2)^{1-\alpha} ; \text{ with } \alpha = 1/2$$

If both perform max effort (max,max), assuming that utilities are comparable:

$$MRS=1; \omega_R = (5, 5) \text{ and } \omega_F = (5, 5); UR= 5.0 \text{ UF}=5.0; \text{ Total welfare } 10$$

If R perform min and F max effort (min,max):

$$MRS=1/5; \omega_R = (9, 5) \omega_F = (1, 5); UR= 6.7 \text{ UF}= 2.2; \text{ Total welfare } 9$$

If R perform max and F min effort (max;min):

$$MRS=5/1; \omega_R = (5, 1) \omega_F = (5, 9); UR= 2.2 \text{ UF}= 6.7; \text{ Total welfare } 9$$

If R perform min and F min effort (min,min):

$$MRS=1; \omega_R = (9, 1) \omega_F = (1, 9); UR= 3.0 \text{ UF}= 3.0; \text{ Total welfare } 6$$

So, from a total welfare perspective, we can order the outcomes of strategic interaction in which R and F perform max and min effort as follow:

$$(max,max) > (min,max) = (max,min) > (min,min)$$

$$10 > 9 = 9 > 6$$

From R perspective:

$$(min,max) > (max,max) > (min,min) > (max,min)$$

$$6.7 > 5 > 3 > 2.2$$

From F perspective:

$$(max,min) > (max,max) > (min,min) > (min,max)$$

$$6.7 > 5 > 3 > 2.2$$

We can examine this problem by looking simultaneously at individual preference order and total welfare in a mirrored principal-agent problem. Based on our analysis, three allocative results are particularly interesting in this regard. In one case, both actors operate as honest agents of the other and perform the maximum possible effort in production and exchange (bringing all the units to the market). In this situation, they reach an equilibrium that is a Pareto optimal level of individual benefit. In fact, higher levels of individual utility cannot be obtained through exchange without at least one actor behaving dishonestly (hiding units). This leads to two main scenarios.

In the second scenario, one of the two actors continues to exercise maximum effort while the other exerts the minimum possible effort (hiding all the possible resources), knowing that he would still profit from a favourable exchange rate. In this case, the result is an extremely unequal distribution, in which the betrayer obtains the maximum possible amount of the goods he does not control in exchange for the minimum possible fraction of his production.

Lastly, there is the case in which both decide to perform the minimum possible productive effort. In this case, they reach a specular distribution, but the allocation for the single agent is extremely unbalanced toward the good he controls. This implies that both have suffered a sharp decrease in their utility with respect to the allocation, where both exercise maximum effort.

More precisely, actor one Robison produced 10 units of water agent and actor two Friday produced 10 units of coconut.

Given identical utility described by the same Cobb-Douglas function:

$$UR = UF = (X1 + XH1)^\alpha * (X2 + XH2)^{1-\alpha}; \text{ with } \alpha = 1/2$$

If both perform max effort (max,max), assuming that utilities are comparable:

$$MRS=1; \omega_R = (5, 5) \text{ and } \omega_F = (5, 5); UR= 5.0 \text{ UF}=5.0; \text{ Total welfare } 10$$

If R perform min and F max effort (min,max):

$$MRS=1/5; \omega_R = (9, 5) \omega_F = (1, 5); UR= 6.7 \text{ UF}= 2.2; \text{ Total welfare } 9$$

If R perform max and F min effort (max;min):

$$MRS=5/1; \omega_R = (5, 1) \omega_F = (5, 9); UR= 2.2 \text{ UF}= 6.7; \text{ Total welfare } 9$$

If R perform min and F min effort (min,min):

$$MRS=1; \omega_R = (9, 1) \omega_F = (1, 9); UR= 3.0 \text{ UF}= 3.0; \text{ Total welfare } 6$$

So, from a total welfare perspective, we can order the outcomes of strategic interaction in which R and F perform max and min effort as follow:

$$(\text{max,max}) > (\text{min,max}) = (\text{max,min}) > (\text{min,min})$$

$$10 > 9 = 9 > 6$$

From R perspective:

$(\min, \max) > (\max, \max) > (\min, \min) > (\max, \min)$

$6.7 > 5 > 3 > 2.2$

From F perspective:

$(\max, \min) > (\max, \max) > (\min, \min) > (\min, \max)$

$6.7 > 5 > 3 > 2.2$

This simple analysis clarifies why individuals become entrenched in a sub-optimal equilibrium within a scenario involving mirrored monopolies and information asymmetry. Indeed, this situation exemplifies the archetypal prisoner's dilemma, where, regardless of the counterpart's actions, the only rational choice appears to be defection – minimising the controlled resource in the market or exerting the minimum possible productive effort. In fact, assuming the other actor exercises maximum effort, it is better to cheat than to reciprocate (6.7 vs 5); assuming the other actor cheats, it is better to reciprocate than to exercise maximum effort (3 vs 2.2).

Reframing the monopoly problem within the prisoner's dilemma framework doesn't immediately offer clear solutions to the CWS vs. TWS debate. As demonstrated, from a total welfare perspective, the cooperative solution is preferable to anyone contemplating defection. Nevertheless, we can draw a relevant conclusion. CWS and TWS identify the same preferable outcomes. Indeed, when the analysis is conducted over two or more markets, the only outcome maximising the total welfare implies that both actors simultaneously benefit from the maximum possible utility as consumers. However, it is important to notice that it is valid only if we consider Cobb-Douglas with constant or diminishing returns of scale. Indeed, in the case of increasing return the Total welfare analysis is indifferent between cooperation scenarios and a single defection (a mathematical example is provided in appendix).

Consequently, it can be inferred that CWS presents itself as a more coherent framework. This conclusion is drawn from the fact that while the sequence of preferred outcomes remains consistent regardless of the adopted utility function, the same does not hold true for Total Welfare. In specific circumstances, Total Welfare is unable to identify a singular optimal outcome distinctly.

Even without taking into account this last observation, our analysis fundamentally reshapes the boundaries of the CWS vs. TWS debate. Given that the two standards can be considered equivalent from an ideal theory point of view, the discourse necessitates a paradigm shift. The relevant matter now revolves around discerning which of the two, CWS or TWS, more effectively serves as a robust foundation for antitrust institutions. In other words, the pertinent inquiry lies in assessing which standard is superior for aligning incentives towards cooperative behaviours within a market economy.

To address this issue, in the next section, we will illustrate why consumer welfare standards can be seen as a rule in equilibria and, therefore, an effective and resilient institution.

5. Solving the Monopoly Prisoner's Dilemma With a Rule in Equilibrium

Our examples illustrate that a market economy analyzed with the MnM approach reveals that actors encounter a social dilemma. More precisely, they face mirrored or symmetrical principal-agent problems due to monopoly power and incomplete information about each other's production capabilities. The Pareto optimal equilibrium for each actor is out of reach unless something enables them to solve their social dilemma. Idealized institutional settings that would enable to reach Pareto optimality (perfect competition, but also bilateral monopoly with no hidden action and common ownership) are all ruled out by assumption. Reciprocity is also ruled out, as a sanctioning mechanism is required to address the hidden action problem. However, sanctioning requires detection and by assumption, the actors face a hidden action problem; this means that detection would imply that the hidden action problem is solved, which would make the sanction superfluous since self-interest would be sufficient to lead to the Pareto optimal equilibrium.

The most viable solution is the emergence of a social norm or value changing each actor's preference to develop a distaste for their own hidden action. This would allow for the establishment of a reciprocity mechanism that ensures coordination towards the Pareto optimal equilibrium. The extensive literature on inequality aversion illustrates the existence of a preference of this sort (Fehr and Schmidt 2006; Kolm 2008). Using the MnM approach, we can suggest that behind an apparent inequality aversion concerning the behaviour in relation to one market exchange, lies an evolutionary mechanism leading to the internalization of a pattern of behaviour that supports mutually beneficial MnM exchanges; in the context of our Edgeworth model, the norm could sound like this: 'thou shall not hide the fruit of your labour'.

To elaborate further on this point, we can take into consideration the prisoner's dilemma derived from our Edgeworth model (for simplicity, the pay-off refers to the last example characterized by $UR = UF = UR = UF = (X_1 + X_{H1})^\alpha * (X_2 + X_{H2})^{1-\alpha}$; with $\alpha = 1/2$ and 10 unit of production for each good) (Fig:4). The action to Cooperate (C) imply bringing all the goods to the market the action to Defect (D) indicates hiding 8 unit of goods (Fig. 4).

Figura 4 Prisoner's Dilemma

	C	D
C	5.0, 5.0	2.2, 6.7
D	6.7, 2.2	3.0, 3.0

As we know, there is no possible solution to a prisoner dilemma. Indeed, the game does not present multiple equilibria; only one equilibrium exists in the one-shot prisoner's dilemma (DD) (3,3). Therefore, no external coordination device can solve the strategic interaction tension. In other words, any prescription to cooperate does not help Robinson and Friday reach the Pareto superior outcomes since the dominant strategy is to defect.

However, many social theorists have pointed out that institutions improve actors' performance in games where individual have an incentive to deviate from the socially optimal outcome (Guala 2016). This is possible through a sanctioning mechanism strong enough to put into question the opportunity cost of non-cooperative behaviours. The sanctioning mechanisms can be modelled as a δ parameter representing the modification of games pay-off introduced by the institutions. This parameter can take the shape of a negative incentive representing the expected cost of the sanction associated with the selected unwonted strategies.

To introduce a sanctioning mechanism in our example, imagine that a third person, Robina, arrives on the island. Robina is an exceptionally capable, resourceful, and independent woman. She can gather both coconuts and water efficiently, making her uninterested in trading with Robinson and Friday. Furthermore, Robinson and Friday noticed her remarkable skills in acquiring all the necessary goods in less than a day's work. Therefore, they propose an agreement to address their social dilemma by asking Robina to oversee their actions.

The agreement functions as follows: To incentivize supervision, if Robina discovers that one of the two, Robinson or Friday, is hiding a portion of the goods from the market, she can claim the entire hidden amount for herself. However, she does not have enough time left from her gathering activity to supervise both individuals simultaneously. This implies that Robinson and Friday expect to be caught hiding only with the probability of $\frac{1}{2}$. Therefore, the cost of the potential sanction, represented by the delta parameter, is equal to half of the hidden endowment, which is $0.5 * X_H$.

Now, we can redraw our example as follows (Figure 5):

Figure: 5 Prisoner's Dilemma in case of sanction

	C	D
C	5, 5	2.2, $6.7 - \delta$
D	$6.7 - \delta$, 2.2	$3 - \delta$, $3 - \delta$

Or doing the proper calculation in utility terms (Figure 6)

Figure 6: Prisoner's Dilemma transformation in a Coordination Game

	C	D
C	5, 5	2.2, 5
D	5, 2.2	2.2, 2.2

The Prisoner's Dilemma has been transformed into a Coordination Game with peculiar characteristics. Firstly, all outcomes are Nash equilibria. Secondly, both actors are indifferent to which strategy to select, even if they know what the other will do. However, they are not indifferent between the diverse equilibria; indeed, their respective ordinal utilities can be expressed as follows:

For (R): $CC = DC > CD = DD$

For (F): $CC = CD > DC = DD$

As shown, they are indifferent between cooperation and defection but consistently prefer that their counterpart cooperate. As a result, the nature of the social problems they face has evolved. Thanks to the institution, achieving the Pareto-superior equilibrium (C, C) (5, 5) is now possible. However, they still need to address a coordination problem to converge to this favourable outcome. Generally speaking, they must devise a way to avoid the adverse scenario where both defect, coordinating their actions to reach the social optimum where both cooperate.

It is relevant to notice that the institution, along with introducing a sanctioning mechanism, also created a behavioural prescription ('thou shall not hide the fruit of your labour') that is the logical antecedent for the application of the sanction. This prescription can serve as a coordination device for Robinson and Friday. Indeed, adhering systematically to this rule allows them to reach the Pareto-optimal equilibrium consistently, avoiding the undesirable outcomes resulting from double defections. In simpler terms, the actors want to follow the rule to prevent the unwanted outcome resulting from a coordination failure¹⁰. Now, it is possible to understand why, in a mirrored monopoly with information asymmetry, it is rational for actors to establish a rule that solves their social dilemma through sanctions and follow the prescribed behaviours. For this reason, we can define "do not hide anything" as a rule in equilibrium. However, it's essential to note that, on one hand, the rule allows the establishment of a reciprocity principle. On the other hand, the existence of this rule is also supported by reciprocity itself. Indeed, the rule in equilibrium is sustained over time only if reciprocity underpins the expectation of cooperative behaviours from other actors. In a situation where, despite the norm, actors consistently defect, the expectation supporting the institution will

¹⁰ The advantage of "not hide anything" as a coordination device is a discursive simplification of the possibility of formally solving the game through a correlation device that ensures (C, C) as correlated equilibrium. On this topic and mathematical demonstration, see (Guala and Hindriks 2015; Hindriks and Guala 2015; Guala 2016; Humann 1974)

weaken, leading to a gradual institutional transformation known as "displacement" (Streeck and Thelen, 2005).

Our argument can be connected to a specific institutional concept called the 'Prisoner's Dilemma Rule' (Ullmann-Margalit 1977). Ullman-Margalit explains that in situations where individuals must decide whether to cooperate with each other or betray their partner, all while lacking knowledge of the other actors' choices, the only way to solve the social dilemma is a 'Prisoner's Dilemma Rule': 'Thou shall act in the interest of the other'. The author's insights revolve around the idea that these rules emerge organically as solutions to complex social interactions to address uncertainty and undesirable individual outcomes.

It may seem paradoxical that it is rational for an individual to follow this rule. However, we know that individuals prefer a situation where all participants, including themselves, adhere to the rule, rather than a situation where the rule does not exist. In other words, the more explicit for of the rule is: 'Everyone, thou shall act in the interest of the other'. Notably, this is nothing else but our formulation of the Golden Rule, a cornerstone of moral discourse, formulated in the Gospel of Matthew (7:2) as 'In everything, do to other what you would have them do to you'.

The generalized adherence to the norm implies that the compliance of others outweighs the costs of adhering to it. Therefore, it is rational to seek an effective sanctioning institution. Once the sanctioning is established, it becomes rational to follow the prescribed behaviors, given the expectation that others will do the same. Coleman provides similar insights: rational individuals in a Prisoner's Dilemma situation place a higher value on controlling their counterpart's actions compared to controlling their own actions (1994). This creates an opportunity for the creation of an institution that replicates the exchange of control over actors' actions, and it is perfectly rational in terms of strict utility maximization. Fabbri, Rizzolli and Maruotti (2020) use a similar approach to explain the spontaneous emergence of property as a convention that solves a Hawk-Dove game.

Formally, the expected utility of actor 1 is higher in a situation where he can constrain cooperation by actor 2, and actor 2 makes a random choice between imposing to actor 1 cooperating or defecting. Indeed, this is superior to a situation where actor 1 is free to choose their conduct but cannot bind the counterpart's strategy.

In the standard prisoner's dilemma situation, where actors can control their own actions, they typically both decide to defect while the counterpart randomizes their behaviour:

$(DC)*0.5 + (DD)*0.5$, which, following the payoff in Figure X, equals 4.6.

However, in a prisoner's dilemma where they can compel the counterpart to cooperate by conceding control over their own actions, while the counterpart still randomizes their behaviour:

$(DC)*0.5 + (CC)*0.5$, which, following the payoff in Figure X, equals 5.

Ultimately, a clear feature of the Prisoner's Dilemma Rule and of its cognates is that the institution is created out of sheer self-interest and, once established, it aligns individual incentives towards the prosocial behaviour, thereby solving the Prisoner's Dilemma.

Also our solution is clearly rooted in methodological individualism. Self-interested actors have reason to accept to follow the rule 'thou shall not hide the fruit of your labour' under the condition that also the other actors involved follow it. This rule is essentially an interpretation of the principle 'Thou shall act in the interest of others' within our specific scenario.

The next step of the argument consists in exporting the findings of the MnM analysis of the mirror principal-agent problem faced by Robinson and Friday in a more familiar market economy. In this context, the question in need of an answer is whether formal institutions focusing on the market of coconuts separately from the market of drinkable water (and vice versa) and, by extension, on any other exchange market in the economy, should choose to follow a total welfare standard or a consumer welfare standard in order to contribute to the solution of the Monopoly Prisoner's Dilemma.

The starting point is to turn the rule 'thou shall not hide the fruit of your labour' in a more general statement. One way to do this is by exalting effort, productivity, and merit in a competitive environment. It is apparent that this is the world we live in.

So far, we have formulated producer-centric versions of the norm to be followed. The real test is formulating the norm in terms of the interest that the norm is meant to achieve. In fact, the TWS version of the norm would sound like this: 'thou shall contribute to the common weal'; accordingly, actors in the role of consumers have an indirectly recognized protected interest in so far as the outcome is the maximization of total welfare. Instead, the CWS version of the norm would sound like this: 'thou shall contribute to the weal of your consumers'. Accordingly, the purpose of the institution is to make sure that everyone, when acting as producers puts the interest of their consumers first. The interest of the consumers is central to the institutional practice. At most, one can say that the interest of consumers in one market allows for the functioning of a system of cooperation. And yes, this system of cooperation, if the conditions of the First Welfare Theorem are satisfied, leads to a market economy that achieves a Pareto optimum.

How can we adjudicate between these two institutional alternatives? In two ways. First, from a theoretical point of view, one can show that the TWS version of the norm is lacking in comparison of the CWS version of some of the properties of a good institution, in particular in terms of enforcement and, crucially, in terms of rule-in-equilibrium.

After having elaborated on these points, the article offers real-word evidence of CWS-like normative ideas from both economic literature and real institutional practice. On these grounds, one can take seriously the idea that the CWS is not a proxy of the TWS, but it is a better institution for the real

world, but also – and this is crucial for our understanding of market institution – for idealized institutional settings with perfectly rational and self-interested agents.

As discussed above, two important determinants of a good institution are specifying the conduct to be performed clearly and a motivating sanction in favour of the desired behaviour. Let us concede that both TWS and CWS can offer a clear producer-centric norm of conduct. Be this as it may, it is apparent that the CWS is easier to apply in practice. The antitrust literature, in fact, has long had to reconcile the insistence of economic theory on total welfare even in partial equilibrium settings with the resilience of the consumer welfare standard in legal practice. The solution was to claim that the CWS is a proxy of the TWS and that the use of former should be adopted “even if the overall objective is to maximize total surplus” (Farrell and Katz 2006, p. 23). In particular, even scholars committed to the TWS as a matter of economics admit that in terms of enforcement, the CWS is superior (Hovenkamp 2019, pp. 107-8).¹¹

The MnM approach allows the elevation of the CWS above the status of proxy of the TWS. CWS is the content of the norm self-interested actors would choose to establish a market-based economic system. This is because the MnM makes explicit another important requirement of institutions for market exchanges as a consequence of the identification of a particular type of social dilemma, the Monopoly Prisoner’s Dilemma (MPD). As seen, the solution of every Prisoner’s Dilemma, including the MPD, requires the adoption of a norm that specifies that the actor has to behave in the interest of the other actor.

The CWS can be formulated in these terms easily. In fact, it has been long formulated in those terms. As noted in Section 2, Adam Smith already did it. More recently, the more sophisticated literature on the concept of consumer sovereignty did the same: the consumer is sovereign, the producer is subject (seminal, Hutt 1936, 1940; see also Hayek 1933: 214-7,¹² Mises 1996 [1963]: 270, Lerner 1972, Buchanan 1988, Persky 1993, Lowery 1998). Legal systems adopting a consumer welfare standard do it too (Esposito 2022: especially 176-180). Traces of the same idea can be found in idiomatic expressions and sayings; in particular, the expression ‘the consumer is always right’ can be found in languages of Latin origin such as French, Spanish, Portuguese, Italian, but also in Arabi, Russian, Korean, and Mandarin. Tellingly, German and Dutch use the expression ‘the consumer is king’ and Japanese goes as far as ‘the consumer is God’. Accordingly, our use of the rule-in-equilibrium approach is robust also from the perspective of common-sense ontology (Kriegel 2011; Sugden 2015).

¹¹ In legal scholarship, a similar view is defended as a general justification for legal normativity. In a nutshell, the idea is that by following legal norms, one is capable of complying with the demands of morality better than by trying to act morally in the first place (Raz 2006; Shapiro 2011). For a critical attempt to reconcile this perspective with the rule-in-equilibrium approach, see Sardo and Esposito (2019) (using a framework similar to Hédoin 2019).

¹² Hayek was Hutt’s mentor at the London School of Economics.

The point can be formulated also in the following terms. It has been recently stressed that, contrary to the common assumption that efficiency is different from and in conflict with moral standards, that both the TWS and the CWS rest on equality norms condemning a monopoly, but only the latter can be framed as the content of a reciprocity norm (Esposito 2023). The TWS rests on the norm that an institution has to show equal respect to producers and consumers, so that it cannot count more the gain (loss) of one or the other; still, monopoly is bad because it reduces the resources available to everyone. The CWS rests on the norm that every actor is equal to everyone else because in their role of consumers they are sovereign and in their role of producers they are subject. A limit of the TWS equality norm in comparison to the CWS equality norm is that the former presupposes the existence of the institution meant to enforce the TWS, whereas the CWS equality norm is the institution that enforces the CWS because it is a rule in equilibrium.

6. Conclusions

The economic exchange is a central form of collaboration. This article uses a framework of analysis that focuses on the connection between two partial equilibrium settings (micro-in-macro approach). The MnM approach allows us to identify a central social dilemma in economic contexts, the Monopoly Prisoner's Dilemma: everyone wishes to benefit from other's competitive behaviour while acting as a monopolist.

To solve this social dilemma, actors must perceive that it is in their self-interest that no one acts as a monopolist. Once they perceive it, an institution can emerge to solve the Monopoly Prisoner's Dilemma. To be a rule-in-equilibrium, this institution must put the interest of actors in their capacity of consumers first. In other words, partial equilibrium settings are to be understood as principal-agent relations where the consumer is the principal and the producer is the agent. Ultimately, this boils down to a rich notion of consumer sovereignty. Only in this way, the institution can emerge according to an explanation that is compatible with methodological individualism.

In terms of welfare standards for the governance of market exchanges, the implications are clear and conclusive: the CWS is a rule-in-equilibrium; the TWS is not. Accordingly, the CWS is not used for antitrust enforcement as a proxy of the real economic rationale of antitrust as a market institution, namely the TWS.

In light of the above, social scientists, and in particular economists, committed to methodological individualism have the following choices: first, accepting that a market is allocative efficient when it maximizes consumer welfare; second, insisting on the total welfare standard, and abandoning methodological individualism; third, working with a conceptual framework that is incoherent at the foundational level.

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