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János Kornai, the Austrians, and the political and economic analysis of socialism

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Abstract
What is the relationship between central planning, pervasive shortages, and soft budget constraints under socialism? In this paper, we address this question by exploring the evolution of János Kornai's work on the operation of real-world socialism. In doing so, our goal is to reframe Kornai's contributions to the political economy of socialism by focusing on the epistemic conditions under non-market decision making. From this perspective, we argue that the dysfunction facing socialist economies is not one based fundamentally on a misalignment of incentives in enforcing hard budget constraints and eliminating shortages. Rather, soft budget constraints are a *consequence* of competition between firms in a non-profit setting, utilized as a means to monetize the control over state-owned resources through the creation of pervasive shortages.

Keywords János kornai · Political economy · Socialism

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> And now comes an astonishing inference. Equilibrium is reached in both systems so long as certain rules are adhered to. Indeed, under a given optimum criterion and other conditions, both systems may arrive at an optimal state. This statement can be demonstrated and proven mathematically.
>
> The similarity perplexed me. Was it then immaterial whether we lived in a centralized or a decentralized economy, under capitalism or communism? Or had the perplexing similarity arisen because both models overlooked the very attributes of real, living economic systems to explain the difference between actual capitalism and actual socialism—a living market economy and a living command economy?

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János Kornai (2006, p. 181).

1 Introduction

It is no exaggeration to say that János Kornai is one of the most important economists in the field of comparative economic systems since the last quarter of the twentieth century. His pioneering work on the over administration of centrally planned economies, the soft budget constraint, and the analysis of the shortage economy opened up a window to the operation of real-existing socialist economies that previously was perceived only dimly by scholars working in the field. At a time when the theoretical case for market socialism had become orthodoxy, Kornai's empirical assessment of the shortcomings of central planning in Hungary made him a "lone wolf" behind the Iron Curtain. Coincidentally, his "naive" empirical observations of real-world socialism in practice paralleled the critiques being delivered by economists in the West, including economists working in the public choice tradition, such as Nutter (1962, 1968) and Roberts (1971). And, his methodological critique of the theoretical foundations of market socialism later in his career also would parallel the insights of the Austrian School of economics, including Ludwig von Mises and F.A. Hayek. The intimate intellectual connection between the work of Nutter and Roberts as well as that of Mises and Hayek has been discussed in works such as Lavoie (1985), Boettke (1990, 1993) and Wagner (1989, 2016). In this essay, however, we will detail the evolution of Kornai's ideas and compare and contrast them with the earlier critical arguments in the analysis of socialist economies by Mises, Hayek and other Austrian economists. In doing so, our goal is to reframe Kornai's contributions to political economy through the theoretical lens of *epistemic institutionalism* (Boettke 2018). According to epistemic institutionalism, the role of institutions is not only to structure the incentives that actors face in their decision-making, but also to generate the *context-specific* knowledge and expectations that guide decision makers. From that perspective, the dysfunctions of socialist economies are not matters of the "hardness" of budget constraints per se, but rather are consequences of the fact that competition between firms in non-profit settings generates criteria of "success" and "failure" (thus the basis for "survivorship") *differing systematically* from those emerging among firms competing within for-profit settings.

Our contribution in this paper is twofold. First, we contribute to the literature that has extended the insights of János Kornai with respect to the relationship between centralization, soft budget constraints, and pervasive shortages in the operation of real-world socialist economies (Gomulka 1985; Vahabi 2001, 2014; Gregory 2019; Andreff 2020). Indeed, other scholars have highlighted that Kornai's work has emphasized the endemic and systemic nature of the dysfunctions associated with socialism. However, the main thrust of that literature has been to focus on the *misalignment of incentives* endemic not only to the bureaucratic administration of the economy but also plaguing economic and political transitions from socialism to capitalism.[1] Our contribution builds more directly on Leeson (2008) and Vahabi (2019), who have highlighted that Kornai's insights have paralleled those of Mises and Hayek, particularly with respect to the impossibility of economic calculation under socialism and their misgivings about equilibrium theorizing. Our point

[1] For recent examples of work that applies Kornai's theoretical work to understanding the process of economic reform and transition, see Perényi, Esposto and Bamforth (2020) and Zhou (2020).

here neither is to deemphasize nor detract from the importance of correctly aligning incentives in order to allow individuals to realize the gains from productive specialization and exchange. Rather, it is to render explicit, or bring to the foreground of analysis, an implicit, though neglected, theme in Kornai's framework, which is an appreciation of the *epistemic role* that alternative sets of institutions play in generating alternative patterns of contextual knowledge and expectations within which individuals act and, thus, the coordination properties of alternative institutional arrangements under capitalism and socialism.

That brings us to our second contribution, namely to the literature on the economics of property rights, focusing particularly on their allocation in non-market settings. From a property-rights perspective, the "distinction between private and public sectors is not to be equated with that between the presence and absence of private property rights. Such rights are necessarily present in both systems" (Barzel 1997, p. 138). Rather, the distinction lies in the degree of residual claimancy, or the manner in which a particular institutional setting ties consequences to the actions of decision makers. For example, Levy (1990) as well Shleifer and Vishny (1992) explain that, because central planners and managers of state-owned firms under socialism are not *de jure* residual claimants on the values of outputs produced in the official economy, they are incentivized to exercise political discretion in the allocation of property rights, namely to create pervasive shortages in order to monetize the economic rents derived from the exchange of de facto private property rights in the black market. Thus, the extent to which private property rights are not allocated in a negative-sum manner is contingent on (1) the degree to which parties to an exchange of property rights are residual claimants (Anderson and Hill 1983; Leeson and Harris 2018; Leeson et al., 2020), (2) the extent to which government actors credibly are constrained from exercising political discretion in the allocation of property rights (Murtazashvili and Murtazashvili 2019; Boettke 2020; Boettke and Candela 2020; Candela 2020; Cai et al., 2020, and (3) how government actors respond to misallocations of resources (see Boettke, Coyne and Leeson 2011; Leeson 2011; see also Sobel and Leeson 2006, 2007). Our contribution here is to highlight the *epistemic* function of property rights in order to understand the relationship between pervasive shortages and soft budget constraints. Precluded from obtaining the economic knowledge that emerges only in the context of private property, namely residual claimancy over economic profits and losses, central planners will act on the knowledge provided to them within the institutional setting in which they are operating, namely the ability to engage in rent-seeking. Thus, the shortage economy that pervaded real-world socialism was not explained by a failure to incentivize the enforcement of hard budget constraints per se. Rather, soft budget constraints emerged as byproducts of the hard knowledge constraint imposed by the impossibility of economic calculation under socialism.

The paper proceeds as follows. In Sect. 2, we juxtapose Kornai's work with that of Mises and Hayek, particularly with regard to the possibility of economic calculation under socialism. By doing so, we provide an intellectual tour through not only the socialist calculation debate and the debate over the economic performance of real-existing socialism, but also the theoretical advances of the Cowles Foundation with respect to general equilibrium theory and mechanism design theory, both of which were meant to provide a response to Mises and Hayek's challenge to the case for market socialism. In Sect. 3, we will return to Kornai's analysis of the realities of actual socialism. In doing so, our goal is to render explicit the epistemic problems that Kornai grappled with in his analysis of socialist economies. In the process, it is our hope that close study of Kornai's contributions to comparative political economy will enrich our understanding of the fundamental role played by private property rights, freely adjusting relative prices, the lure of profit, and the discipline of economic losses on the ability of individuals to pursue productive specialization and realize peaceful social cooperation. Section 4 concludes.

2 The epistemic nature of overcentralization in economic administration

In the aftermath of the collapse of communism and central planning in Central and Eastern Europe, one could argue that the warnings and lessons of János Kornai have been fully vindicated and absorbed into the body of economics. However, how such lessons have been filtered into our understanding of the operation of socialist economies, along with decision-making in non-market settings more generally, cannot be understood outside the context of the socialist calculation debate of the 1930–1940s. Our purpose here is not to imply that Kornai's critique of real-world socialism was a direct contribution to the theoretical debate over the possibility of economic calculation under socialism. Rather, by placing Kornai's contributions within that intellectual context, we wish to illustrate how his own insights into the economics of non-market decision-making not only paralleled public choice scholars, but also economists of the Austrian School.

Gregory (2019, p. 3) argues that Kornai's 1957 doctoral dissertation, later translated and published in English as *Overcentralization in Economic Administration* (1959), anticipated "virtually all of Kornai's later breakthroughs that made him one of the great economic thinkers of our era". Indeed, by Kornai's account of his own career looking backward, the seeds of his later work on soft budget constraints and the shortage economy were sown in that book. The central point we wish to highlight is that "*Overcentralization* showed how close a relation there was between shortage and centralization, how shortage increased the tendency to centralize and centralization induced shortage" (Kornai 2006, p. 90; emphasis in original). What, however, is the direction of causality in that relationship? We raise the question because we wish to highlight (1) the *epistemic* nature of institutions and (2) the *contextual* knowledge that emerges within market settings, and the lack thereof outside the institutional context of private property. Those points were articulated not only by Ludwig von Mises and F.A. Hayek during the socialist calculation debate, but also rearticulated by G. Warren Nutter and Gordon Tullock. Given the stated ends of socialism, namely to deliver advanced material production, to eliminate the waste and alienation characteristics of capitalism, and create social harmony, Mises argued that abolishing private property and money prices as means of achieving those ends would make economic calculation impossible. Economic calculation serves the vital role in any social system of exchange and production because it is the process by which decision makers sort among the myriad technologically feasible projects to achieve and sustain economic success. Social systems, if they are to be judged appropriately, must be able to select from menus of perceived, normatively desirable, technologically feasible projects or activities the ones that are economically viable. If not, frustration and waste are built into the system. Economic calculation is the essential tool in that process, the absence of which dooms any social system of exchange and production. "Where there is no free market", Mises ([1920] 1975, p. 111) argued, "there is no pricing mechanism; without a pricing mechanism, there is no economic calculation". Nutter, a Sovietologist, whose empirical work on the economic performance of the Soviet Union (Nutter 1962) paralleled Kornai's analysis of light industry in Hungary, later rearticulated that basic Misesian point by arguing that markets without private property are a grand illusion (Nutter 1968). Outside the context of private property in the means of production, no market in those means is possible. Without a market in the means of production, no money prices in them will emerge. Without money prices, reflecting the relative scarcities of the means of production, economic decision-makers will be unable rationally to calculate the values of the means of production in myriad alternative uses. Hayek would later expand Mises's insight by highlighting the tacit and dispersed nature of knowledge that is communicated through the price mechanism. The knowledge required to engage in economic calculation simply is not disseminated outside the context of private property (Lavoie 1985; Boettke 1998). The knowledge problem first raised by Mises, and developed further by Hayek to central planning of an entire economy, was applied more widely by Tullock to explain the epistemic limits of non-market decision-making in bureaucracies (Tullock 1965; see also Boettke and Candela 2018). The point here is that the Austrians, as well as public choice scholars influenced by that tradition, recognized that the *fundamental* problem inherent in planning in non-market settings is not merely one of aligning incentives, but one of knowledge. For even if bureaucrats are incentivized perfectly to allocate the means of production to their most valuable uses in producing final consumption goods, outside the context of private property, bureaucrats administering a centrally planned economy, by definition, cannot observe the profit and loss signals necessary for economic calculation, especially so in an ever-changing environment.

A close reading of Kornai's work, however, would seem to imply that the problems endemic to socialism are *motivational*, rather than *epistemic*. Planning under socialism is inferior to the alleged "chaos" of the market economy because of the socialism's inherent absence of incentives. Indeed, Kornai's explicit discussion of incentives under central planning would seem to reaffirm that conclusion, but he also raises an implicit point about the epistemic nature of the problems inherent in planning. As Kornai (1959, p. 72; emphasis added),

> Incentives are needed which will stimulate the personnels of enterprises, and top managements in particular, to do their utmost to serve the interests of their enterprises effectively, and thus, in the last analysis, the social interest as well. Briefly, it is necessary to connect the interests of individuals, of enterprises, and of society to each other in a harmonious whole so far as possible. *The establishment of these connexions is best thought of as occurring in a system of transmission of interests* operating through a number of gears.

What seems to be an uncontroversial claim today—that incentives are wrapped in a signal[2]—was, in the intellectual context in which Kornai was writing, quite radical in 2 respects.

First, in retrospect, what is nearly forgotten today is that one of the casualties of the socialist calculation debate was the discussion of incentives in economic analysis. For example, Oskar Lange ironically had attacked Mises's critique of socialism because Mises, according to Lange (1936, p. 55), had denied the universal validity of economic science by appealing to property rights as the institutional precondition for economic calculation.

[2] Our elaboration of Kornai, namely that incentives are embedded within mechanisms that filter and transmit dispersed and tacit and knowledge, also parallels the insights of Sowell (1980, p. 150) in *Knowledge and Decisions*: "Effective feedback does not mean the mere articulation of information, but the implicit transmission of others' knowledge in the explicit form of effective incentives to the recipients. A corporation's profit and loss statement or a baby's whimpers are such transmissions. Both galvanize people into action in response to other people's feelings, even though one is articulated and the other not. It is the effectiveness of the incentive transmission, not the explicit articulation that is crucial."

Given the equilibrium paradigm that had emerged by the 1930s in neoclassical economics, institutional analysis, and therefore discussions of incentives, had come to be defined as lying beyond the scope of economic analysis. Incentives were analogous to motivations, which were regarded as the realms of psychology and sociology. For example, Abba Lerner criticized a fellow market socialist, Evan F. M. Durbin, for having addressed the possibility of incentive incompatibilities under capitalism. As Lerner wrote:

> In this comparison we must take the theoretical system in both cases—*i.e.*, leaving apart such *sociological questions as incentive*, etc. In general Mr. Durbin refuses to discuss these matters in the article considered and he is well justified in refusing to accept in the context of the problem of economic accounting such criticisms of socialism as depend upon these considerations. He is, however, guilty of a similar sin in the opposite direction when he declares it to be a disadvantage of capitalistic production that the managers of joint-stock companies will reinvest their quasi-rents in their own enterprise, even if the yield is greater elsewhere, because by so doing they safeguard their own jobs…*This is not an accounting but a personal or sociological problem which may well be even more serious in some forms of socialist economy* (Lerner 1937 , p. 267, fn. 1; emphasis added).

What reinforced the preoccupation with equilibrium analysis and the preclusion of institutional analysis, was the rise of what Kornai refers to as the "General Equilibrium (GE) School" and economists associated with the Cowles Commission, including Kenneth Arrow and Gérard Debreu, who sought to prove the existence, stability, and optimality of general competitive equilibria. Such contributions, according to Kornai, were "*a brake on the development of economic thought*" (Kornai [1971] 1991, p. 27; emphasis in original). The purpose of economic theory, according to Kornai, is to explain and understand the reality of real-world economies, not to construct abstract and unrealistic models. Therefore, economic models cannot "*serve as a substitute for a scientific theory describing reality*" (ibid., p. 14). Economic theory without an understanding of the institutional context that structures incentives renders the operation of real-world socialist economies unintelligible.

In that context, Kornai's analysis of socialist economies in practice, with respect to their incentive incompatibilities, was quite revolutionary and ahead of its time: "*Overcentralization* brings up pointedly the problem area of incentives, which would become one of the main subjects of economics decades later" (Kornai 2006, p. 87; emphasis in original). It is easy to forget that the economist's mantra that "incentives matter" had to be resurrected by economists in the second half of the twentieth century, following the rise of equilibrium analysis and its corresponding theories of market failure and market socialism. Therefore, Kornai's institutional approach to understanding non-market decision making, as analyzed in *Overcentralization*, paralleled the revival of institutional analysis not only among Austrian economists, but also among public choice economists, such as Buchanan, Nutter and Tullock, as well as property rights economists, such as Armen Alchian and Harold Demsetz, and New Institutional economists, such as Ronald Coase and Douglass North.[3]

[3] See Buchanan (2015, p. 260), in which the following is stated: "The diverse approaches of the intersecting 'schools' must be the bases for conciliation, not conflict. We must marry the property-rights, law-and-economics, public-choice, Austrian subjectivist approaches." Indeed, Kornai himself has recognized the parallel insights to which he has drawn about the incoherence of market socialism by Mises ([1920] 1975), Lavoie (1985), and Nutter (1968), as well as the "property-rights school" of Alchian and Demsetz (see Kornai 1992, p. 500).

Secondly, by drawing our attention to the incentives operating under socialism, Kornai also alluded to the fact that alternative sets of institutions governing incentives will engender different patterns of learning. Although it is indeed the case that the influence of Mises and Hayek would become more explicit in Kornai's later work, the *contextual* nature of knowledge that emerges within different sets of institutions is implicit to Kornai's framework going back to *Overcentralization*. By rendering that underlying theme explicit, the direct connection between Kornai's analysis of non-market decision making under socialism, his work on the shortage economy, and its relation to soft budget constraints, becomes straightforward, as we discuss in Sect. 3.

One way of understanding the epistemic point alluded to by Kornai is by drawing an analogy between a telephone cord and market prices. Abolishing the ability to exchange property rights in the means of production and, hence, exchange ratios (i.e., money prices), which communicates the derived demands for capital goods from consumers' subjective valuations of final products, is analogous to cutting a telephone cord in the midst of a call between consumers and producers. Kornai alludes to how rivalrous competition between producers seeking to satisfy consumers' demands renders the centralization of production unnecessary: "In suitable conditions, competition for the orders of customers can develop into a powerful driving force. *This force is capable of replacing a considerable part of the system of centralized instructions which now regulate production together with the incentives relating to them*—and it can do so with a net gain in effectiveness" (Kornai 1959, p. 191; emphasis added). Therefore, if producers are prevented from observing consumers' valuations, transmitted to them by the price system, and communicated in the form of profit of loss signals, which is required to allocate scarce capital goods to their most valued consumer uses, then knowledge of a bureaucratic nature substitutes for economic knowledge (Kornai 1959, p. 201). That is, rather than producing to satisfy competing consumer wants, fulfillment of a production target outlined by a central planning board becomes an end in itself. Our point here is not to claim that his account of Hungarian light industry as outlined in *Overcentralization* led Kornai to abandon socialism completely.[4] Rather, what we are emphasizing is that Kornai had glimpsed a subtle, yet important lesson that paralleled what Mises and Hayek argued. First, unable to learn from the demands of consumers communicated in the form of profit and losses, managers of state-owned firms can "learn" from the only source of knowledge available to them, namely the bureaucratic directives of a central-planning board. The realm of bureaucratic decision-making must begin where economic calculation ends (see Mises 1944). "The less the reliance placed by the system on material incentives (and the less it is able to count on the enthusiasm of people)," Kornai states, "the more it will be driven to employ methods involving coercion" (Kornai 1959, p. 112). That message is not unlike Hayek's (1944) account of "Why the Worst Get on Top" in the *The Road to Serfdom*. It is in the same respect that "the expansion of the administrative machine is not a cause *but an effect: it is a consequence of a specific type of economic mechanism*" (Kornai 1959, p. 207; emphasis added). Therefore, the inherent overcentralization of a socialist economy, and the pervasive shortages and soft budget constraints characteristic of it, are *byproducts* of the knowledge generated within the context

[4] By the end of 1955, Kornai recounts in his intellectual autobiography that he had completely moved away from Marxist theory and ideology, but "went on believing for quite a while that socialism could be reformed" (Kornai 2006, p. 81). See, for example, his work with Tamás Lipták, applying mathematical analysis to theoretically examine central planning (Kornai and Lipták 1962, 1965).

of non-market decision-making, from which actors in the system learn, and to which they respond.[5]

3 Soft budget constraints or hard knowledge constraints? Kornai and the operations of centrally planned economies

By Kornai's own account, "*Overcentralization* was written by a *naive* researcher observing reality with open eyes. *Economics of Shortage* was the work of a *professional* economist" (emphasis original, Kornai 2006, p. 239; emphasis in original), in which he sought to provide a systemic analysis of the causes and effects of real-world socialism. As Kornai states, the "shortage economy is an intrinsic, *system-specific* attribute of the socialist system that reforms may alleviate but can never abolish" (ibid., p. 242; emphasis added). Economic production is an activity that takes place through time, implying that production decisions must be made prior to consumption decisions. Knowledge in the form of profit and loss signals therefore is required to guide the allocation of the means of production to their most valued consumer uses. The pervasiveness of a shortage economy is not a motivational problem of incentivizing enforcement of a hard budget constraint. If that were all, the Lange-Lerner model of market socialism then would be theoretically possible. Rather, the absence of residual claimancy that inherently characterizes socialist firms precludes the possibility of its managers learning how to compete in a cost-effective manner. As a result, managers of state-owned firms will learn to rent-seek for property rights over the means of production, the rents from which are monetized through black market exchanges. Thus, the incentive to create pervasive and persistent shortages is fundamentally a *consequence* of a hard knowledge constraint, which in turn explains the emergence of a soft budget constraint under real-world socialism.

Kornai's evolution from a "naive" researcher in *Overcentralization* to his later work on the shortage economy and soft budget constraints is marked by a growing emphasis on a dual level of analysis to understand non-market decision-making permeating the entire socialist system. The political economy of socialism, or any other system for that matter, requires not only a higher analytical tier, which focuses on the rules governing social interactions to understand the pattern of incentives and knowledge engendered by a set of rules. The higher tier of analysis also requires an understanding of the set of de facto property rights operating in practice. It is only by evaluating "the rules of the game" that we can then proceed towards a lower analytical tier, focusing on social interactions within given sets of rules. "No single factor", according to Kornai, "can satisfactorily explain how shortage appears and reproduces. A full explanation involves grasping a more complicated mechanism of cause and effect. One important link in this causal chain is what I call in the book the 'soft budget constraint.'" (Kornai 2006, p. 242; see also Kornai 1979, 1980). Focusing on the structure of property rights governing a socialist system requires not only an analysis of the incentives operating within that institutional setting, but also how the institutional setting generates knowledge about survival conditions that are peculiar to that system. The

[5] Another way in which to reframe this point is to draw the distinction between high-powered and low-powered incentives (see Williamson 1985). Frant (1996, p. 367) describes the distinction as follows: "High-powered incentives are those provided by market transactions, in which efficiency gains from a particular transaction flow directly to the parties transacting. In hierarchies (organizations), on the other hand, incentives are low powered. The particular individuals involved in a transaction may get a raise, a promotion, and so on, but they generally are not able to personally lay claim to the gains from trade.".

pervasiveness of shortages and soft budget constraints under real-world socialism, from an epistemic institutionalist approach, are *an effect* of the lack of residual claimancy statuses of state-owned firms, not their cause.

The key to understanding the causal mechanism is that *cost minimization and profit maximization are flip sides of the same coin* (Coase [1938] 1981; Buchanan [1969] 1999). In a non-profit institutional setting wherein the managers of state-owned firms are precluded from market knowledge embodied in profits and losses in their decision-making, managers likewise will be prevented from discovering how to allocate scarce capital goods to their most valued consumer uses. Since the costs of production will be covered only if, among the various courses of action, an enterprise's manager chooses the course of action that maximizes profit, the inability to retain the resulting profits, if any, implies that such managers cannot learn whether they are minimizing costs in their deployment of scarce capital goods. "Hardness of a budget constraint", Kornai (1986, p. 8) states, "is not a synonym for profit-maximization". A central planning board ordering the manager of state-owned firm not to exceed its costs of production implies that cost curves are objectively given facts, as is the case in the model of market socialism, which Kornai rejects. However, taking cost curves as variables that can be chosen independently of the process generating such knowledge in the first place, namely price competition within a context of private property rights, puts the cart before the horse. The criterion for surviving under market processes, cost-minimization, and its reciprocal, profit maximization, is absent completely under socialism. Indeed, as Kornai (ibid.) writes, "the more the loss-maker is spared from tragic consequences, the softer is the constraint". But the softness of the constraint is not a failure of central planners to "harden" it. Even if state-owned firms in centrally planned economies were allowed to go bankrupt, the point here is that hard budget constraints require residual claimancy in production decision-making as an institutional prerequisite, but is absent under socialism. The lack of contextual knowledge that exists only among residual claimants operating in a market process explains not only why soft budget constraints emerge as an effect of socialism, but also explains the bias in centrally planned prices that leads to the shortage economy.

In a market economy, the entrepreneur organizing the firm as the residual claimant earns profits and avoids losses from his or her decision-making by metering and monitoring the marginal productivity of individual workers in team-production settings. Such metering and monitoring occurs by limiting shirking by employees (Alchian and Demsetz 1972), and by using capital and other inputs cost-effectively.[6] From a property-rights perspective, we usefully can distinguish between cash-flow rights, or the ability to exchange resources for

[6] Moreover, the lack of residual claimancy also implies that the organization of production within state-owned firms will not be incentivized correctly, not owing to the absence of incentives per se, but to a failure to know what kinds of incentives should be implemented to minimize the transaction costs associated with metering and monitoring workers in the first place. When production within a firm is organized by a residual claimant, "opportunities for profitable team production by inputs already within the firm may be ascertained more economically and accurately than for resources outside the firm. Superior combinations of inputs can be more economically identified and formed from resources already used in the organization than by obtaining new resources (and knowledge of them) from the outside. Promotion and revision of employee assignments (contracts) will be preferred by a firm to the hiring of new inputs. To the extent that this occurs there is reason to expect the firm to be able to operate as a conglomerate rather than persist in producing a single product. Efficient production with heterogeneous resources is a result not of having *better* resources but in *knowing more accurately* the relative productive performances of those resources" (Alchian and Demsetz 1972, p. 793; emphasis in original). Thus, in a non-profit setting, the planners will not be able to identify which contractual arrangements, such as piece-rate or fixed-wage contracts, will minimize the transaction costs associated with metering and monitoring workers (see Piano and Rouanet 2020). It is only through the profit and loss mechanism that firms can sort from the array of technically feasible

money, and control rights, the ability to exclude others from employing the same resources. The nature of the market process is such that metering and monitoring is a function of the knowledge generated by an institutional context of private property, market prices, and profit and loss signals. By shifting the institutional context to one in which private property rights are abolished, metering and monitoring of another kind will emerge.

Under a socialist system, control rights rested to a large degree at the management level of state-owned enterprise, but managers did not possess full cash-flow rights. This meant that any losses accrued by firm managers from misallocating inputs according to consumer demands were borne by the state, in effect dispersed as costs in the form of lower standards of living throughout the population. As long as output targets set by a central planning were met and everyone received their perquisites due to them, then the firm manager was judged as a "success," even if the costs of production exceeded its output value to consumers. Without the ability to claim residual payments in the form of profits, any additional output officially reported as produced and sold was, in effect, a 100% tax on the managers of the state-owned firms, the benefits of which would accrue to the state treasury. Moreover, any bureaucrat ordering an increase in the price of a good, so as to approach a market-clearing equilibrium, would not capture the additional revenue generated by the higher prices. Unable legally to earn profits from sales of outputs, it is in the mutual interests of the firm's managers to restrict output and for bureaucrats to hold centrally set prices below market-clearing ones, which predictably results in shortages (Levy 1990; Shleifer and Vishny 1992; see also Boettke and Candela 2017).

How does the pervasiveness of shortages, caused by price ceilings, link to soft budget constraints? Both shortages and soft budget constraints are manifestations of excess demands, the former associated with consumer goods and the latter with productive inputs. Rather than competing against one another in open markets, consumers and producers are resorting to the other means of competition available to them, the soft budget constraint being just a consequence of such competition for resources. "External assistance", as Kornai (1986, p. 7) states, "is usually not granted automatically, as some effort is needed to obtain it. The firm's managers (and in the case of a private firm, also the owners) must resort to political pressure groups and lobbies, or to personal connections. Explicit bribery might be frequent or rare, with experience varying from country to country. Some hidden corruption in form of reciprocal favors is more wide-spread". The *epistemic* point alluded to by Kornai is that, given that managers of state-owned firms cannot learn to compete successfully based on the knowledge transmitted by market prices and profit and loss signals, they will instead compete by adopting survival strategies based on the knowledge available to them, namely the ability to seek rents. Competition for resources based on political exchange substitutes for competition based on market exchange. The transaction costs that emerge in the form of queuing that results from such shortages represent rents that can be monetized in black market exchanges. In effect, unable to learn how to maximize profits, as would be the case under capitalism, the soft budget constraint emerges as a means by which de facto control of goods and services is monetized in the form of bribes from

Footnote 6 (continued)

contractual arrangements those that are economically viable. Thus, the calculation problem under socialism extends not only to the allocation of the means of production in the economy as a whole, but also within socialist firms as well (see Rothbard 1962, pp. 544–560; Boettke and Coyne 2004).

consumers in the black market, whose valuations of such goods and services exceed the official price ceiling.

4 Conclusion

János Kornai was a systemic theorist of the political economy of socialism in practice. As such, he brought empirical as well as theoretical analysis to bear in unearthing the institutional and organizational structures of actual socialist systems as perceived by individuals not only in Hungary but also in centrally planned economies throughout Central and Eastern Europe. In developing those arguments throughout his long career, János Kornai made significant contributions to the theoretical framework of modern political economy and the empirical investigation of existing socialist systems.

Our focus in this paper has been to render explicit an implicit contribution to Kornai's theoretical framework, namely the epistemic role that alternative institutional arrangements play, particularly in non-market settings. By reframing Kornai's theoretical contribution through this lens, we have sought to highlight and explain the relationship between central planning, pervasive shortages, and soft budget constraints under socialism in practice. In doing so, we have argued that soft budget constraints are consequences, not causes, of the failures of socialist central planning. This failure was one that emerged not from a misalignment of incentives in enforcing hard budget constraints per se. Rather, soft budgets constraints were an outcome of competition between firms in a non-profit setting, utilized as a means to monetize the control over state-owned resources through the creation of pervasive shortages. This form of competition resulted from the survivorship properties specific to socialist bureaucratic coordination, which are wholly different from those operating within capitalist systems (but not unlike the administrative states governing modern democracies).

One implication of our argument, despite his objections to the contrary, is that we can locate Kornai's contribution within the broad intellectual traditions of property rights economics, law and economics, public choice economics, and market process economics, each of which has emphasized not only the incentive misalignment problem of socialism in practice, but the epistemic problem of bureaucratic organization under such systems. Thus, not only is central planning conceptually incoherent, but the hybrid bureaucratic systems of actual socialism also are dysfunctional from the point of view of economic growth and development.

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