Mises Meets the Internet: Revisiting the Calculation Debate in Light of Recent Technology

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The socialist calculation debate is a major milestone in Austrian economics in which Mises, followed by Hayek and others, showed that socialism was untenable not just because of unfortunate incentives but because of defects inherent in the structure of the socialist proposal; there simply is no way, they argued, for a central plan to engage in rational economic calculation without freely fluctuating market prices for all orders of goods. Unless one lives in a very small or very static economy, calculation is a necessity, and it requires market prices. One of the central aspects of the argument, emphasized particularly by Hayek, is the knowledge problem inerrant in socialist planning. Because information is dispersed and specific to time and place, there is no way to centralize it in a way that would permit central planning to rival the free market. But recent developments in technology and the rise of the Internet have led some to question whether the Austrian position may need to be reexamined in the light of twenty first century advancements.

Leaps in Technology

Obviously technology has evolved in a way no one, including Austrian economists, could have foreseen. In particular, the rise of the Internet has dramatically reshaped the production process. Especially relevant to the calculation debate is the new and growing field called the Internet of Things (IoT). This term refers to the phenomenon of connecting everyday objects, not just specialized computers, to an international network. Watches, cars, refrigerators, lightbulbs, toothbrushes, and pretty much anything else you can think of are now being developed so their status can be viewed and controlled over the Internet. Agriculture is a good example of IoT implementation as it has been one its first major beneficiaries. Devices now exist which allow farmers to receive constant data about the status of individual plants, anticipate weather patterns, and adjust cultivation practices accordingly (Lohr 2015). Other producers are also able to make more informed production decisions as the ubiquity of sensors provides a wealth of data about consumer behavior and preferences. Certainly the nature of information has been revolutionized by the Internet, and some have taken this change as a reason to revisit and reject the Austrian position on the necessity of market prices in economic calculation.

Technology as a Solution to Socialism

The position that central planning could be a superior method of making production decisions if only technology were advanced enough goes back to the original calculation debate, but proposals have become more serious as computers became more powerful. Many writers from the early 1970s to now have proposed that Mises and Hayek may have been right back then, but we could eventually (and perhaps now do) have the technology to possess the knowledge necessary to plan the economy. Oskar Lange (1970), conducted significant research into “cybernetic economics” in which computers would be used to facilitate central planning. This kind of planning was implemented in Chile in 1971 with project Cybersyn. While that project was abandoned in the midst of a military coup in 1973, some have proposed that the modern Internet can make central planning succeed where all other attempts have failed.

One optimist about the feasibility of socialism is activist Andy Pollack (1997) who writes,

The material possibility of socialism, as reckoned in the sheer productivity of industry and the availability of masses of goods and services, has existed for most of this century. Now the technical basis for the process of managing those things, i.e. for the process of socialism, has taken huge leaps forward with the advances in information technology of just the last few years.

One can only assume that Pollack’s resolve has been strengthened by significantly greater technological advances in the past eighteen years. More recently, author and senior editor of *The New Republic* Evgeny Morozov connected fresh developments in Internet technology directly to overturning the result of the calculation debate in a 2015 interview.

The only way to beat the market, as Oskar Lange, Hayek’s main contender in the social calculation debate, posited long time ago, is by relying on cybernetics (i.e. feedback generated by ubiquitous sensors) and advanced computing machinery…. I do think that there’s much to learn in the cybernetic heritage – which also spans operations management, systems theory, and so forth. The unfortunate episode in the development of cybernetics is that, with the partial exception of Project Cybersyn, most cybernetic experiments in the socialist context never had the ability to work on the assumption of constant connectivity and interconnected feedback systems that can communicate in real-time at virtually no cost. If you think about the Soviet experience… it’s actually surprising that it carried on for so long given how poorly informed the planners were. And also how easy it was to cheat the system by submitting false data and so forth. Many of these problems can now be resolved thanks to the Internet of Things on the connectivity front and technologies like blockchains on the trust/security front (imagine: replacing the lying Soviet bureaucrats with a blockchain!). Where the neoliberals won the debate in the 1980s and the 1990s is in convincing all but hardcore believers in the communist project that socialism and even more broadly communism were practically impossible [due] to the implausibility of designing an adequate communication system that can be as effective as the market in allocating knowledge dispersed through the economy. I’m not sure that this argument is still valid today.

As the Internet of Things becomes more ubiquitous, one must expect that Morozov’s position will seem increasingly plausible to socialists. They can admit that socialism was impossible in the past, but that now the world is ready; socialism can finally work!

One distinction must be made at the outset. The terms “prices” and “the price mechanism” as used by Mises and Hayek refer to the existence and use of genuine money prices which are the result of bidding for goods and services in a market. The term has been appropriated by others, like Lange and Taylor (1938), to have a wider meaning, namely “terms on which alternatives are offered.” This broad definition of prices, which may exist under socialism must be held separate from the term as used by Mises in the former sense.

Technical Flaws in Socialist Approach

Despite the high hopes of the above writers, it can truly be said that they all have missed the point. The Austrian critique of socialism is still valid today, and will still be valid regardless of the development of technology. To begin with, the plausibility of central planning even with advanced Internet and computing capabilities fails on a superficial, technical level. First, Morozov’s implication that the modern Internet allows for communication “in real-time at virtually no cost” is highly questionable on both counts. The speed of light is fast, but not negligible on a planet sized scale, and there are obviously large costs to building and maintaining Internet infrastructure. Second, As Jesús Huerta de Soto (2010) explains, the same technology that allows one to account for the collection and operationalization of more data also allows for the creation of a greater volume and complexity of data such that the information to be known will always run ahead of the ability to know it. A great virtue of the price mechanism is that it does not, strictly speaking, convey all the information about the goods being priced but rather allows for the use of that information even by those who do not know it. As in Hayek’s (1945) example of tin, it does not matter why tin is more scarce; price fluctuations allow for appropriate adjustments in consumption and production without anyone knowing all the details. Through prices, information is encoded into a simple shorthand understood by everyone but designed by no one. It is through the price mechanism that production processes too complex to be contained in any consciousness are able to be realized, and eliminating market prices would eliminate that ability. In addition to these shortcomings, however, hope for a revival of socialism based on improved technology is flawed on a much more fundamental level.

Central Planning and Consumer Valuation

The impossibility of economic calculation within socialism does not derive merely from the volume or complexity of information. As Hayek (1989) argued, the information necessary to calculation does not just happen to be dispersed among various individual in a way that makes aggregating it difficult. Rather, information is “essentially dispersed.” The usefulness of information derives exactly from the fact that it is not in in the hands of a central planner, be it a person or computer, but in the hands of Hayek’s (1945) “man on the spot.”

Even if all relevant information could be aggregated to a central computer in real time, there is still no way for an algorithm of any complexity to produce a superior order than that which emerges from the market process making use of the price mechanism. “Superior” is obviously a value laden term, but when its definition is carefully considered, the first fatal flaw in computer driven socialism is revealed: a system of pricing and allocating resources must be judged by the subjective preferences of those within the system. An algorithm may be able to set exchange ratios between goods which would resemble those generated by the price mechanism in a free market, but they must be directed toward an end which is designed by a minority of individuals or emerges from the program itself. The ends pursued by a computer program, therefore, are not based on the subjective preferences of all individuals in the economy, and this massive piece of data, by its very nature, can never be assimilated into an objective algorithm. As Mises (1920) puts it, “It is impossible that there should ever be a unit of subjective use value for goods. Marginal utility does not posit any unit of value. Judgements of value do not measure; they merely establish grades and scales.” The market prices of goods reflect not only how rare or abundant they are in absolute terms but also the subjective value of those goods in alternative uses. A good may be extremely rare but have a very low price if no one values it. The same good, however, may obtain a very high price if many individuals strongly prefer it to available alternatives. The process of bidding up the price of a good is the product of human action pursuing individual preferences, and no amount of data about the state of the world can allow one to accurately predict each person’s value scale prior to their action. As James Buchanan (1983) put it, a central planning scheme, even when it possesses all available information, only works if we disregard the fact that humans make genuine choices. He writes,

The potential participants *do not know until they enter the process* what their own choices will be. From this it follows that it is *logically impossible* for an omniscient designer to know unless, of course, we are to preclude individual freedom of will. [Emphasis in original]

So a hyper-advanced computer or Internet system possessing all information about the state of all goods in real time still cannot account for the very engine that drives the emergence of a spontaneous order, namely human action. It must substitute some set of objective preferences for the numerous subjective valuations of each potential market participant, and this fact puts central planning at large disadvantage compared to the market price mechanism. The coordination facilitated by the price mechanism is not the result of objective information transmission only – that is, bare facts about the world – but the use of that information in exchanges which themselves rely upon the inversely ordered subjective preferences of acting individuals. In order to achieve a “price” under central planning which contains the same richness of information as a price set on the free market, the planner, be he man or machine, must possess the necessary data *before* making a determination. But the existence of that data depends not only on information about a good but also on information about individuals’ value scales which are revealed by action and, thus, cannot be known prior to the action. Therefore, the data necessary to make the determination of economically useful price via central planning does not exist to be known.

Rivalry and Central Planning

Not only can the information relevant to economic calculation not be collected by any agent by any means, the information that can be collected and used for central planning makes calculation more difficult, not less. Mateusz Machaj (2014) writes of the fundamental difference between centrally planned “prices” and prices which emerge from free exchange. The “planners” in a free market, he argues, are the various entrepreneurs who attempt to make plans using price signals as clues and who then subject these plans to the judgement of profit or loss. In this way, productive enterprises are allowed to persist while those which are unproductive, and, thus, waste resources, are forced to shut down. In a centrally planned scheme, however, prices do not control the planners; planners control the prices. So production will be driven in the direction of the planners’ preferences regardless of economic reality because the forces which would constrain entrepreneurs are themselves under the control of the planners.

This critique is made more fully by Don Lavoie (1985) who emphasizes the role of rivalry between competing production plans in the formation of prices that allow for rational economic calculation. Lavoie recounts the Austrian critique specifically toward the more recent proposal of so-called “market socialism.” Later in the calculation debate, proponents of central planning like Lange and Lerner retreated from full socialism and essentially conceded half the argument to the Austrians by defending, instead, market socialism as a middle ground. The key idea in the proposal is summarized by David Lane (2013) as “retain[ing] the market mechanism while socializing the ownership of capital.” This model essentially entails allowing markets to allocate consumer goods and using the information generated by that process to centrally plan the production side of the market. The market socialist thesis is still alive and well, but it should not be since it suffers from the same knowledge problem as traditional socialism. The Austrians would agree that allowing the price mechanism to work on the consumer side does solve the calculation problem for that side of the market (that is merely a concession of the Austrian thesis), but they further held that free prices are necessary for all orders of goods on both sides of the market for rational economic calculation to occur throughout the whole economy. As Lavoie demonstrates centrally planned production still does not work under the market socialist model; free capital markets are indeed necessary in addition to free markets for consumer goods. As Mises (1920) argued, competitive prices for consumer goods are “but one of the two necessary perquisites for economic calculation.”

This point, however, is precisely where the modern socialist arguments about the use of technology may appear to function best. Perhaps, as noted above, consumer preferences are of a nature that they cannot be assimilated into a central plan by any technological means, but surely the producer side of the market does not suffer from this same shortcoming. The argument might go that planners could simply take the information from freely fluctuating prices in markets for consumer goods as sufficient to centrally plan production of those goods which consumers value if they also have access to the wealth of information produced by radically interconnected technologies like the Internet of Things. Are not these two sets of data sufficient to establish a rational allocation of higher order goods? To go back to Hayek’s tin, why would one need market prices to adjust exchange ratios in response to changes in the availability of tin if a computer can provide the information even more quickly? This position once again fails on a fundamental level, as Lavoie emphasizes, because the information bearing properties of prices in a free market are the result of rivalry between various plans.

Because factors of production are scarce and have alternative uses, producers have to bid them away from alternative production plans. This rivalrous bidding process is what makes factor prices the bearers of economic information that can be used to engage in economic calculation. Rivalry means that each producer has his own ends in mind and will judge potential production decisions by his expectations of how they will achieve his ends. His use of scarce factors is then judged based on its ability to satisfy others’ preferences, and this information is communicated as either a profit or a loss. The producer can then use the understandable unit of money prices to engage in economic calculation and determine his preferred course of future action. But if there is central planning, then there is one goal of production not many competing goals. In that case, the allocation of capital is directed toward the goal of the planners. Even if the planners set up some sort of exchange ratio between factors, these “prices” will not carry with them the information necessary to economic calculation. The old dream of mandating that price equal marginal cost fails because marginal cost is not given, and it is not a characteristic of the inputs themselves. All costs are opportunity costs and the opportunity cost of using particular inputs is discovered by the process of bidding factors away from alternative uses. Centrally planned exchange ratios for factors of production will not have encoded within them information about the alternative uses of factors because they acquire that property from being bid away from alternative uses of which there are none under central planning.

Conclusion

The crucial fact about the flaws in even the market socialist thesis is that it is not a technical problem but a fundamental flaw in the idea of central planning. Proposing to solve the calculation problem with ever more advanced and connected computers is, therefore, to misdiagnose the problem. It is quite likely that very interesting and useful innovations will be produced by solving technical problems with the IoT, block chains, and related technologies, but to set these phenomena as solutions to the socialist calculation problem gives the right answer to the wrong question.

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