Commentary

Title:

"Computers Still Cannot Plan an Economy"

Author(s):

Robert Gmeiner
Visiting Assistant Professor of Economics & Bagwell Center Affiliated Faculty

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During the Cold War, socialism was broadly rejected in the United States as the "other" ideology and viewed as a pressing threat. Since that time, socialism has been discredited in much of the former Eastern Bloc, but it has recently been gaining acceptance in the United States. This ascendance of socialism comes at a time of unprecedented capabilities of computers and artificial intelligence, which presents interesting challenges for those who oppose socialism as a method of economic planning that is incapable of producing the prosperity of the free market.

The economic calculation arguments advanced by Ludwig von Mises and F.A. Hayek have been a mainstay of free market thought for several decades, but this was not always the case. Before the collapse of the Soviet Union, socialism was viewed as a viable way to organize an economy, and Mises's and Hayek's arguments were accepted by some, but viewed by others as either unproven or disproven. The collapse of the Soviet Union tilted the scales in favor of the free market.

Despite some differences, Mises and Hayek advanced similar arguments. Hayek's are summed up very well in his seminal article, "The Use of Knowledge in Society,"[1] which was selected in 2011 as one of the twenty best articles ever published in the *American Economic Review*.[2] Very succinctly, Hayek thought that it was impossible for central planners to obtain and analyze the knowledge needed to run an economy because that knowledge existed in a decentralized form, dispersed among all actors in the economy. In a less-emphasized point, Hayek indicated that the planner's optimization problem might be tractable with enough computing power if the decentralized knowledge could be gathered together, but this was undoubtedly impossible in Hayek's time.

This proviso in Hayek's article about tractability is the reason why central planning needs to be revisited in this time of impressive computing power and increasing acceptance of socialism. For all their advances, computers are not a silver bullet that makes economic calculation possible. They are very good, but they are still far from perfect at what they do. Moreover, there are incentive problems for planners who wield too much power, and the ability of computers to do a better job than humans can exacerbate those problems.

The first issue for planning an economy with computers is reliability of data. With smartphones, the internet-of-things, and computerized production processes, data are more available than ever, so obtaining complete data seems easier than ever. Complete data, however, are not the same thing as clean and robust data. There are always both signals and noise, and any statistical inference is subject to a probability distribution and confidence level. An integrated economy with many multi-step production processes has countless opportunities for data errors to cascade and magnify. Besides collecting data within an economy, any planning system must model what the rest of the world can do because no developed economy exists in isolation; international trade is an important part of most supply chains and consumer choices. This involves a problem of similar difficulty, but with even less data to analyze.

Setting aside the reliability issue, any economic planning system, computerized or human, must make decisions and use coercive power. A plan can only be executed if planners have enough latitude to make decisions with meaningful economic impact. The more power they have, the greater their opportunities to misuse that power and serve their own interests. Few are the autocratic governments that offer a truly good life for their citizens. Returning to the data

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[1] Hayek, F.A. (1945) "The Use of Knowledge in Society" *American Economic Review*. 35(4): 519-530.

[2] Arrow, Kenneth J., Douglas B. Bernheim, Martin S. Feldstein, Daniel L. McFadden, James M. Poterba, and Robert M. Solow (2011) "100 Years of the *American Economic Review*: The Top 20 Articles" *American Economic Review*. 101(1): 1-8.

reliability issue, if a computerized economic planning system can act decisively and rapidly enough, major changes can be made based on faulty information, and this might not even be known until the decisions are already implemented.

A centrally planned economy must have goals, and goal-setting processes are subject to political pressures. Not only can political decisions result in the setting of goals that harm people when achieved, but this is almost certainly going to happen because goals must exist in a complete hierarchy. This hierarchy must be defined before decisions need to be made. If goals are not complete, meaning that part of the economy is not subject to central planning or lacks a clearly defined goal, unintended consequences can result. Moreover, goals must exist in a hierarchy and some things must be achieved first.

Consider the potential goals of providing good health outcomes, preserving life, maximizing GDP, and minimizing health expenditures. Ranking these things and setting limits to what can be done to accomplish each one is a difficult political decision and there will be unintended consequences if the ranking is not complete for each possible situation. If the top goal is to maximize GDP, then the planning system would require every single medical intervention to be administered to a patient. If minimizing health costs is the top goal, the system would let all chronically ill patients die in impersonal fashion and make the population appear healthier because only healthy people would survive its decisions. If preserving life is the top goal, then a million-dollar drug that gives a patient an extra three days could be administered while non-life-threatening injuries go untreated. Healthcare is a stark example, but similar problems with the setting of goals could come up in many areas. In a computerized planning system, there is no place for common sense to be used at the moment of decision; all things must be decided in advance.

To get around HOV lane restrictions, motorists have placed mannequins in the passenger seats of their cars. These motorists are feeding faulty information into a monitoring system so they can have what they want – a faster commute. A computerized system that makes decisions based on informational inputs will magnify this incentive problem for market participants. Firm managers who want access to more resources could attempt to make their production processes appear more efficient than they really are. Incentive issues will always exist for participants, not just planners, and these issues will manifest themselves in attempts to "game the system."

Planners and participants are not the only ones with incentive problems. Goals are set politically, but they are implemented by programmers. There is not a succinct list of goals after the political decision is made. Goals exist in optimization problems as objective functions and constraints. No matter how transparent or democratic the process of setting goals, implementing them is a non-transparent, technical process. There is an apocryphal story about a programmer at a bank who took the fraction of a cent in interest from each account that was not paid because of rounding, and then deposited all those minuscule amounts into his own account, which together totaled a significant amount of money. The technique is known as salami slicing. No depositor would ever notice because interest is always paid to the cent after it is calculated more precisely. Whether this story is true or not, these types of incentives will exist. Programmers will wield extreme power, and planners and public officials will bear more responsibility than they have control.

Even if Hayek's argument can be solved with modern computing power, socialism is still not a viable way to organize an economy. His problem seems tractable, but data reliability remains a severe issue, presenting a lingering practical problem for a theoretical solution. This data reliability issue cannot easily be solved, but if it could, there would still be major incentive problems. Planners have an incentive to seek their own interests just like public officials do today.

Setting goals completely and hierarchically is difficult and will make many people unhappy and there may still be unintended consequences. Individuals will try to game the system and may succeed. There are more opportunities to game a coercive planning system than to game a spontaneous order. Finally, programmers will have some of the most important jobs in the planning system and can structure the system to suit their own interests and possibly avoid detection in so doing.

The arguments against socialism need to be updated to consider computing power and artificial intelligence. Hayek's arguments now can reasonably be questioned, but these challenges do not refute the point that central planning is not a viable economic system. Central planning suffers from different challenges, but they are just as severe. Computers and artificial intelligence have not solved the problems of socialism; they do some things well, leave some problems unsolved, and exacerbate other problems, like incentive issues. As socialism continues its ascent in popular opinion, it is imperative to consider the limitations of computing power in planning an economy.