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# Stable Jobs or iPhones? The Dilemma of Innovation in Socialism

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**Mihnea Tudoreanu[1,2] and David M. Kotz[1]**

**Abstract**

Perhaps the greatest strength of capitalism has been its ability to promote sustained technological progress. A viable socialism must also promote sustained technological progress while avoiding the problems associated with technological change under capitalism. Socialism faces a fundamental dilemma regarding technological change and job security in that technological progress is inherently disruptive. As old technologies are superseded, product lines become obsolete, production processes are changed, and certain kinds of jobs are no longer needed. Thus, technological progress creates insecurity for jobholders. Even with an employment guarantee, the loss of one's job may require retraining, changing careers, or moving to a new location. In this paper, we propose means for promoting technological advance under planned socialism while also providing meaningful employment security.

**JEL Classification:** B5, P2, P5

**Keywords**

socialism, innovation, democratic planning

## 1. Introduction: The Importance of Innovation[1]

The debate between capitalism and socialism is usually framed in terms of static efficiency. This approach asks which system can make better use of a given set of resources under given conditions.[2] However, it is doubtful that either system is inherently more "efficient" than the other. The famous economic calculation debate, at its height in the 1920s and 1930s, focused on precisely such notions of

[1]Helpful comments were provided by two reviewers for this journal.

[2]The meaning of "better use" is open to interpretation, which often ends up being the most contentious part of the debate.

[1]University of Massachusetts Amherst, MA, USA
[2]Social Sciences, Grand Rapids Community College, Grand Rapids, MI, USA

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**Corresponding Author:**
Mihnea Tudoreanu, University of Massachusetts Amherst, Gordon Hall, 418 N Pleasant St., Amherst, MA 01003, USA.
Email: mtudorea@econs.umass.edu

static efficiency, and ended with Oskar Lange showing that socialism can reach any equilibrium that capitalism can reach (Lange, Lippincott, and Taylor 1938).

In our view, the ability of each system to improve economic performance over time is the most important dimension to analyze, and technological change is the basis for long-run improvements in economic performance. The ability of capitalism to promote technological innovation is a major reason for its historical success. European empires in the 19th and 20th centuries were able to extend capitalism throughout the world largely due to their technological edge. Closer to our time, the bewildering array of consumer products available under capitalism remains one of the main reasons why this economic system is attractive to large numbers of people. The lack of consumer goods on a par with the West was one of the most important causes of popular discontent with Soviet-type socialism.

Any socialist system that arises in the future is likely to exist alongside capitalist societies in the world, for some time. They would undoubtedly become rivals, and in order for socialism to be successful, it must be able to withstand a long-lasting rivalry with capitalism. Innovation will play a crucial role in any such rivalry, in at least two ways that we will consider in this paper. First, the popularity of each economic system will be affected by its ability to provide attractive consumer goods. Second, any international rivalry between capitalism and socialism will necessarily involve a military component. The society with the more technologically advanced military will have an advantage, even if no war actually takes place.[3]

To address this question, we begin with a brief discussion of innovation under capitalism and Soviet-type socialism as background for considering how the above challenge to a future socialism might emerge and how it might be resolved.

## 2. Innovation under Capitalism

The rapid advance of technology in capitalist societies from the 19th through the 21st centuries is well documented. Indeed, the critics of capitalism spoke very favorably of its promotion of technological progress as early as the mid-19th century (Marx and Engels 1978).

How does capitalism promote innovation? The key ingredient is said to be competition. Private firms aim to maximize their profits, and so they pursue innovation in order to increase their profits and stay ahead of their competitors. Under perfect competition, the lack of barriers to entry ensures that new firms can enter any market where there is potential profit to be made by introducing an innovation. The same condition ensures the rapid diffusion of successful innovations, as other firms will copy the successful idea.

One major problem with this picture is immediately apparent. In a competitive market with no barriers to entry, an innovating firm can only profit from its innovation for a very short time before competitors move in and copy its successful idea, driving profits back down. As a result, paradoxically, *too much* competition can reduce or even eliminate the incentive for innovation, by rendering it unprofitable. To address this problem, governments in capitalist societies have universally restricted competition by issuing patents and copyrights, thus effectively granting each innovating firm a monopoly over its innovation for a set period of time. However, this means that diffusion (copying) of innovations is deliberately restricted, in order to create the necessary incentive for firms to engage in the other steps of the innovation

[3] Successful innovation can be expected to be advantageous for other reasons as well in such a future rivalry, including its role in raising the productivity of labor and living standards.

process. Thus, capitalism imposes a trade-off between the incentive to innovate and the speed of diffusion of innovations as well as gaining the maximum possible benefit from the innovation.

Critics can point out the problems and distortions of capitalist innovation. Also, the role of the state and private nonprofit institutions is very important in innovation, which shows that the unique features of capitalism are only partly responsible for the innovations that occur under this economic system. Nevertheless, the record of capitalist innovation is impressive.

The strength of the incentive to innovate under capitalism is actually rooted in the inefficiency of that process. That is, the decision to innovate in capitalism does not take the social costs into account. Every time an innovation is introduced, there are winners and losers. Even in the most basic scenario where only a new consumer product is introduced, while there are winners—the consumers—there are also losers, which include the workers making the old products that were replaced by the new one as well as additional workers who make inputs used to produce the old products.[4] Some innovations have significant positive externalities, such as product innovations that are public goods, and process innovations that benefit the community around the firm which adopts them. Capitalism is very likely to neglect such innovations, and capitalist firms are likely to ignore avenues of research that may result in them. The entire technological trajectory of a society is affected if it focuses almost exclusively on innovations that are intended to lead to profitable private goods.

Thus, the profit-oriented decision-making process of capitalism, by taking account only of private costs and benefits to the innovating firm, can lead to some innovations being produced and disseminated even though they are a net loss to society. Or, conversely, it can lead to some innovations not being pursued because they are not profitable although they would have considerable net social benefit.

## 3. Innovation under Socialism

The socialism to be discussed in this paper is based on a planned economy with social ownership of productive property.[5] This definition is broad enough to include a wide variety of different socialist economic systems, from the authoritarian Soviet model to various kinds of democratically planned socialist models.[6]

### *3.1. Soviet-type socialism and innovation*

The Soviet model of socialism was presented by its advocates as a technologically progressive economy, and there was some merit in this view. The Soviet model certainly achieved rapid industrialization and sustained high levels of economic growth for several decades, which included the development and dissemination of new technologies both in military and civilian areas. Soviet labor productivity also grew rapidly until 1975 (Kotz and Weir 2007).

Several arguments were made in favor of the potential of the Soviet model for innovation. It was argued that the Soviet model could innovate more efficiently and disseminate innovations more rapidly than capitalism because there were no private firms with a desire to maintain trade secrets, no patent laws, and no wasteful competition as in capitalism. In addition, the Soviet system encouraged

[4]Existing fixed capital used to produce the old products is devalued as well. Some workers are winners including those who produce the new product and the means of production used to produce it.

[5]Social ownership can include ownership by national, regional, or local government, or by workers or consumers. It excludes ownership by private investors seeking profit from the enterprise.

[6]We exclude a form of socialism based on market allocation rather than economic planning, based on our view that such a system cannot provide a stable alternative to capitalism.

scientific education, provided ample funding for basic research, and had a variety of institutions with an explicit mandate to produce innovations. The profit motive was absent, but in its place the central plan directly encouraged innovation by such methods as raising enterprise labor productivity targets each year. There were well-funded professional innovators in large enterprises and in specialized R&D institutes.

Yet for all that, and in spite of the very real successes of Soviet innovation in some areas, the system had major flaws pulling it in a technologically conservative direction and ultimately preventing it from outpacing capitalism in the introduction of new technologies. These flaws were first of all present in the incentives faced by enterprise directors. The primary goal they were given was to fulfill the production targets in the current economic plan, and their monetary incentives were largely focused on this. As a result, small process innovations that had obvious benefits were adopted quite readily in order to increase productivity, but enterprise directors saw more significant innovations as simply too risky to adopt in most cases. This was especially true given the policy of "taut planning," which aimed to provide each enterprise with precisely the inputs it appeared to require to reach its output target. This meant that any delay or minor error could cause an enterprise to miss its plan targets, and most directors were not keen to increase their risk by introducing major innovations.

The Soviet system did not suffer from the capitalist bias toward private goods in the innovation process. For example, it developed an excellent public transport network, both within cities and throughout the country. However, the Soviet system did suffer from a bias in favor of what might be called "prestige goods." Throughout its existence, but especially during the Cold War, the USSR repeatedly attempted to demonstrate its superiority over its capitalist rivals by investing heavily in projects that were designed to be more eye-catching than useful, and also by focusing excessively on military spending and military technologies.

### *3.2. Democratically planned socialism (DPS) and innovation*

There are several proposed models of a DPS economy, including the system of negotiated coordination put forward by Devine (1988), the participatory economics envisioned by Albert and Hahnel (1991), and the computerized "new socialism" of Cockshott and Cottrell (1993). They differ in important respects, but they all share similar criticisms of the Soviet system and propose a type of socialism that is more democratic, both at the national political level and also within the workplace. This has important consequences for innovation.

First, merely having an open and democratic society, with elected representatives answerable to a voting public, would fix some of the shortcomings of the Soviet model. Such a society would not invest in useless prestige goods, and assuming that voters are concerned about their own future and that of their children, steps would be taken to develop environmentally friendly technologies and innovations that make use of renewable energy sources. The benefits of the Soviet model could be maintained: high investment in basic science, public goods being given adequate importance, and the free circulation of technical knowledge.

A DPS economy would not suffer from the shortcomings of innovation under capitalism. The direction of research and investment in the pursuit of innovations in various fields could become matters of public debate. It could be democratically decided, for example, whether to invest in the pursuit of more efficient electric cars or modernize the rail network instead. Thus, public and private goods could be placed on a level playing field. Innovations that are socially harmful could simply be abandoned or not pursued in the first place.

## 4. The Dilemma of Innovation in Socialism[7]

One of the advantages for innovation in DPS is that it can effectively take into account social and environmental costs, including the jobs lost or disrupted by the introduction of a new technology.[8] But this can also be problematic, in that it is likely to make innovation slower in socialism than in capitalism. Democratic majorities are not immune to some of the same factors that caused Soviet managers to be technologically conservative.

On the one hand, DPS should not suffer from taut planning, unrealistic plan targets imposed from the top down, or an incentive structure that discourages risk-taking by trying out new technologies. But on the other hand, innovation is always disruptive in any kind of economic system. As old technologies are superseded, product lines become obsolete and production processes are changed, and as a result certain kinds of jobs are no longer needed. Even with an employment guarantee, the loss of one's job may have to involve retraining, changing careers, or moving across the country. So, it is reasonable to expect that workers will resist new technologies.[9] Yet at the same time, in their capacity as consumers, they will demand new and better products.

This is the "Stable jobs or iPhones?" dilemma. We can prioritize cutting-edge consumer products, or we can prioritize stable employment, but perhaps not both.[10] In DPS, the people will be able to decide between one and the other, on a case-by-case basis, so that some innovations will be pursued, others will be scrapped because of their disruptive effects, and some will be introduced at a deliberately slow pace. Meanwhile, capitalism always comes down in favor of the iPhones despite the conflict with stable jobs. Since socialism will not always do this, it is likely that socialism will have more job security but fewer cutting-edge consumer products than capitalism.

If there is an international rivalry between socialism and capitalism, the citizens of the two kinds of societies will be able to compare their lifestyles with those in the other economic system. Workers living under capitalism may be attracted by the stable jobs, shorter working hours, democratic workplaces, and social benefits provided by socialism. However, those living under socialism will likely also be attracted by the rapid introduction of new consumer goods under capitalism. Moreover, as long as the speed of innovation in socialism is lower than that in capitalism, the "consumer gap" with capitalism would grow over time.

This may not be considered a problem for socialism if most of the population value stable jobs more than iPhones, but there would likely be a minority who do not. If the consumer gap is large enough, and/or that dissenting minority has an overriding preference for new consumer goods, then we have a category of people with a material interest in supporting capitalism, which values a new technology over job stability, even though they are part of the working class.

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[7]The dilemma of innovation in socialism, and the possible responses to it considered in this section, apply specifically to a period in which socialist and capitalist systems coexist in the world. If socialism largely or entirely replaces capitalism in the world, and hence is no longer engaged in a rivalry with capitalism on a world scale, this dilemma would likely have different features and different possible resolutions.

[8]While there are differences among the various proposed models of DPS, in all of them innovation decisions are made in a manner that relies on input from a wide array of groups affected by the decision, including workers, consumers, and the local community. Social and environmental concerns are taken into account when devising an economic plan. A capitalist system uses profitability as the main criterion for economic decisions, although social costs can be factored into economic decisions via taxes, subsidies, and regulation. However, such measures are much less effective than a system in which social costs are taken into account in every step of the innovation process and in which there are no powerful private owners of capital to resist taking account of social costs.

[9]Capitalism tends to generate low-wage work, which then discourages technological upgrading. This suggests that DPS, which would not generate low-wage work, would find some innovations desirable that would not be undertaken under capitalism.

[10]That there is a trade-off between innovation and job security under capitalism was emphasized by Schumpeter, who popularized the term "creative destruction" in 1942 (Schumpeter 1994 [1942]). This trade-off would not be automatically abolished by a transition to DPS.

A common response to the flaws of Soviet socialism has been to propose other models of socialism that would not have those flaws. But the trade-off between job security and innovation is not one that can be easily eliminated within socialism. It is not due to the overly centralized or undemocratic nature of Soviet socialism.

Furthermore, there is a military aspect to the innovation problem. Innovations that aid the military are also likely to have a disruptive effect on employment, as in the case of consumer-oriented innovations. This is a problem because it might put DPS at a military disadvantage with respect to capitalism, which would hurt the socialist side in international relations even if no military conflict takes place. If one side knows it *would* lose any war that *did* take place, then that side will act timidly and avoid even nonviolent confrontation, so as to avoid provoking the other side into war. For both sides to stand a good chance of success in a peaceful rivalry, they must be more or less evenly matched militarily, so that neither feels that it can do whatever it wants with impunity or that it must tread lightly to avoid confrontation.

The Cold War was a multifaceted struggle between two different systems. Any future socialist economic order will most likely face capitalism in a somewhat similar struggle. Can such a struggle be won by socialism without matching capitalism's rate of technological development? That is the question.

## 5. Possible Solutions

One possible response is to accept this as on balance a positive feature of socialism, even if it does come with certain disadvantages. The decision to advance slower may be a valid choice. It may even be one of the best features of socialism that it does not force people to constantly switch jobs and uproot their lives.

However, if this choice caused the socialist society to lag behind rival capitalist societies in technological development, that would be dangerous for the long-term survival of socialism, as noted above. Under certain favorable circumstances, perhaps this problem could be ignored. For example, if socialism first takes hold in the most technologically advanced countries, a faster rate of innovation in the less-advanced capitalist countries would not pose the same challenge as faster innovation in capitalist countries that are more advanced than the new socialist countries. In other words, there might be no problem if the next round of transition to socialism begins where orthodox Marxism would expect it to begin.

Is there a way to overcome this problem entirely, by eliminating the trade-off between job stability and technological innovation? In our view, in principle there is. It is possible to imagine a scenario in which the forces of production under capitalism have advanced to the point where it would be technologically possible to automate all jobs.[11] We do not believe that capitalism would make full use of this automation potential, because if rapid automation produced a swelling reserve army of labor, the result would be to drive down wages, making human labor cheap enough that it would be profitable to employ it again. However, capitalism could give us the technology needed for full automation, even if the capitalists do not use it. In such a scenario, a transition to socialism could mean a transition to full automation. The new socialist society could make use of the technological potential and automate all jobs. In that case, further innovation would not disrupt anyone's job, because there would be no jobs to be disrupted. Human labor would have become, for the most part, a purely voluntary activity done for the purpose of self-actualization, rather than something needed for production and a source of income for workers. Thus, technological progress itself could save us from the downsides of technological prog-

[11] The financialization of capitalism in the neoliberal era has resulted in part of profit going, not into investment, but into the financial circuits. However, real investment, and the technological advance that accompanies it, have not ceased, as evidenced by the continuing increase in labor productivity in developed capitalist economies.

ress. We are obviously not at that point yet, but we *could* reach it before the next transition to socialism occurs.

Both of the options above are possible, but they essentially rely on luck. What if the future socialist society is "unlucky" and has neither a technological head start nor the ability to completely automate all production? In that case, the socialist society would face the trade-off between job stability and technological innovation, while competing with advanced capitalist societies. This was the situation that all past socialist experiments faced. What is to be done in such a case?

One option would be for socialism to provide a general employment guarantee, without a guarantee of remaining on the same job, for the sake of innovation. Under capitalism, an employment guarantee would not be possible, at least in the long run, because workers have too much bargaining power at real full employment for capitalists to extract profit, but it is possible in a socialist-planned economy. However, this option would diminish the benefits of socialism over capitalism, by making socialist enterprises behave a bit more like capitalist ones. It could be combined with sufficiently large compensation packages so as to make up for the disruption of involuntarily changing jobs, even to such an extent that it would be regarded as a net positive by the workers experiencing it. However, that could be quite costly for the rest of society, if innovation frequently renders jobs obsolete.[12]

Another option would be to have "social priority campaigns" in response to challenges from capitalism. If the socialist society finds itself slipping behind technologically in a certain area that is considered particularly important by the voting public, a campaign could be launched to improve that specific type of technology and overhaul the specific industry in question. In other words, job stability could be the general rule, but exceptions could be declared in special circumstances. This could also be combined with compensation packages given to workers who are forced to change jobs, and it would be less costly to provide generous packages in this scenario since they would be less common.

A third option would be to import attractive but socially costly new products from the capitalist world for a time, while only gradually introducing production of them. After all, consumers only want to get a new cutting-edge product, not to produce it. This might be a cynical response, since it amounts to unloading the social costs of the new product onto the capitalist world. Also, it may not always be a viable option. The capitalist world might impose embargoes on exporting certain goods to the socialist world, especially those with military applications.

A fourth and more far-reaching option would be to develop a two-sector economy under socialism, in which the norm is for everyone to work two half-time jobs rather than a single full-time one. One sector would come with a lifetime job guarantee and would involve craft-type production and other types of production that are satisfying for the workers. The other sector would be guided by the aim of producing goods in an efficient manner and would not protect jobs from the disruptive effects of innovation. The economy could be organized such that a worker spends half of the working week in a sector 1 job and the other half in a sector 2 job. Sector 1 could potentially produce very high quality products, and it could give workers in each workplace a veto over the introduction of any new technology that would eliminate their jobs. Sector 2 could aim to be at the cutting edge of technological innovation, and the jobs in that sector would only come with a general employment guarantee. Everyone would be guaranteed *some* job in sector 2, but it would not necessarily be a stable or enjoyable one.[13]

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[12] A related option would provide subsidies to enterprises that introduce a job-disrupting innovation to finance retraining so that current workers can remain at their workplace, although that would not be possible if the innovation sharply reduces the number of workers needed at the workplace.

[13] Such a two-sector production model would pose a challenge for economic planning. To be workable, the sector guaranteeing stable employment would have to be able to produce products that consumers want to purchase. If the other sector became able to produce all of the goods needed for a comfortable living standard with only a half-week of labor per worker, the guaranteed stable employment sector might evolve into a sort of hobby sector whose products would be partly sold as luxuries and partly distributed free of charge.

There may be other options for resolving this contradiction of socialism, or several options might be combined. It is possible that different socialist societies will handle this dilemma differently. It is also possible to imagine a socialist city-state full of enterprising people who enjoy changing jobs on a regular basis, for whom the social costs of innovation are not regarded as costs at all. The important thing is to acknowledge that this problem exists and that advocates of socialism must confront it.

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## ORCID iD


Mihnea Tudoreanu https://orcid.org/0000-0002-5520-7258

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## Author Biographies

**Mihnea Tudoreanu** is a doctoral candidate in economics at the University of Massachusetts Amherst. His research focuses on the political economy of socialism, including historical socialist economies and proposed models of future socialist societies.

**David M. Kotz** is professor emeritus of economics at the University of Massachusetts Amherst and the author of *The Rise and Fall of Neoliberal Capitalism,* Harvard University Press, 2015.