

## From Welfare State to Innovation State

By Dani Rodrik

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A specter is haunting the world economy – the specter of job-killing technology. How this challenge is met will determine the fate of the world's market economies and democratic polities, in much the same way that Europe's response to the rise of the socialist movement during the late nineteenth and early twentieth centuries shaped the course of subsequent history.

When the new industrial working class began to organize, governments defused the threat of revolution from below that Karl Marx had prophesied by expanding political and social rights, regulating markets, erecting a welfare state that provided extensive transfers and social insurance, and smoothing the ups and downs of the macroeconomy. In effect, they reinvented capitalism to make it more inclusive and to give workers a stake in the system.

Today's technological revolutions call for a similarly comprehensive reinvention. The potential benefits of discoveries and new applications in robotics, biotechnology, digital technologies and other areas are all around us and easy to see. Indeed, many believe that the world economy may be on the cusp of another explosion in new technologies.

The trouble is that the bulk of these new technologies are labor-saving. They entail the replacement of low- and medium-skilled workers with machines operated by a much smaller number of highly skilled workers.

To be sure, some low-skill tasks cannot be easily automated. Janitors, to cite a common example, cannot be replaced by robots – at least not yet. But few jobs are really protected from technological innovation. Consider, for example, that there will be less human-

generated trash – and thus less demand for janitors – as the workplace is digitized.

A world in which robots and machines do the work of humans need not be a world of high unemployment. But it is certainly a world in which the lion's share of productivity gains accrues to the owners of the new technologies and the machines that embody them. The bulk of the workforce is condemned either to joblessness or low wages.

Indeed, something like this has been happening in the developed countries for at least four decades. Skill and capital-intensive technologies are the leading culprit behind the rise in inequality since the late 1970s. By all indications, this trend is likely to continue, producing historically unprecedented levels of inequality and the threat of widespread social and political conflict.

It doesn't have to be this way. With some creative thinking and institutional engineering, we can save capitalism from itself – once again.

The key is to recognize that disruptive new technologies produce large social gains and private losses simultaneously. These gains and losses can be reconfigured in a manner that benefits everyone. Just as with the earlier reinvention of capitalism, the state must play a large role.

Consider how new technologies develop. Each potential innovator faces a large upside, but also a high degree of risk. If the innovation is successful, its pioneer reaps a large gain, as does society at large. But if it fails, the innovator is out of luck. Among all the new ideas that are pursued, only a few eventually become commercially successful.

These risks are especially high at the dawn of a new innovation age. Achieving the socially

desirable level of innovative effort then requires either foolhardy entrepreneurs – who are willing to take high risks – or a sufficient supply of risk capital.

Financial markets in the advanced economies provide risk capital through different sets of arrangements – venture funds, public trading of shares, private equity, etc. But there is no reason why the state should not be playing this role on an even larger scale, enabling not only greater amounts of technological innovation but also channeling the benefits directly to society at large.

As Mariana Mazzucato has pointed out, the state already plays a significant role in funding new technologies. The Internet and many of the key technologies used in the iPhone have been spillovers of government subsidized R&D programs and US Department of Defense projects. But typically the government acquires no stake in the commercialization of such successful technologies, leaving the profits entirely to private investors.

Imagine that a government established a number of professionally managed public venture funds, which would take equity stakes in a large cross-section of new technologies, raising the necessary funds by issuing bonds in financial markets. These funds would operate on market principles and have to provide periodic accounting to political authorities (especially when their overall rate of return falls below a specified threshold), but would be otherwise autonomous.

Designing the right institutions for public venture capital can be difficult. But central banks offer a model of how such funds might operate independently of day-to-day political pressure. Society, through its agent – the government – would then end up as co-owner of the new generation of technologies and machines.

The public venture funds' share of profits from the commercialization of new technologies would be returned to ordinary citizens in the form of a “social innovation” dividend – an income stream that would supplement workers' earnings from the labor market. It would also allow working hours to be reduced – finally approaching Marx's dream of a society in which technological progress enables individuals to “hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner.”

The welfare state was the innovation that democratized – and thereby stabilized – capitalism in the twentieth century. The twenty-first century requires an analogous shift to the “innovation state.” The welfare state's Achilles' heel was that it required a high level of taxation without stimulating a compensating investment in innovative capacity. An innovation state, established along the lines sketched above, would reconcile equity with the incentives that such investment requires.

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