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Government

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Innovation-led growth can square a circle that is challenging modern capitalism: how to generate sustained and sustainable economic growth, built on high-value, well-paying jobs. This is at the core of entrepreneurial societies, and it is a good objective. The problem is how to get there. Although many countries have set the goal, few have achieved it.

The reason for this elusiveness lies in widespread misunderstandings about how innovation-led growth has been achieved in the past. These misunderstandings have allowed the wrong narratives to drive policy making, with individual entrepreneurs and companies as the central characters of the story. Left unchallenged, this narrative leads to counterproductive policy making and a distribution of rewards from growth that doesn't reflect the actual distribution of risks.

An entrepreneurial society needs an entrepreneurial state, one that through visionary and strategic public investments, distributed across the innovation chain, can create animal spirits in private businesses. Entrepreneurs then see growth opportunities, and business investment follows.

Breakthrough technologies, such as the internet and biotech, did not emerge from governments worried about "commercialization"; they emerged from the spillovers of investments that were focused on long-run public missions. Missions of the past, such as getting a man to the moon, translated into multiple homework problems that needed different actors to work together in dynamic partnerships, spurring innovation. Today's societal challenges, from aging to climate change, can provide a similar focus and animating force. They can stimulate innovation and give direction for new private investment and entrepreneurial activity as profit-making opportunities come into sight. Mission-oriented thinking could also be used to develop technology roadmaps for the 17 sustainable development goals.

Crucially, this will require public leadership, challenging the prevailing ideology which limits the role of public actors to simply de-risking or facilitating the real heroes — the private sector wealth creators, like risk-loving entrepreneurs — while waiting for the market to find solutions. In the few countries that have achieved innovation-led smart growth — like the U.S., Israel, Denmark, and even China today — public actors have not just enabled the private sector. They have actively taken risks as an investor of first resort, not just a lender of last resort. In Silicon Valley, what was critical was the decentralized network of intelligent public organizations that facilitated feedback loops throughout the whole innovation chain. This includes basic research, applied research, and downstream patient and strategic long-term finance to companies. It also includes policies that directly and indirectly shaped demand for new goods and services.

Contrary to the dominant view that policy is meant to simply "fix" market failures, public agencies like DARPA and SBIR in the U.S., Yozma in Israel, and Sitra and Tekes in Finland have actively shaped and created markets. These kinds of direct investments are more successful at generating new private investment than the same money spent through indirect measures like tax credits.

This approach means going beyond leveling the playing field, and instead actively tilting it in a particular direction. That doesn't mean betting on single technologies (all eggs in one basket), but rather backing a portfolio of different technologies (driven by problems to solve) that are encompassed under a mission (the big problem). The usual critique that governments cannot pick winners ignores the fact that the internet was picked through such mission oriented investments, as were nearly all the technologies in the iPhone (including GPS, Siri, and touchscreen). And in the energy sector, solar, nuclear, wind, and even shale gas, were primed by public finance. Elon Musk's three companies Solar City, Tesla, and Space X have received over $4.9 billion in public support. Sometimes these investments succeed (Tesla), sometimes they fail (Solyndra) — but any venture capitalist will tell you this is normal.

The challenge is to get beyond these wrong narratives and tired ideological debates about whether the state should step up or step back.

The real question is how to apply the lessons of successful mission-oriented policy in the past to the societal challenges of today, both as a basis for addressing these important challenges and as a stimulus of — and a direction for — inclusive, sustainable, innovation-led growth. This means developing the conceptual frameworks, analytical tools, and organizational capabilities that can justify, evaluate, and nurture this approach.

In a recent article in the journal Industry and Innovation, I have described these challenges in terms of the following four questions:

First, **routes and directions.** If "let the market decide" is an inadequate and ineffective response to the challenges we face, how can we find democratically enduring ways to choose particular missions and set the routes and directions for change?

Second, **organizations.** How can we build learning organizations in the public sector that can welcome risk, learn from failure, discover, explore, *and* understand when to turn the tap off? This means understanding policy as a process, one in which learning from failure is accepted and welcomed. Talking about public organizations as mission-driven — not merely as facilitators for others — will also help in recruiting the talented people that visionary public organizations need.

Third, **assessment.** Static cost-benefit analysis cannot capture the transformative impact of strategic, market-creating public investments. New dynamic assessment tools are needed, based on a much richer understanding of public value creation.

Fourth, **risks and rewards.** The wrong narrative about who the risk takers are has led to a distribution of rewards that does not reflect the true distribution of risk. If taxpayers are taking the biggest risks during the uncertain early stages of the innovation process, they should share in the rewards. The question is how best to do this. There are many options, including agreements on the reinvestment of profits (exactly the kind of deal that led to the creation of Bell Labs); capping prices of publicly funded products (e.g., drugs); retaining a golden share of the intellectual property rights; retention of equity or royalties when feasible; and income-contingent loans. There is no one solution, but consideration of different ways through which rewards from innovation can be better shared is central to a strategy that targets not only smart growth but also inclusive growth.

It is a truism that the winners write the history books. The winners from Silicon Valley — the VCs and the entrepreneurs — wrote the storylines that justified the rewards they took. But their stories are not a useful guide for policy making elsewhere. For that, it is necessary to look beneath, at the shoulders they were standing on, and devise symbiotic ecosystems between public and private actors that recognize wealth creation as a collective endeavor. Because an entrepreneurial society first needs an entrepreneurial state.

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