

The challenge of innovation in turbulent times

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Abstract

This paper has been prepared for the Global Agenda Council of the World Economic Forum. It addresses the issue of the shift toward reduced entrepreneurial dynamism in Europe as well as in the United States. The paper starts from a few insights about “the decline of innovation” in Western Economies and argues for establishing new institutions for an economy of entrepreneurs and fast movers.

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1 – Prelude

The world, and in particular its developed economies, face grand challenges – all global and systemic – from health care to climate change and energy conservation, and from food and water security to ageing populations. The good news is that these challenges can be met. From early in the 19th century onward, the world has seen the emergence of modern economies – which we define as economies that stimulate the conception of new ideas and their embodiment in new products. Many prior societies and their economic systems were able to produce great *inventions*, ranging from the Pyramids to Sputnik, and from mathematics to architecture. Yet none of these was an *innovation* in the sense of the *creation* and willing *adoption* by managers or consumers of a new or improved process or product. Whatever the origins of a new business idea, its path to an innovation involves aggressive *entrepreneurs*, who know how to get the job done, and shrewd *financiers*, who have insights into what might work and turn a profit. Such innovations were sporadic in the pre-modern period – mostly sparked by the discoveries of scientists and explorers – but became an everyday occurrence in the early 19th century, as even the most routine companies had to experiment to survive. Now chronic innovation is the rule in nearly all industries. The modern economy is an innovation *machine*.

Intense innovation by the business sector in developed economies may be the best way, perhaps the only way, to meet these grand challenges. There is better understanding of the processes of innovation than existed 50 or 25 years ago, thanks to the legendary work by Hayek, Chandler, Nelson, Bhidé and a few others. Looking to business innovation as a means toward meeting those challenges to governments may seem a paradox, since the world's critical "challenges" are not to build out Facebook, build more amazing cell phones and so forth. The paradox is resolved once we realize that commercial and industrial innovation increases productivity and thus income, which increases the tax base and thus brings in the extra tax revenue required to meet the grand challenges. Also if the right incentives are set up (so that for instance the price system reflects truly the future scarcity of commodities) then the business sector by itself will play a major role in bringing new and innovative solutions to the market. So the business sector will not only generate more revenues through innovation but also specific innovative solutions to the grand challenges.

On the other hand, commercializing new technologies requires substantial funds and time and entails strong levels of risk and uncertainty. It is far easier and safer to make money from other kinds of investments than from investing in the development of new processes or products. The latter can produce the biggest gains but it also results in an outsize share of losses.

Like all other economic actors attending to their incentives, innovative entrepreneurs must weigh the prospects for an envisioned innovation against the prospects of developing relatively known and relatively safe projects. And innovative financiers have to consider the returns on alternative uses of their capital. So, in most cases, given this great uncertainty and risk, their temptation is to shun or at least treat with caution investments aimed at achieving innovation.

Hence to further the incentive to invest in innovative projects the state will need to take measures. Opening and integrating product markets, improving technology transfers, designing financial instruments better adapted to the funding needs of the different types of innovators, and strengthening universities are some of the most important policy improvements that governments can make to increase innovation. Private-sector investments will respond to such policies only to the extent that those policies are perceived to be credible, lasting and reasonably stable.

But, today, a modest degree of policy intervention to facilitate innovation is likely to be insufficient. In America, two recent setbacks raise new difficulties that must be overcome if business sectors are to regain enough dynamism – or “innovativeness” – to make it feasible for our societies to meet our grand challenges. First, there is the weakened state of the financial sector. That has made it difficult for small firms to obtain finance for investment projects, innovative and uninnovative alike. Second, there appears to have been decline in economic dynamism over very nearly the entire decade. We cannot assume that, when the recession ends, American dynamism will return to the “old normal.”

In many European countries, a decline of dynamism became evident early in the postwar decades, when there was strikingly little indigenous innovation. The great catch-up was fuelled by the great inter-war innovations overseas. The Lisbon Agenda was not a cure.

2 – The decline of innovation

2.1 - The west's structural slump a possible drag on innovation

Advanced economies have been staggered by the current economic downturn. Not only did GDPs and profits suffer, but worse, innovation and knowledge creation declined as well. As a result, the nature of the debate has changed.

Before the crisis, economists and policy makers focused on innovation debated how Europe could improve its innovation performance relative to the United States. The U.S. was more successful in creating innovations in the form of new products, new services, new processes and new business models. As a result, the European economies could, at best, catch up to the U.S. only intermittently, as when the U.S. slowed in the 1970s and stumbled in the early 1990s. About a hundred causes were hypothesized for Europe's lesser dynamism: There was a confluence of hierarchical and stunted companies, hostile economic cultures and a lack of academic focus on business and innovation.

It is now clear that, since the economic downturn of 2008, the U.S. has an innovation problem too, though perhaps a milder one than, Europe's. Once the fiscal and monetary stimuli have run their

course, the next challenge for both the U.S. and Europe will be to reignite innovation as the ultimate method to return to sustainable growth.

Unfortunately, if history is a guide, the financial crisis in banks, households and the construction industry will allow only a slow rate of recovery. Due to the structural nature of this crisis – the overhang in housing and office buildings and the oversupply of bad loans at the banks – recovery can only proceed as fast as these impediments melt away. The estimated current output gaps for individual countries are very large, which means that actual output levels are far below potential output levels, leaving huge amounts of underutilized capacity. It could be 2020 before these output gaps are closed (van Ark, 2009)

One reason for hope is that economic crises have historically provided breeding grounds for economic renewal. The death of the residential housing industry may create new opportunities for investment elsewhere – and for innovation. But this is easier said than done, for a number of reasons.

First, a heightened sense of uncertainty has reduced the willingness of firms to supply innovative new products for try-out by households and businesses. Furthermore, the straitened circumstances of venturesome consumers and sophisticated businesses have weakened the demand for innovative new products. Several European countries – notably Germany, Italy and France – are something of an exception since they had little dynamism to lose.

Second, the huge amount of underutilized capacity, which is a by-product of the output gaps, reduces incentives to innovate through investment in new machinery and equipment. Companies will stick with their current stock of machinery and reduce orders for the latest updates.

Third, the long recovery path also poses risks beyond investment in tangible capital as recovery can also lead to an erosion of intangible capital. In particular, the human capital of high-skilled workers quickly erodes as worker training is postponed. Forward-looking activities in companies, such as R&D programs, are also coming under pressure as earnings fall and opportunities for the commercialization of new innovations decline.

Finally, as the structural crisis in financial markets will take time to resolve itself, it will continue to limit access to capital and – important for innovation – the quality of capital. Access to venture capital has been seriously constrained and will need to be restored, in particular to fund R&D and innovation in small and medium-sized enterprises that, unlike large firms, cannot rely on retained earnings.

2.2 - A shift toward reduced dynamism

The U.S. now joins Europe in showing structural signs of weakening dynamism. In the past decade the financial sector has become less oriented toward financing business than ever before. In established businesses, short-termism has become rampant. Executives avoid farsighted projects, no matter how promising, out of a concern that lower short-term profits will cause share prices to drop. Mutual fund managers threaten to dump shares of companies that miss quarterly earnings targets. Timid and complacent, our big companies are showing the same tendencies that turned traditional utilities into dinosaurs. Meanwhile, many of the factors that have long driven American innovation have dried up. Drove of investors, disappointed by their returns, have abandoned the venture capital firms of Silicon Valley. At pharmaceutical companies, computer-driven research is making fewer discoveries than intuitive chemists once did. U.S. production of information and communication technology (ICT) has been waning. It is no wonder, then, that in the U.S. productivity has grown more slowly since around 2003 and business investment as a share of GDP still has not regained the level reached during the Internet boom of the 1990s. Barring unanticipated breakthroughs, current innovations are likely to constitute only small, incremental steps – a slow pace with unhappy results for productivity, employment, and everything else.

Given these conditions, there are huge strategic and policy challenges to support technological change and innovation in the current economic environment. The depth and length of the recession has pushed many firms closer to the survival line. It has increased the pressure to focus on short-term operational issues, notably cost savings. The more medium-term tactical issues, such as improvement in performance and the development of new markets, or long-term strategic issues such as deeper reforms or attempts to achieve global leadership, are put on hold.

We will see in the near future some major changes in the business landscape, with many losers and winners emerging. These changes provide an important dynamic to renewed growth and recovery – provided markets show greater dynamics on the demand side. At the same time, new competitors from emerging economies are changing the contours of the global business landscape.

Policy makers in advanced economies have a major task on their hands to provide a breeding ground for renewed organic growth. Policy instruments will need to focus not only on closing the output gap in the short term, but also on strengthening potential output and productivity growth itself in the medium and longer term. The current fiscal stimulus plans cannot be the only or even the most effective tool for long-term recovery. Three main aspects of the global innovation policy challenge are explored in the rest of the paper.

3 – Establishing new institutions for an economy of entrepreneurs and fast movers

3.1 - Some general principles

It is extremely important to grasp the modern theory of indigenous innovation – the theory originated by Hayek, Michael Polanyi, Nelson and Phelps, Frydman and Rapaczynski, Bhidé and a few others. Several factors help determine a country's capacity for indigenous innovation, including the pluralism and insight with which the financial sector selects among alternative projects that might lead to successful new commercial products, the prevalence of businesses having the vision and daring to invest in long-term projects of a radically novel character and uncertain profitability, and the existence of end-users – consumers and managers alike – capable and curious enough to try unfamiliar products. Obviously, the extent to which imaginative and creative business people and business students wanting to start a new company can expect to find financing and talented workers determines the degree to which innovation can come from the grassroots, not just from the top.

The evidence for this theory is right in front of us. Huge and successful innovators such as Walmart, FedEx, Amazon and Cisco have grown not so much by mastering the intricacies of physics, chemistry, and molecular biology as by structuring human work and organizational processes in radically new ways. The same is true of companies based on more radical innovation, such as the network firms Google, YouTube, eBay, and Yahoo. All of the aforementioned companies have added hundreds of billions to the annual gross domestic product of the United States, with only modest contributions from industrial research as it has been traditionally understood.

The social significance of this activity transcends the gain in incomes of some and the gain in GDP of the country. The indigenous innovation in a country and especially grassroots innovation – with the attendant creativity, problem-solving, and exploration – are hugely important determinants of job satisfaction, employee engagement, and job creation, as well as a nation's league standing in productivity.

We can hope – but we cannot expect – that reliance on the innovation agenda of a few elites will deliver the *rate* of innovation of which the grassroots are capable. For most people, the extent to which jobs will once again offer rewards from the experience of participation in grassroots innovation will be crucial to the degree of human fulfillment obtained from work and career. Some elites don't care much about dynamism in the business economy, except maybe indirectly, but ordinary people have much to gain.

This is a message that governments and even universities have not delivered to the general public.

3.2 - Changing the economic structure to support innovators, entrepreneurs and fast movers

The volume of entrepreneurial activity and competitive entry into new emerging industries depends heavily on the prevailing “rules of the game,” i.e. the reward structure in the economy. Framework conditions have to be established so that innovations in services and industries are becoming an activity that promises the greatest monetary (or other) returns.

The proper institutions are needed for an effective development of this economy of start-ups, fast movers, and new industries. In such an atmosphere, frenetic innovators are exposed to high-powered incentives and thus are willing take risks and work day and night, because the reward can be very high and the potential failure manageable.

Institutions in many advanced economies are now rather weak in promoting economic dynamism, both in terms of promoting entrepreneurship and the ability of financial markets to steer finance towards worthy innovations. In fact, they tend to be good at suppressing this dynamism. In other words, the relatively poor economic performance of many advanced economies results in both the underdevelopment of capitalist institutions such as venture capital and equity finance, and the overdevelopment of corporatist institutions that suppress innovation and competition. These corporatist institutions impose penalties, impediments, prohibitions, and mandates, which are generally intended to stifle creative destruction. Among these impediments are licenses and permissions to set up a new plant or firm, the need to consult with workers on changes in the mix of products or plants, and employment protection legislation. There are some self-reinforcing mechanisms between the underdevelopment of capitalist institutions and the overdevelopment of corporatist institutions: because the latter are designed to suppress changes inherent in unbridled capitalism, they also lead to underdevelopment of the former, such as stock markets, resulting in lower ratios of stock market valuation to GDP in continental Europe than in the U.S.

For most countries, the main agenda should be focused on helping to promote the dynamism of their own economy by opening it up to outsiders, competition, and “creative destruction.” There is a case in many countries for a new balance between capitalist institutions and corporatist institutions. Many institutional changes are needed. In the next paragraphs we will focus on three, which are of particular relevance in these times of massive challenges and crises.

3.3 - Three key institutional changes

There are three areas in which some radical reshaping is clearly necessary, whether or not there is yet a consensus on the best design.

Restructuring finance to serve business. The advanced economies require radical reform of institutions in the financial sector. There is a pressing need to create or reform institutions in order to replenish the supply of capital for investment in projects of a highly innovative nature. The banking industry has moved away from its historical role of lending to businesses to such a degree that the large companies have sought their financing increasingly through issues in the corporate bond market. But that market is not equipped to judge the promise of corporate investment plans. A direct way to address this deficiency in the financial sector is to create a new class of banks that are dedicated to lending for innovation. Such a plan, one modeled somewhat after the Farm Credit System in the U.S., has recently been outlined (Phelps and Tilman, 2010).

Reforming corporate governance. An institutional reform is needed to correct the way corporations function. Joint stock companies have traditionally exposed shareowners to the moral hazard that the management might pursue its self-interest over a decade or two, rather than taking chances that would pay off in the long run – in the form of blooming profits and a high share price. Now short-termism has been aggravated by the financial sector. Mutual funds have stooped to extorting from the CEO of a company in which they hold shares an agreement to focus on meeting earnings targets one quarter ahead; the CEO who focuses instead on innovation for the sake of the long term will find that the fund managers will dump the company's shares. Moreover, the pay of the mutual fund managers themselves, rather than being based on the price performance of the shares in which they invest, is based on the expansion of their shareholdings, no matter how badly performing in the future. It is extremely important, therefore, that institutional reforms be made that would align fund managers toward the long term and, for good measure, that would liberate the CEOs of businesses from the tyranny of quarterly earnings targets.

Addressing egregious mispricing of risk. Finally, the prevailing concept that rating agencies can judge the uncertainty posed by a given type of bond and the notion that the financial sector can reduce risk by selling credit default swaps has led to the mispricing of a range of financial assets and consequent over-borrowing and over-lending by banks and various other financial companies. Once institutional reform forces banks and other financial companies to internalize the risks of the assets they acquire, they will look with greater favor at investing in areas where the risks are understood – including lending to or investing in innovative businesses.

4 – Raising the rate – and influencing the direction – of innovation

Much of the long-term policy framework, particularly in Europe and in the new “catching-up” economies, will need to continue to focus on improvements in operational efficiency – that is, narrowing of the gap between average and best practices among businesses by putting the emphasis on diffusion of technology and innovation practices. Many of the policy instruments to achieve this goal are not exclusively related to research and innovation and need to be an integral part of a

broader policy framework in order to be effective. Such an agenda should clearly go beyond any kind of R&D target, and place greater emphasis on diffusion of technology and innovation, schooling and training, market reforms (notably in services), etc.

But in addition to strengthening the diffusion of innovation, policies targeted at strengthening the growth environment must focus on new strategic growth initiatives. This requires a policy framework that is explicitly geared toward the creation and use (commercial and non-commercial) of knowledge in certain domains such as climate change, energy, or health – such areas where the centrality of R&D and innovation is emerging as a solution to structural problems. These knowledge areas and the associated general purpose technologies require a comprehensive innovation strategy that involves government, business, and society working together to create demand and supply for research, development, and applications.

As we are entering the era of crises and grand challenges – climate change, foods, water, and health – it is a good time to revisit the argument in favour of modest and neutral policy intervention. Increasing the rate of innovation is not enough; we do not necessarily want to increase the rate *randomly* in the system but in certain domains and sectors such as climate change or health. It appears to be the case today that in order to cope with these major challenges and risks, we cannot simply proceed as usual with neutral allocation of R&D subsidies, tax credits, framework conditions, and an effective patent policy. Rather, there is a need to accelerate the rate of advancing knowledge and implementing solutions *in certain directions*.

In what sense is a policy addressing a grand challenge different from a classic policy that is designed to address chronic underinvestment in R&D on decentralized markets? In the latter class of policy, the main goal is to increase the rate of technical change while in the former the goal is to influence both the rate *and* the direction of technical changes. But then the central question is about the design of such policies: What is the most effective method to increase some kind of command-and-control in the direction of innovation? And how can this be done without imposing predefined technologies, freezing or petrifying competition, and undermining the extraordinary power of a free-market economy to boost large numbers of experiments in a decentralized way?

5 - Conclusion

Our societies need to repair their innovation machinery. This includes improving and strengthening the conditions for entrepreneurs and fast-movers who need to invest in translating good ideas into new products and processes, to enter new markets and to grow. This is the alpha and omega of any innovation policy. It involves dramatic institutional adjustments in some countries, and more specific

actions to help firms to cope with the new economic environment in the countries where the basic conditions were largely present before the crisis.

The needed rehabilitation must also extend to the financial sector. Our societies must recognize that it is essential to restructure the financial sector so that it once again has the spirit and the expertise to finance investment projects in the (non-financial) business sector, particularly projects of an innovative character. The proposal to institute a new network of banks dedicated to the financing of innovative business projects – a network rather like the Farm Credit System in the United States – deserves urgent consideration if it is to get off the ground in time to cut the risk of a lost decade.

On the whole, the financial sector must be weaned from short-term borrowing on the liability side and encouraged to engage in long-term investing and lending on the asset side. Residential mortgage finance should not be allowed to crowd out long-term financing.

As commercial innovation and thus rapid productivity growth begin to return to the advanced economies of the west, these nations can begin introducing new national and global initiatives of the sort described in Section 4.

One of the main messages of this paper is the need for the right sequencing of actions and policies. In the future we will need to attempt some heroic state-led innovations involving the development of new collective goods in order to address global challenges – in short, to rescue our economies by reviving the Hume-Hayek grassroots system of indigenous innovation. Financing these heroic initiatives will require an increase in tax revenue. Yet the investment will be worth it. The world cannot afford to shelve even temporarily the maintenance and improvement of grassroots innovation – the innovation emerging from the imagination, experimentation and exploration of business people. The world cannot be allowed to leave behind the innovative capitalism of the 19th century and much of the 20th. On the contrary, capitalism must be overhauled to strengthen its capabilities and its drive to innovate. For the present century at least, the proper business of our national economies is business.

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