Is there a technological fix for the current global stagnation? 
A response to Daniele Archibugi, Blade Runner economics: Will innovation lead the economic recovery?

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A R T I C L E   I N F O

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A B S T R A C T

Daniele Archibugi asks whether the 2007–8 financial and economic crisis was brought about by the exhaustion of the current techno-economic paradigm, and whether a new paradigm will lead to eventual recovery. My answer to both questions is ‘No’. Whilst it is useful to think in terms of techno-economic paradigms to understand the uneven process of technological and social advancement, the main reason for the crisis and the main requirement for a new upswing are both socio-political rather than technological in nature. There is a link between the neoliberal deregulation regime that led to the crisis and ICTs. This regime might actually slow down the formation of a new techno-economic paradigm based around Blade Runner technologies such as genetic engineering, artificial intelligence and nanotechnology.

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1. Introduction

The Research Policy editors should be congratulated for introducing this new format where scholars are invited to stimulate and take part in a debate. It is an excellent idea to provide space for reflections that cannot be satisfactorily presented in a standard journal article. The current system of counting publications and citations as basis for getting tenure and allocating budgets is somewhat akin to the Soviet System of measuring output in terms of weight, and one with equally negative consequences – in the former case you get really heavy products, while in the latter you get too many standard papers meticulously analyzing relatively trivial issues.

The issues raised by Daniele Archibugi (DA) are certainly important: are the current stagnation and the 2008 crisis a reflection of the fact that the technological foundation of a long economic upswing has now been exhausted? Are there newly emerging technologies that will form the basis for a radically different techno-economic paradigm and will those lead the next recovery? If so, will they be dominated by biotechnology or are there other candidates as pervasive general purpose technologies that will drive growth?

I share Archibugi’s view that it is useful to think of economic history in terms of techno-economic paradigms. But I disagree regarding the main cause of the 2008 crisis and its possible remedy. The crisis did not reflect that the exhaustion of technological opportunities, and new technologies will not lead the next recovery. Rather the 2008 crisis reflected a combination of dubious politics and fundamental inherent contradictions in the current globalizing form of capitalism. If those contradictions are not resolved, there are no general purpose technologies, however radical, that can break the current stagnation. I will also argue that information and communication technologies played a role in the crisis but only in an indirect manner.

In his paper, DA refers to Perez (2013) and Mokyr (2013) as arguing that there is still potential for job creation based upon new technologies “provided that the social and economic systems allow for their introduction and diffusion”. My main point is that this precondition is more difficult to overcome than indicated in the discussion paper. The current socio-political paradigm is incompatible with a new techno-economic paradigm that may eventually coalesce from today’s emerging technologies. The most critical issues have to do with the contradiction between neoliberal national political governance, on the one hand, and financialization and economic globalization, on the other hand.

Moreover, even if a social transformation took place that allowed for the introduction and diffusion of emerging new technologies, economic growth and job creation would depend more on the generalized use of existing technologies in ‘the rest of the world’ (Latin America, Africa, China, India and Indonesia) than on the application and wider use of the brand-new technologies in the OECD-area. It is surprising that DA who is a world-leading expert on globalization including working on global citizenship, does not...
have more to say on the importance of location. It stands in contrast to the insights offered in contributions to the excellent handbook he recently co-edited (Archibugi and Filippetti, 2015).

DA reflects on how his children and grandchildren will experience the advent of new technologies. I agree with him that there is no reason to doubt that future generations will be confronted with fancy and unforeseeable new phenomena reflecting technological change. But there are reasons related to societal risk and acceptability for believing the Blade Runner technologies that DA presents as primary candidates for forming the technological basis of the future long upswing might not become as all-pervasive as he assumes.

My conclusion is that politics and new forms of governance will matter more than the economy and technology for the eventual upswing and sustained economic growth – a conclusion that might seem inappropriate and even surprising from someone with a lifelong career as an expert on the economics of innovation.

2. On the usefulness of the concept of a techno-economic paradigm

The concept of a techno-economic paradigm is helpful when it comes to understanding economic and social change. It reminds us that technological change takes place at an uneven pace in which clusters of independent technical innovations form that then prove superior in terms of how they contribute to economic performance compared with existing technologies. It also reminds us that the new technological systems will confront technological, social and cultural barriers that reflect how institutions and organisations have adapted to earlier generations of technology.

One recent example is the set of social, organizational and infrastructural transformations that have taken place in connection with the wider use of information and communication technologies. The Solow paradox (later on taking the opposite form of the ‘new economy’ hype) referred to the fact that the widespread use of this revolutionary technology was not (initially, at least) reflected in higher rates of productivity growth. In Lundvall (1991) and Lundvall (2009), I referred to research showing how Danish firms at the end of the 1980s introducing this ‘superior technology’ without combining the introduction with organizational change and training of employees experienced a fall in productivity. In an important paper, Paul David (1990) went back one hundred years and showed that a similar slow impact came from introducing electricity as a substitute for steam power.

One of the interesting ideas of Perez and Freeman is that they link new techno-economic paradigms to shifts in global leadership. The classical example is how Germany and the US overcame the UK and took world lead (gaining an absolute advantage) in an era when electricity and chemistry became more important than mechanical engineering, steel and coal. Fifty years later, countries such as Japan, Singapore and Korea were able to join the rich countries on the basis of information and communication technologies. One reason for this change in leadership is that the very success of adapting institutions so that they match the existing core technologies subsequently becomes a handicap for the prevailing lead country (or countries) when new technologies become dominant. DA gives some attention to the location of the new techno-economic paradigm but only in connection with an analysis of European countries. However, his analysis is more on the persistence of investments in R&D than on how the qualitative characteristics of the national systems of innovation may or may not match a future techno-economic paradigm.

Yet while it is useful to discuss how changing technological systems are reflected in shifts in absolute advantage and how existing institutional forms are challenged by such shifts, it is more problematic to propose that such shifts will ‘lead a recovery’ or to argue that the exhaustion of the existing paradigm lies behind the crisis and the ensuing period of stagnation. I find much more convincing the argument that the ‘recovery’ after the great depression was ‘led by’ the Second World War and that post-war economic growth reflected the aftermath of the war rather than being led by new technologies. Der Wirtschaftswunder in Germany and the rapid growth in Japan reflected a unique historical experience in which physical infrastructure had been largely destroyed while the advanced knowledge base remained more or less intact. To this was added the politically motivated and comparatively successful Marshall plan that made it possible for Western European countries to engage in catching up with the US, the world’s lead economy.

3. Where did the 2008 crisis come from?

There is already a voluminous literature on why the recent financial crisis came about and I will not attempt to give a full answer but merely point to what I see as the most crucial factors.

The deregulation of financial markets and weak governance more generally represent the single most important factor in explaining why there was deep financial crisis in 2007–8. Financial deregulation was a politically orchestrated process that started in the second half of the 1970s in the US and accelerated and became world-wide in the 1980s. An important mechanism behind the acceleration and wider spread of financial deregulation was interstate and international competition. Financial institutions in the US became located in peripheral states offering minimum regulation as early as 1977 (Sherman, 2009). In order to become the preferred host of financial institutions, nation states competed in offering ever more lax regulations.

The globalization of finance contributed to the globalization of trade and foreign direct investment, and it went hand-in-hand with neoliberal strategies that led to increasing inequality and to financialization, whereby enterprises became increasingly focused on trading in financial assets as compared to investments in production capacity. Expansionary monetary policy in the US and elsewhere promoted asset price inflation while the increase in income inequality slowed growth in aggregate effective demand. The room for national fiscal expansion became narrow as speculative attacks on national currencies grew in scale.

The 2008 crisis was triggered by insolvency in US subprime mortgage markets but there could have been many other triggers to bring about the global financial collapse. The asset inflation and a myriad of transnational Ponzi schemes with fictive liabilities and assets would surely have collapsed sooner or later. The combination of globalizing financial markets and neoliberal economic strategies with weak transnational governance ultimately proved unsustainable. The crisis illustrates why the idea of a technological fix for stagnation problems is inadequate and why the institutional and political framing of technological development needs to be brought into the analysis. Nevertheless, as we shall see in the next section, information and communication technologies may indirectly have contributed to the crisis.

1 At the start of the 1980s I was member of an OECD ad hoc expert group with a mandate to analyse the role of science and technology with regard to competitiveness. Half way through the process, the DSTI Director (who was from the US) came to one of our meetings and told us that we should reorient our work and focus on how deregulation could contribute to competitiveness. The group did not comply and we ended up with recommendations to build ‘structural competitiveness’ through investments in knowledge infrastructure. Those conclusions were not widely dissemination at the time – the final report was held up because of a supposed lack of printing capacity at OECD!
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