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Invisible innovation and hidden performance in services: a challenge for public policy¹

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Although contemporary economies are undeniably service economies, since services are now our main source of wealth and jobs, the relationship between services, on the one hand, and innovation and performance, on the other, continues to be a matter of considerable debate. Thus in the still dominant industrialist or technologist approach to this relationship, innovation efforts and performance levels in services are underestimated. It is this approach that is responsible for the existence of two gaps: an innovation gap and a performance gap. The innovation gap indicates that our economies contain invisible or hidden innovations that are not captured by the traditional indicators of innovation, while the performance gap is reflected in an underestimation of the efforts directed towards improving performance in those economies. These gaps have their origin in certain more or less ancient myths about the fundamental nature of services and the errors of measurement associated with them. They may have harmful consequences for the validity of the public policies implemented at national or European level. Since they are based on imperfect or even erroneous forecasts, these policies may also prove to be inappropriate.

1. An innovation gap

The innovation gap is a measure of the difference between the reality of innovation in a service economy and innovation as it is captured and measured by the traditional indicators (particularly R&D and patents). It indicates that the service economy probably innovates more than these indicators would suggest and that consequently there is hidden or invisible innovation in service economies that has, if possible, to be identified and supported by appropriate public policies.

This innovation gap concerns services in particular, and it might reasonably be assumed that the larger the service sector is in a given society, the greater the gap is likely to be. In reality, however, it is also sustained by the invisibility of certain forms of innovation in other sectors of the economy. This is all the more true since contemporary economies are characterised by a certain blurring of the boundaries between goods.

Visible innovation is the innovation that is captured by the traditional indicators, such as R&D and patents. Consequently, it reflects a technologist and assimilationist view of innovation that regards innovation as involving essentially the production of technical systems with a scientific basis. Such a concept of innovation leads to the conclusion that services are relatively less innovative than manufacturing industry, despite the progress associated with the adoption of ITCs. It also indicates that innovations are much more likely to be adopted than produced by services themselves. This technologist and scientific concept of innovation is the cause of the innovation gap under discussion here. It is able to capture only the exposed tip of the innovation iceberg. It not only causes a public policy gap but it is also reinforced by it. After all, public policies intended to support innovation are primarily horizontal scientific and technological policies (Rubalcaba, 2006).

Thus invisible or hidden innovation constitutes an important area of research that is still largely unexploited; it is essential to continue exploring it in order to fill the innovation gap and to make good the gap or bias in public policy. It should be noted, firstly, that this invisible

¹ This paper draws on a research carried out within the ServPPIN project (European Commission, FP7. For a more developed version see Djellal F. and Gallouj F. (2010)

innovation is not invisible to everybody. It is undeniable that, in recent years, there have been institutional changes and efforts made by researchers to remedy this situation²; nevertheless, it frequently remains invisible to theoretical analysis, to the statistical indicators used by national and international institutions and to public policies. On the other hand, the issues at stake in invisible innovation do not elude the actors in organisations responsible for implementing this type of innovation. Invisible innovation is not a homogeneous category. The diverse forms it may take are often grouped together under the heading of non-technological innovation. This is a convenient expression, but it conceals a wide diversity of types of innovation: social innovations, organisational innovations, methodological innovations, marketing innovations, innovations involving intangible products or processes, etc.

Thus innovation in services cannot be reduced to technological innovation, as is shown by the following examples, among others: a new insurance policy, new financial instruments, a new area of legal expertise, a new restaurant, distribution or hotel concept, a new leisure concept, a new care or cleaning protocol, a new consulting methodology, etc. This does not mean that these innovations cannot be based on tangible technologies (computers or means of transport, for example), but that they are not consubstantial with them and that they may in certain cases dispense with them. In other words, the notion that innovation exists only when the novelty is embodied in a technical system is unjustified. Not to accept this is seriously to underestimate the capacity for innovation in services. The myopia of national and international indicators of R&D and innovation (which persists, although it is declining thanks to changes in OECD manuals) can be explained by this error.

2. A performance gap

Economic performance also poses serious problems of definition and measurement, and here too hidden forms of performance can be identified. These hidden forms of performance are also not unconnected with the service-based nature of economic activities. This performance gap reflects the difference between the reality of performance in a service economy and performance as measured by the traditional economic tools (productivity and growth). Once again, an organisation or an economy in its totality may perform better (or worse) than is suggested by the indicators of productivity or growth. In particular, this notion of hidden performance brings into play that of sustainable development, defined in both socio-economic and environmental terms, and, more generally, other worlds of performance than the industrial and technological world.

This performance gap has its roots in classical economic thought, and in particular the work of Adam Smith who compared the productive work involved in manufacturing with the unproductive work involved in services, which vanish at the very moment they are produced. It is curious to think that an analysis based on a definition of services confined to the work of domestic servants, servants of the state and artists continues to influence contemporary thinking. The main criticism generally aimed at the service economy is that it suffers from low productivity. This characteristic was for a long time (and indeed still is) regarded as intrinsic to services, so much so in fact that it provided Jean Fourastié (1949) with the main criterion for the first positive definition of the service sector. It also lies at the heart of Baumol's models of unbalanced growth (Baumol 1967), in which it characterises the so-called stagnant sectors. It is reflected in contemporary discourse by the diagnosis of a new pathology, namely Solow's paradox, according to which computer technologies exist everywhere except in productivity statistics.

² For a survey of these efforts, see in particular, among others : Gallouj and Djellal (2010) ; Gallouj and Savona (2009); Howells (2007) ; Miles (2005) ; Tether (2005), Preissl (1999); Sundbo (1998).

In reality, productivity and performance in services are not (or are no longer) poor by definition. They have undeniably increased. This increase can be explained by both the actual strategies adopted by the economic actors and a knowledge effect produced by our improved understanding of the theoretical and methodological problems posed by services.

Firstly, the economic actors concerned are not inactive. Service firms and organisations are capable of effectively implementing rationalisation strategies, which tends to give the lie to the notion that productivity in services is inevitably low (Gadrey, 1996; Djellal and Gallouj, 2008). It is not only in operational services that these strategies are at work. They are also deployed in knowledge-intensive services.

Secondly, the performance gap can also be filled by an improved theoretical and methodological understanding. Critical analyses of the notions of productivity and growth are frequently tackled in similar terms, since in both cases it is the essentially the nature of the product that is at issue. The terms of this critical debate can be divided into two groups of arguments.

The first argument concerns measurement error. The hypothesis is that the level of productivity in services is undoubtedly less problematic than the methods used to measure it. Attempts to use this industrial and technical indicator come up against the problems of identifying the output of service activities. Thus the unit of output for a computer manufacturer is a computer, but what is the unit of output for education, national defence (particularly in peacetime), the police or even the ministry of foreign affairs? Thus this first argument calls into question the results and suggests corrections. In the case of public services, for example, the measurement of output in terms of input (which presupposes that productivity remains static) has been abandoned and replaced by measures of output based on the activities that make it up.

The second argument calls into question the very notion of productivity, or at least its absolutism. The idea is that, in services to a greater extent than elsewhere, performance cannot be captured solely through the notion of productivity. Consequently, a multi-criteria form of assessment is required, one that takes account of the multiple dimensions of performance: technical performance of course, but also commercial performance (relative to monetary and financial values), civic performance (relative to equity, equal treatment, social cohesion, respect for the environment, etc.) and relational performance (quality of interpersonal relations, empathy, trust relations, etc.).

3. From innovation and performance gaps to policy gap

In a service economy, the definition and measurement of innovation, as performance, raises numerous difficulties. They are the cause, not only of an innovation gap, but also of a performance gap. We will now compare these two gaps and examine their consequences on the fundamental relationship between innovation and performance and their implications in terms of public policies.

The fundamental hypothesis of the analysis is that innovation efforts in a post-industrial economy are always under-estimated. A consensus now seems to have been established on this point, as an increasing number of theoretical and empirical works bear witness but also, and particularly, the many revisions of the OECD official manuals. The specificities of innovation in services are recognised, even if the inertia of our analytical tools and technical difficulties can prevent them from being taken into account, for example in surveys. On the

other hand, a consensus on the nature, scope and challenges of the performance gap is far from being achieved. It is true that performance, considered from the viewpoint of productivity and growth, has always been at the heart of all economic theories. It is therefore subject to a major effect of cognitive irreversibility.

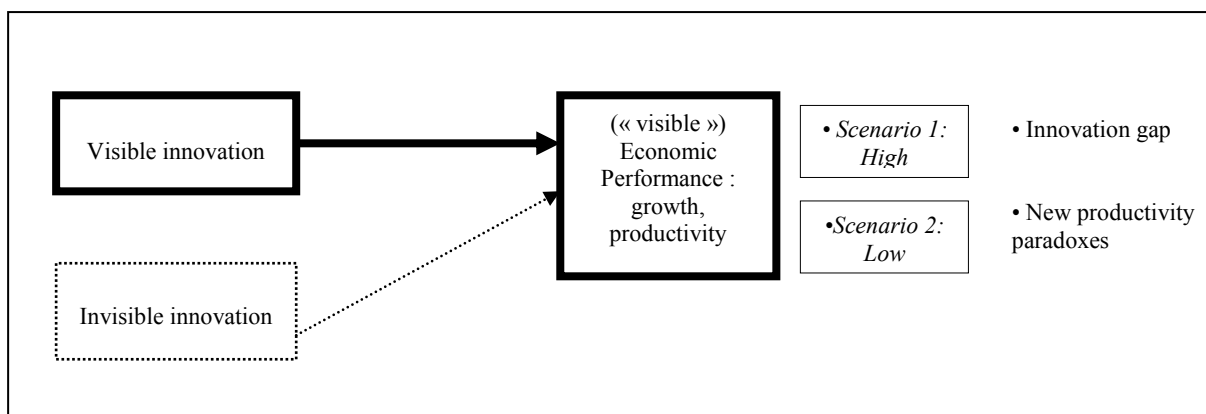
In view of these differences in the perceptions of gaps, it is necessary to consider several possible scenarios, to examine the consequences of these on the innovation-performance relationship. The first case (the most frequent) is that in which one believes that performance is defined satisfactorily by productivity and growth. Public policies supporting innovation are based on this canonical scenario. The second case is where one assumes that the performance is badly defined (and under-estimated), in other words that there is a performance gap. We will examine these two scenarios, as well as their consequences for public policy.

3.1 Performance is (considered to be) well defined

National and international policies supporting innovation are based on this hypothesis, according to which performance can be reduced to growth (and to productivity). The discussion and possible theoretical or operational problems only therefore concern the innovation variable. For a given innovation effort, this hypothesis allows one to consider two interesting scenarios, which differ depending on the levels of performance achieved.

The first scenario is that which corresponds to a high economic performance for a given (visible) innovation effort. This scenario may wrongly lead to the impression being given of a high output of a country's visible innovation effort, while in fact part of the performance is explained by invisible innovation. In the case of GB, for example, NESTA (2006) observes a high economic performance in the last decade for a lower level of innovation than in other countries. For example, R&D per capita expenditure in GB is two times lower than in Sweden and in Finland. It is lower than in France or in Germany. The number of patents per inhabitant is much higher in Germany, Japan and the United States than in GB. The explanation of this paradox lies in the British innovation gap. In fact, part of the performance can be explained by the invisible innovation effort.

Figure 1: The innovation gap and the innovation-performance relationship



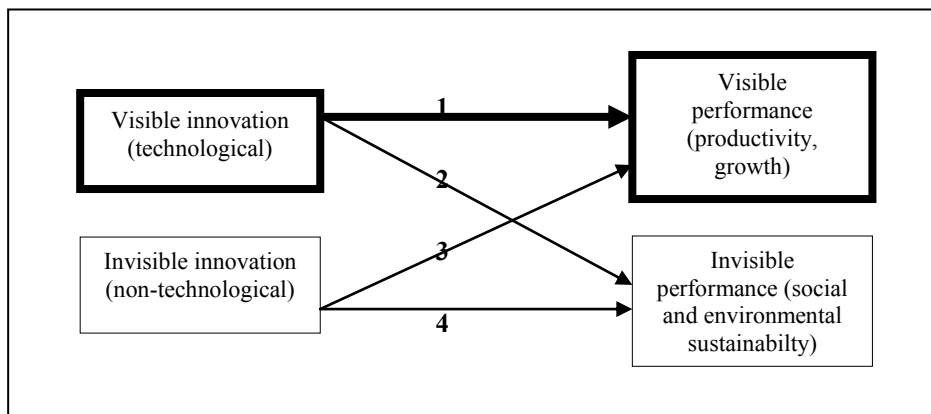
The second scenario is that which corresponds to a weak economic performance (growth) for a given innovation effort. In fact the situation is then still more unfavourable than it appears (and it will be necessary to draw conclusions in terms of public innovation policies), since the level of real innovation is higher than the measures considered indicate. Invisible innovation

efforts combined with visible efforts are not effective. Therefore, to paraphrase the Solow paradox, we can here formulate a new productivity paradox: there is innovation and R-D everywhere (including invisible innovation and R-D) except in performance statistics.

3.2 The performance is badly defined

A certain number of recent studies question the dictatorship of productivity, of GDP and growth, by considering that they are neither the only, nor the best indicators of the economic performance of a country. Thus, just as there is invisible innovation, so there would be invisible performance. This invisible performance mainly concerns the field of socio-economic and ecological sustainability. It expresses concerns in terms of human development, social cohesion, equality, equity, environmental protection, outcomes rather than outputs. Here we are interested in the (theoretical) consequences (on the analysis of the innovation-performance relationship) of taking this new gap into account.

Figure 2: Innovation gap, performance gap and innovation-performance relationship



Thus visible innovation certainly leads to visible performance (relationship 1), but it can also result in an invisible performance with regard to socio-civic and ecological sustainability (relationship 2). Technological innovation can indeed also be a source of social, civic and ecological benefits, and certain technological trajectories are more guided than others by the seek for socio-economic or ecological sustainability. For example, technological innovations responding to the problems of the elderly (domestic robots, smart home, electronic surveillance...) represent a powerful innovation trajectory in ageing service societies.

Relationship 3, which links invisible innovation to visible performance, means that the non-technological forms of innovation are also a source of growth (visible performance). It is the reason (when invisible innovation efforts are significant) for the incorrect interpretation of the innovation-performance relationship (mentioned previously), which takes account of high growth for a relatively weak innovation effort.

Relationship 4, finally, which links invisible innovation to invisible performance, assumes a favoured relationship between non-technological innovation and invisible performance. There seems to be a strong correlation between the invisible component of innovation and the invisible component of performance. Indeed proximity services, for example, are the setting for significant social innovation activity, which escapes traditional indicators, whereas their role in the resolution of social problems is fundamental. More generally, if one considers performance from the viewpoint of sustainability, one notes that, although they are not dramatic, many non-technological, and particularly social, innovations, play a significant role

in this. Amongst others, we can mention certain forms of sustainable tourism, the many innovative initiatives in the field of care for the elderly, childhood, social integration, and in the financial field, micro-credits to respond to the problem of banking exclusion...

Because of the existence of hidden performance, innovation efforts can be more effective than the measures indicate. Thus, for given innovation efforts, an apparently weak (traditional) performance can be enhanced from the viewpoint of alternative performance. Conversely, an apparently high (traditional) performance can be put into perspective, insofar as growth and productivity gains are tarnished by ecological or social damage.

3.3 The double gap: a challenge for public policies

In view of the two gaps identified in this work, one can assume that public innovation policies are, to a certain extent, inadequate. Indeed, they rely on a partly inaccurate analysis, and consequently suggest solutions that could prove to be inappropriate.

In order to carry out their diagnosis, public policies generally favour relationship 1, which links visible technological innovation to visible performance (growth, productivity). Figure 2 illustrates well all the errors in analysis and the paradoxes that can follow from such a hypothesis. We can thus identify a weak innovation effort at the same time as a high (growth) performance. This is the diagnosis achieved by NESTA (2006) in Great Britain for the last decade. We can also identify an apparently higher innovation effort, which does not fulfill its promises on performance. This is the case for France in the same period. To establish a satisfactory analysis, it is necessary to take into account all the other relationships between innovation and performance (relationships 2, 3 and 4), which can contribute to different interpretations of innovation efforts and levels of performance achieved.

In view of the diagnosis established on the basis of relationship 1, the solutions recommended by the public authorities naturally consist of promoting technological innovation, that which is based on scientific and technical R&D activities and which can be appropriated by patents. These strategies mainly concern public research and the industrial sectors, in particular high technology. As regards training systems, policies will consist of favouring scientific and technological training. As the OECD (2005) emphasises, the innovation policy of member countries was mainly considered to be an extension of R&D policies. Thus, in economies that are, however, largely dominated by services, these technologist and industrialist policies have also been transposed to services. In the same way as economic analysis, public policies of support for innovation in services are dominated by an assimilationist perspective.

The main lesson to draw from the preceding analyses in terms of public policy is that, to take into account the double gap that has been identified, the public authorities should break with their technologist orientation and try to promote invisible innovations and performances.

It is thus necessary to emphasise innovation and R&D policies that are specific to services (perspective of differentiation), in other words, policies that are not content with supporting technological innovation and R&D, but which also favour non-technological forms of innovation and R&D. As far as the source of the gap is not confined to services, it is also necessary to support innovations in services within the manufacturing and agricultural sectors. If it happens, this recognition of invisible innovation in public policies should also redirect priorities on education policy. Indeed, one should also support the development of the necessary skills in non-technological forms of innovation, whether this is skills that produce or which absorb these innovations. These skills do not only concern an elite, they should be disseminated to all levels of the population. This is particularly obvious with regard to social

innovations that can be produced and implemented in the informal and domestic sphere (voluntary work, community organisation) as in the formal sphere (or social entrepreneurship). All services of course are concerned by these innovation policies. But some sectors appear to be more concerned than others. This is the case with the KIBS, which contribute strongly to the innovation gap, both through their own internal non-technological innovation, but also by that which they produce for their customers. This is also the case for the numerous proximity services, where many social innovations are implemented.

If one considers performance in terms of sustainable development, one again notes that it is the technologist or assimilationist perspective which dominates. Most of the public policies of induction of sustainable innovation fall within such a perspective, which consists of supporting sustainable technological innovations in different ways: funding, taxation (for example, by granting tax credits for clean technologies or which save energy), public orders, the dissemination of information... In order to favour invisible performance more, it is also necessary here to implement demarcation policies which emphasise the specificities of sustainable innovation in services and in particular social innovations.

Conclusion

The relationship between innovation and performance (equated with growth) is a major economic relationship, which has been the subject of an extremely extensive literature. In post-industrial economies, the two terms of the relationship raise several problems, which have been the subject of a separate literature. In a highly tertiarised economy, service innovation partly escapes the tools of traditional economic analysis. One therefore observes an innovation gap. Performance continues to be defined in terms of growth and productivity, while other forms of assessing performance prove to be necessary. One therefore observes a performance gap.

Economic analysis and public policies favour the relationship between visible innovation (identified by traditional definitions, R&D and patents) and visible performance (equated with growth). They therefore emphasise technological innovation that is a source of growth. However, the double gap that has been identified reveals much more complex relationships, which can question the relevance of diagnoses and the validity of public policies supporting innovation. It therefore appears that these policies should adopt a demarcation perspective, which allows one to take account of and support the specific forms of innovation (in particular in services) and the most dynamic and most strategic sectors (for example, the KIBS), but also a certain number of economic sectors that are sources of social innovations (proximity services). These policies, whatever the form of innovation (technological or non-technological), should also favour less visible performance (sustainable performance).

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