

The Public Sector in Innovation Systems

Module1 – Conceptual Framework

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Output from the joint Nordic research project 'Measuring Public Innovation in Nordic Countries: Toward a common statistical approach': Module 1: Examining the heterogeneity of public sector

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Abstract

Public sector innovation is increasingly regarded as a central factor to sustain a high level of public services for both citizens and businesses. As the public sector plays an important role in most developed economies, it should not be excluded from our understanding of how the economy evolves. The main objective of this paper is to discuss how innovation in a public sector context may be perceived and conceptualized, and to reflect upon the role that the public sector is often assigned in theorizing on innovation systems. Various motivations for the public sector to be innovative are presented, as well as rationales for measuring innovation in the public sector. The paper argues that the public sector should not be treated as a static framework for innovation in the private sector, but rather as a co-evolving actor along innovation in the private sector. Furthermore, parallel to innovation in the private sector, innovation in the public sector should neither be seen independent from the underlying incentive structures that structure behaviour, nor from their wider systemic context. Although possessing distinct features in relation to the private sector, there seems to be common ground as to which concepts from studies of private sector innovation may also be applied on the public sector, but that these should be further developed and refined, taking into account the heterogeneous and specific characteristics of the public sector.

Key words: public sector, heterogeneity, learning, innovation systems

Introduction

A range of studies of the development of new products, production processes and behaviour in private, market-based companies have greatly improved our understanding of the processes underlying innovation and social and economic change in modern economies. However, theorizing on innovation and learning has often had its prime focus on innovation in the private sector. But as the public sector plays an important role in most developed economies, it should not be excluded from our understanding of how the economy evolves. Public sector innovation is increasingly regarded as a central factor to sustain a high level of public services for both citizens and businesses, as well as addressing social challenges and improving welfare. However, the lack of quantitative evidence limits the ability to understand and promote public sector innovation. There is still a tendency to consider the public sector as something radically different than the private sector in terms of innovation. The vast literature on innovation systems has largely tended to ignore the role the public sector plays in processes of innovation. Making a sharp distinction between the private and public sector often implies perceiving the public sector as a regulatory framework for innovation in the private sector, and as a passive recipient of innovations from the private sector. Public sector institutions are often seen as conservative and bureaucratic, and the changes in the public sector are often understood as consequences of innovations outside the public sector (Windrum 2008).

Why should public organizations innovate, when they are neither challenged by competition in the market nor confronted by a need to expand in order to survive in the market? At first glance it may seem odd to be concerned with the level of innovation in the public sector. As the tasks and services of the public sector in many ways are based on incentives and rationales different from services operating on the private market, it may be difficult to see why public services should innovate. However, public services may have considerable effect not only on the effectiveness of the carrying out of public services itself, it may also influence the ability for the private sector to innovate and improve the relation between the public sector services and its citizens. The public sector has a great impact on people's lives, and the public sector is in many ways the basis of society and facilitates the framework in which it develops. Due to its importance, it is paramount that public sector improves and innovates along with the rest of society. In more detail, there may both be economic, industrial, political, relational and personal motivations for innovation in the public sector:

First, there are economic motivations for stimulating a cost-effective and productive administration and management of the civil service, such as financial management, health services, collection of taxes and educational offer. To the degree that there is a demand for higher quality in public services and at the same time a common belief that public expenditures and taxation should not increase, the answer lies in innovation in the public sector.

Second, many activities in the public sector will be devoted to affect the innovative performance of the private sector or in other parts of the public sector. An innovative public sector is important to innovation in the private sector, due to the close interactions between the private and the public sector in many domains, and due to the role of the public sector as a facilitator of infrastructure for the private sector (e.g. knowledge development through education and research, communications such as roads, railways or ICT, and industrial policy instruments). Public procurement practices can nonetheless also represent important incentives that may have a major impact on innovation in private sector.

Third, an innovative public sector that offers services of good quality (new service or new aspects, ease of use, access, timeliness) may ensure an effective handling of the relations between the public sector and citizens, such as through informing the public, through taxation, education or in health care. The efficiency of a country's public sector and a delivery of public services of good quality are vital to achieve transparent operations, which may improve the understanding and legitimacy of how the public sector works. A modern and effective public sector with increased accountability to the public may result in public satisfaction with the services offered, which may improve the trust of the public sector (Vigoda-Gadot et al. 2008).

Fourth, innovation in the public sector may be motivated by political reasons. The public sector does not as a whole face the test of competitive markets, but politicians and political parties in Western democracies face the test of competitive electoral politics. Political support and votes are gained through being seen to perform better than opposing political actors, and the provision, delivery, and cost of public services is an important domain for competition between claims of effective (potential) performance.

Finally, innovation in the public sector may also be motivated by personal reasons. Public sector policy makers, managers and professional workers may gain personal satisfaction, motivation and status among their professional community and society at large from improving public services and the users experience with these. As such by proposing innovations they may boost their own careers.

In order to be able to improve our knowledge and understanding of the rate and degree of innovation in the public sector, as well as about its incentives, processes and impact, there is now an increasing awareness of the need for more systematic and comparable data on innovation in the public sector (Koch and Hauknes 2005). Against this background this paper aims to discuss a set of conceptual issues relevant to innovation in the public sector.

The paper discusses how innovation in a public sector context may be perceived and conceptualized, and problematizes the role that the public sector is often assigned in theorizing on innovation systems. The paper does not aim to present or discuss in detail how innovation takes place in different parts of the public sector, nor will it go into lengthy elaborations on specific indicators for measuring innovation in the public sector (See Bloch 2010 for a detailed discussion of this). Rather, the paper seeks to present some generic and analytical tools that are central to our understanding of innovation in the public sector, as well as in the preparations for how to go about measuring it. In this way the paper seeks to improve our understanding of how work with developing indicators for measuring innovation in the public sector should be organised. In practice this work should be seen in close interrelation with the next revision of the Oslo manual.

The paper is part of the output from the joint Nordic research project 'Measuring innovation in the public sector in the Nordic countries: Toward a common statistical approach' in which a questionnaire will be developed to collect data on innovation in the public sector. The objective of the project is to develop a measurement framework for collecting internationally comparable data on innovation in the public sector, which will contribute to our understanding what public sector innovation is and how public sector organisations innovate and will develop metrics for

use in promoting public sector innovation. The work of the first stage of this project is documented through, in all, six papers¹:

- The public sector in innovation systems (Markus M. Bugge, Johan Hauknes, Carter Bloch and Stig Slipersæter)
- Towards a conceptual framework for measuring public sector innovation (Carter Bloch)
- Survey methodology for measuring public innovation (Peter S. Mortensen)
- Mapping user needs (Lydia L. Jørgensen)
- Feasibility study of public sector organizations (Per Annerstedt and Roger Björkbacka)
- Nordic survey on public innovation 2009 – draft pilot questionnaire

In addition the paper builds upon the insights generated in the Publin project (Koch and Hauknes 2005; Koch et al. 2006) and in particular on work conducted by Johan Hauknes at NIFU STEP.

The discussion is structured along three themes. First, some reflection is given to delimiting the public sector, as well as to its objectives and outputs. Second, the paper discusses how innovation and learning should be conceptualised in a public sector context and how the public sector should be perceived as an active co-evolving partner of wider innovation systems. This section also discusses how innovation can be conceptualized in any organisation, and how this form of organisational learning is affected by incentive structures. The third section bridges the discussions on innovation in the public sector with a focus on heterogeneity in the public sector; how the public sector consists of heterogeneous interfaces within and across the public sector; between the public and the private sector, between the public sector and all citizens (and users of specific services), and the interfaces across government. As part of this it is also discussed how the boundaries between the private and public sector have become increasingly blurred.

Defining and delimiting the public sector

How do we define the public sector, and what are public services? In order to form a better understanding of public sector innovation, it is first necessary to examine key characteristics of public services and of the public sector on the whole. This section presents a brief discussion of the delimitation of the public sector, main characteristics of public services, as well as their objectives, values and outputs.

A normal way of perceiving the public sector is associated with the supply of public services, such as education, health care, public administration, research, public transport, welfare schemes, infrastructure, police and defence. However, delimiting the public sector and identifying the boundaries of its activities towards the private sector can be a difficult exercise as many services and activities in the public sector are often closely integrated with private sector activities and vice versa. Several actors in the public sector have various degrees of autonomy compared to the private sector, where all actors are in principle autonomous. Also, in response to demands for improvement in general welfare growth and societal development, many public sector activities and the organisation of these are under continuous change. Some

¹ In addition to this, some countries have published national results of their feasibility studies. See www.mepin.eu.

of the types of organisations that contribute to such a blurred picture are intermediaries between the public and private sector, such as non-governmental organisations (NGOs), research and technology organisations (RTOs) or Technology Transfer Offices (TTOs). Within R&D statistics it is common to define public sector as the governmental sector and publicly owned institutions (Mortensen 2010). Without departing on a lengthy elaboration on categorisations and delimitation of the public sector it can be noted that there are various approaches to delimiting the public sector. Examples of different approaches include using function of government, kind of activities, product types or a selection of establishments or legal units (Mortensen 2010).

Objectives and value creation

One of the most important differences between the public and the private sector is differences in objectives. Businesses may have a number of secondary goals, but the main overarching goal for all businesses is to give return on investments and to increase shareholder value. Goals are much less clear for the public sector. Objectives may be much more diffuse and multifaceted and consequently they may be more difficult to measure. A policy initiative can e.g. be directed at both regional development and innovation, or environmentally sustainable industrial development.

Although the public sector in many ways has approached the private sector in terms of outsourcing, privatization and contracting, there are differences between the public and the private sector. On the surface the public sector appears to be more homogeneous than the private sector. Instead of pursuing profits large and bureaucratic organisations appear to be more or less monopolistic suppliers of services to society (Røste and Miles 2005). However, whereas the private sector is primarily targeted and oriented towards its existing and future customers the public sector both relates to all citizens on one hand and users of specific services on the other. The users of public services correspond to the customer in the private sector, but the considerations towards all citizens are something that is unique to the public sector. In many countries the public sector offers universal, democratic services (e.g. health services, education) that are commonly available to all types of citizens in the entire country. Whereas the customers in the private sector possess power in the sense that they may choose not to purchase a given product from a supplier or a company, the citizens have the power to overthrow the Government. The complexity of objectives is also assumed to be greater in the public sector than in the private sector. The public sector may have parallel and co-existing objectives and mandates, whereas the private sector is more one-dimensional and is commonly measured in terms of its pecuniary characteristics and performance.

How objectives are defined and formalised by public sector institutions will impact public sector innovation and value creation. Kelly et al. (2002) identify three forms of value creation in the public sector: services, social outcomes and trust.

Value creation in *services* may take place through increased efficiency, improved quality, user satisfaction, increased usage of services, greater equity (fairness) in service provision or greater choice or variety. *Social outcomes* such as social cohesion, equality, reduced crime, poverty reduction, better educated population or improved health, represent central aims of public services. For many of these services there are no well functioning markets to provide services for those that need them. In this sense public activities can be seen as compensations for shortcomings in market economies.

Trust and legitimacy are also identified as important public objectives, as they will influence on user satisfaction with public services and the public sector's ability to achieve broader societal goals. Among the objectives here are improved public perceptions of public service institutions, accountability of public service institutions in meeting public needs, and beliefs that public sector activities are aligned with stated societal objectives.

In addition to potential conflicts between objectives within an organisation, innovation can also have various forms of both positive and negative outputs. E.g. surveillance cameras everywhere in public places may be able to reduce crime, but it can at the same time undermine the legitimacy and trust of the public sector. This illustrates how objectives, value creation and outcomes in the public sector are complex and multifaceted. Another implication of this is that measuring one kind of output should often be seen in relation to other forms of output in order to reflect how the various aspects are often integrated and woven together.

The nature of public services

Innovation in the public sector and how innovation is perceived depends to a great extent on the nature of public services. There is also a great degree of heterogeneity in public services, where the differences among public units, both in terms of size, focus, objectives and outputs, are arguably even greater than for the business sector. For example, there are institutions providing services to individual users (which perhaps are those that most closely resemble business services), institutions providing collective services to all citizens, and administrative institutions providing services to other governmental organisations (which would reflect business to business services). The services offered at all citizens are unique to the public sector in contrast to the private sector. As most production in the public sector is associated with service production a number of characteristics of services in general also applies to public service providers:

- *Intangibility*. Services are not objects, they are activities, e.g. consulting. Typically, they can't be stored and customers are unable to see them beforehand.
- *Simultaneity*. For many services, production and consumption are continuous, e.g. a concert. This may attach an additional element of importance to client interaction, and may give a larger role to the customer as a 'co-producer' of service innovations (e.g. Ramirez, 1999; Skjølsvik et al., 2007). It also implies in many cases that development of new services will be hard to separate from 'production', with the result that much service innovation will *be incremental* in nature.
- *Customization*. Some services are customized to the individual client or user, e.g. advertising. The degree of standardization may influence how service firms innovate. This is arguably also a dimension that is growing in importance for the public sector, as many public services are increasingly tailored to individual users.
- *The human factor*. While this varies greatly from sector to sector, in general, the human factor will be more important for (the production, delivery and development) of services than for product development, e.g. health care services. This will tend to place greater emphasis on worker competences and client interaction.

Although one may operate with common characteristics that apply to many services, there are various ways in which services may be categorised. A number of typologies of services have been proposed in the literature, and which might have relevance for innovation in the public sector. An example is Howells and Tether (2004), who identify four service 'sectors':

- Physical services – services engaged in the physical transformation, particularly of goods, i.e. services that act on goods, such as road transport, handling and storage, logistics.
- Information processing services – services engaged in the transformation of information, such as data processing services.
- Knowledge creating services – provision of knowledge based services, such as consulting or research.
- People-oriented services – services which are aimed at the transformation of people, i.e. services which act on people, providing physical and/or mental/emotional changes

Not all public services fit into this business-oriented classification, but many of them are relevant, especially people-oriented services, but also physical (e.g. urban redevelopment) and information processing services. A particular service from the public sector that must be added is regulation and policymaking. Coordination and administration could also be included as separate categories.

Defining output from the public sector

What is the output of the public sector? Atkinson (2005) argues that the principles for measuring output from the public sector should be the same as for private sector and that as far as possible the output from the public sector should take into account the quality of the service in question.

Much of the activities taking place in the public sector are services. In innovation studies from the private sector it is held that the knowledge generation in services is closely associated with the proximity to clients and users (Skjølsvik et al. 2007). However, as we have seen, some of the governmental levels in the public sector (i.e. the policy level and the administrative level) do not always provide services directly to the private sector nor to the citizens, rather they provide the political and regulatory frameworks and the implementation of these into the various types of public services. For the business sector, we have standard output measures (sales, value added) that go across all sectors. This does not exist for the public sector, as many actors in the public sector provide services to third parties in both the public and private sector. However, some fairly standard output measures exist for specific sectors. Then, finally, this discussion might lead into an examination of whether these output measures could be used to create output indicators for eventual sector specific modules in our measurement framework, or towards an eventual linking of public innovation data to data on these output measures.

This represents a challenge to the wish of using the same principles for measuring innovation in both private and public sector. Another associated challenge relates to the fact that part of the mandate of some public and semi-public institutions, e.g. directorates and institutes, is to support and nurture productivity and innovation in the private sector. In these instances the public sector becomes an intermediary between the public and the private sphere, and which may blur the lines between the ones that have facilitated an innovation and the ones that have implemented it. Who is to be credited for the innovation? Is there a risk that the same innovation is being reported several times?

The heterogeneous fields of the public sector suggest that one may take various perspectives to defining output from the public sector, depending on the governmental level, sectoral activities

and the degree of proximity to the end user. In terms of proximity to the end user and to which degree one should focus on production or consumption Atkinson (2005) uses the example of postal services, where one may either measure output in terms of letters processed (production perspective) or letters successfully received (user perspective). Another example that illustrates the same is education, which could either be measured in terms of number of hours spent on teaching (production perspective) or the actual skills and knowledge acquired by the student (user perspective). These examples illustrate that taking into account the user perspective implies integrating quality into the output measure from the public sector which ultimately would be more in line with the overall objective of the public sector in terms of providing better welfare to its citizens.

Innovation in the public sector

What is innovation in the public sector? What is the difference between business as usual and innovation in the public sector? And how does innovation in the public sector differ from innovation in the private sector? Innovation in the public sector shares some commonalities and common ground with innovation in the private sector, but in other ways it differs from innovation in the private sector. This section discusses some ways to perceive these similarities and differences.

The Oslo Manual (OECD/Eurostat 2005) defines innovation as “the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations”. This definition sees innovation as the successful introduction of something new and useful. In this definition, the notions of “new” and “useful” should be interpreted as context-specific, organisation specific, rather than universal or market-wide.

It should be noted that in this context we do not count “radical” innovations only – i.e. innovations that are new to society – but also practices and the use of technology that is new to a specific organisation. As innovation may either be radical or incremental, it can sometimes be hard to distinguish between innovation and reform. According to Windrum (2008) there has been a type of disciplinary myopia between innovation studies and political science. Whereas innovation studies have tended to focus upon innovation in private sector, political science often perceives change in the public sector as policy change or reform, but fails to address innovation.

OECD/Eurostat’s definition of innovation (2005) may work well for some parts of the public sector, but certain aspects of the definition may be more problematic for other parts. The notion of “newness” in the OECD/Eurostat definition of innovation may work well for several areas of the public sector. However, the notion of “improvement” may turn out to be more elusive in public sector contexts, as the evaluation of “improvement” may be contextual and depend on the perspective of the respective stakeholders. Whereas companies in the private sector operate with a single objective public organisations count on a multiplicity of objectives, e.g. increase quality, equity and efficiency. As a result, improvements in e.g. education can be perceived differently based on the respondent. The consequence of this is that the answers provided will be highly subjective, and referring to radically different objectives, which again will complicate comparability between the answers and thus a threat to the validity of the information gathered.

When discussing what innovation in the public sector might be it can be appropriate to distinguish between narrow and broad innovation policy. Narrow innovation policy deals with policy measures to support innovation in the private sector. Broad innovation policy on the other hand covers all sectors of society; i.e. how a variety of aspects influence the dynamics and productivity of the business sector, such as infrastructure, legislation, tolerance, trust, diversity or cultural vibrancy; e.g. how new environmental regulation may enhance innovation in materials or in building construction. The broad innovation policy perspective requires taking a holistic or integrated approach to understanding how to unleash the innovative potential of society.

Given that the overall objective for public sector activities is increased welfare and a better quality of life for its citizens, it makes sense to focus on all behavioural changes that contribute to achieving these goals. Hence innovation may be understood as deliberate changes in behaviour with a specific objective in mind.

In the same way as studies of innovation in private services first used tools and concepts initially generated and based upon studies in private manufacturing, it is natural when studying and measuring innovation in the public sector that one starts out with theories and concepts developed in private sector innovation studies (Windrum 2008). Such a reappraisal of innovation theories and concepts onto new territories may add to our understanding of the dynamics of innovation in large.

The public sector in innovation systems

As many activities in the public sector are largely intertwined with services and activities in the private sector innovation in the public sector cannot be seen independent from its wider societal and systemic context. Public sector uses private services and private actors depend upon public input factors in their innovative activities such as infrastructure, research and education. Also, public support leading to private sector innovations might become useful or profitable for the public sector at a later stage. So when trying to understand how innovation takes place in the public sector this should not be done without seeing this in relation to the wider innovation system in which it is part.

Innovation systems theory is based upon the assumption that the actors involved in innovation may be identified and that the processes leading to innovation may be characterised. It is also acknowledged that innovation does not occur in isolation, but depends upon the interplay between many different types of actors that take part in and play various roles in an innovation process; such as industry partners, collaborators, subcontractors and competitors, as well as educational institutions and governmental bodies.

There are many different approaches to this field of study. The systems of innovation literature was first formulated in terms of national systems of innovation (NSI) (Freeman 1987; Porter 1990; Lundvall 1992; Nelson 1993), in which universities and research institutes at the national level are seen to play a central role in the provision of knowledge to the private sector. Other parts of this literature have termed the interplay between universities, public policy and industry function as a triple helix (Etzkowitz and Leydesdorff 2000). The national systems of innovations literature has been accompanied by a focus on technological innovation systems (TIS) (Carlsson 1995) and sectoral innovation systems (SIS) (Breschi and Malerba 1997) and

subsequently by regional innovation systems (RIS) (Cooke 1992; Cooke, Uranga, and Etxebarria 1997; Asheim and Isaksen 2002; Cooke, Heidenreich, and Braczyk 2004 (1998)) and clusters (Porter 1998). The focus on localized clusters within the RIS approach adds a more articulated spatial perspective to the analysis and understanding of innovation processes. Within studies of systems of innovation there seems to be an increasing attention to how innovation is often demand driven or user driven (e.g. von Hippel 2005; Grabher, Ibert, and Flohr 2008). Common to all these approaches to innovation systems is that they apply a systemic understanding of industrial development and economic growth.

However, although many of these approaches have included public sector into the analysis of the innovation processes in the private sector, they have tended to leave out the innovation dynamics within the public sector itself. Applied onto the public sector an innovation systems approach would typically see the behavioural changes of a public organisation in relation to the interaction with its users (e.g. citizens or companies), its subcontractors (e.g. suppliers of ICT infrastructure or technical equipment), its collaboration partners (public or private), its political and institutional set-up as well as its management and intra-organisational dynamics, learning and absorptive capacity.

Management and incentive structures

The decision making and organisational structure that public sector organisations operate within are central in defining the conditions for innovation. Such conditions may differ greatly from private businesses, and also vary across the public sector. Organisations are typically part of a complex organisational structure that impacts, both directly and indirectly, how organisations operate and innovate. This also includes rules and regulations that influence and in some cases dictate how organisations function. Individual organisations typically do not have full autonomy over many decisions, overall objectives, budgets and incentive structures. The implication is that external actors (in particular policy and other public organisations) will play a larger role in enabling innovation in individual public sector organisations than for a business. From a policy point of view, it also reflects a greater role for policy compared to the promotion of business innovation. Policy has a much larger potential to influence on public sector organisations' innovation activities and enabling condition for innovation than for the business sector.

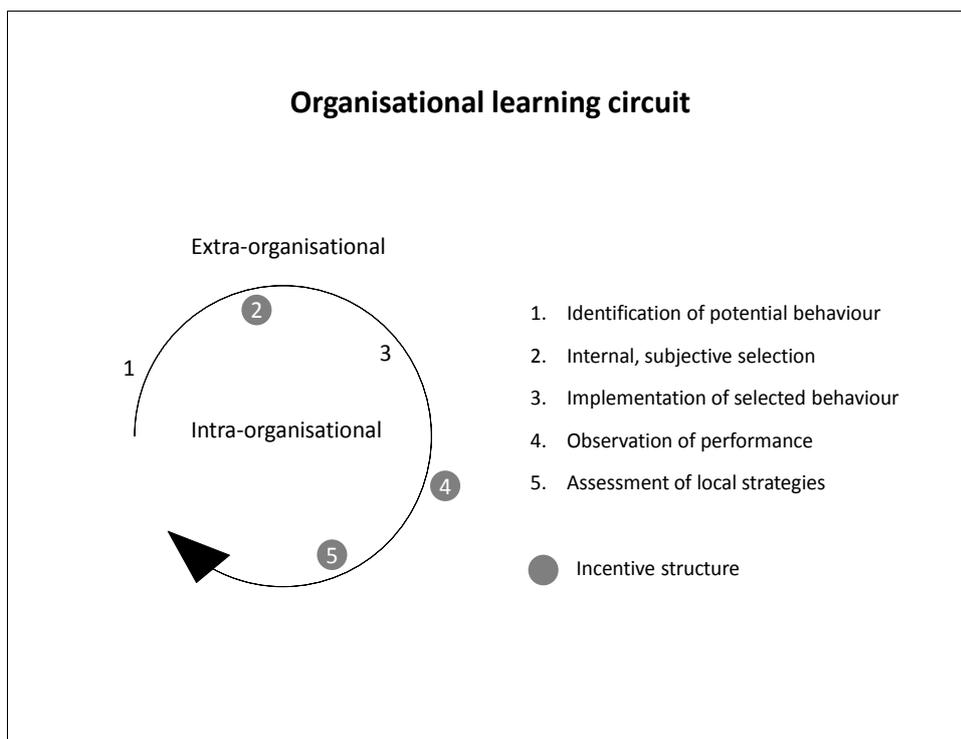
An aspect of this is incentive structures, both for individuals and the organisation itself. A number of elements may act to shape incentive structures for staff and management, such as financial and non-financial rewards, explicitly identifying innovation as a goal of their work, allocation of time and resources to innovation, support from top management, and others. Many of these elements are also relevant for the organisation as a whole. Probably the most often mentioned disincentives for public sector organisations to innovate relates to budgetary conditions; i.e. organisations don't have an incentive to innovate because improvements in efficiency would result in a loss of funds.

In order to understand why innovation occurs in the private or public sector and its driving forces and barriers, there is thus a need to understand the underlying incentive structures, i.e. the rewards and penalties in the system that make these actors and agents change their behaviour. Such an incentive structure can consist of formal and informal elements and be of political, economic, cultural or social character. The incentive structure can have effect at a systemic level or at an individual or personal level. The aim should be to increase the rewards

and to decrease the penalties – for themselves, for their organisation, for the system and the culture they partake in. The role and importance of incentive structures is valid for both private and public sector. However, one may question the degree to which this has been realized in the ambitions and efforts to increase efficiency and productivity and innovation in the public sector.

The incentive structure shaping the innovation strategies of organizations may be seen in two ways: First, the objective incentive structure providing the actual selection mechanism of innovations. Second, the subjective and local interpretation based on the context provided by the objective incentive structures, which shapes the selections of strategies in the respective organizations. Any organization gets input on “do what” and “do why” partly based on external inputs. This could be seen as a form of mapping of possible types of behaviour. On the basis of such external inputs the organisation selects its own “do how” strategy internally, which is based on the unique and subjective capabilities and needs within the organisational context.

In this way incentive structures play a vital role in shaping innovation and the introduction of new modes of behaviour in any organisation. Based on Koch and Hauknes (2005) the way the learning circuit of any innovating organization is affected by the underlying incentive structure can be illustrated as follows:



The figure seeks to capture the learning circuit in any innovative organisation. The incentive structure facing the innovating organization is a key to understanding this learning circle, and thus to the basis of any “theory of the innovating organization” at the micro-level. The first phase, i.e. the identification of potential new modes of behaviour and innovations, takes place outside the organisation and consists of orienting oneself among all kinds of existing knowledge and impulses, impulses that may stem from existing knowledge internally or externally, collaboration, R&D or search. The second phase, i.e. the internal deliberate selection of behaviour based on the identification of possible strategies, takes place inside the organisation and is context specific to internal capabilities and characteristics. The second phase then leads to

the third phase of the learning circuit, which refers to the implementation of the selected behaviour and also takes place internally in the organisation. The altered behaviour selected upon and implemented in the organisation is then being assessed and readjusted in phase 4, which examines and compares the performance of the organisation in relation to external indicators and contexts. The evaluation of the fourth phase is then followed by an assessment of the strategies selected locally in the organisation, which subsequently leads to a new round in the learning circuit. The incentive structure is likely to affect the learning circle at various phases, and in particular on three junctures:

- In phase 2 the incentive structure will affect the local and subjective selection process internally
- In phase 4 the performance of the organisation is observed according to measures along current indicators
- In phase 5 the internal assessment of the chosen behaviour is likely to be evaluated according to the degree of success on current indicators

The incentive structure affecting the learning circuit at various stages may take different forms, such as pecuniary rewards, subjective motivations, political success, self realization or social status. The learning circuit can imply either incremental or radical change. Incremental change is normally referred to as single-loop learning which takes place inside a given conceptual action framework. Radical change on the other hand is associated with introduction of new conceptual action frameworks or rationalities which may be termed double-loop learning (Argyris 1976). In addition to the focus on the actual behavioural changes and innovations carried out, it is also important to have a surrounding system that stimulates creativity and learning and that promotes and diffuses the innovations.

Since the late 1980's, the call for the public sector to become more innovative has been a central part of new public management (NPM) (Parsons 2005). As part of the NPM doctrine there has been a need for explicit standards and measures of performance and goals as well as indicators for these, preferably expressed in quantitative terms (Hood 1991). However, in the development of the indicators for measuring public sector performance the indicators were not only used to indicate the performance, but they were also used as management tools. In this way the development of the indicators came to interfere with the incentive structure and thus potentially affect behaviour in new directions.

In the wake of the implementation of new public management it has been debated (Gjørup et al. 2007; Nissen 2007) how the implementation of new indicators and measurement tools in the public sector as part of new public management did not foresee how such an introduction of new indicators and their impact on funding and resource allocation contributed to change the incentive structure surrounding the actors employed in the public sector. If such an impact on the incentive structure and change in behaviour has not been taken into account when formulating new policies, the new indicators and measurement tools may cause an altered behaviour that is not intended, and that may even be counterproductive to the overall objectives of the public sector. In this sense it is vital that when developing indicators for measuring innovation in the public sector one should avoid using indicators that may serve as incentives for the public sector to work on a short-term basis focusing upon the innovation in itself rather than on achieving broader end-objectives.

As such the indicators meant to spur innovation and productivity instead may cause a behaviour that tends to respond to the indicators themselves and not the deeper aims that they represent. In this sense implementation of new indicators may well lead to change, but not necessarily the type of change that reflects the ultimate goals for a given organisation. Another related aspect to this discussion is that the data collection as part of the wish to improve our knowledge about innovation in the public sector will further increase the current pressure on public administrative bodies and organisations regarding annual reporting and surveying. It has been demonstrated how the public sector finds itself in an 'evaluatory trap' (Olson, Humphrey, and Guthrie 2001). In this sense there is a danger that the wish to generate knowledge about innovation in the public sector may in itself be counterproductive.

When trying to understand innovation in the public sector this should be seen in close connection to the surrounding incentive structure that impact public sector. Both public and private organisations are being affected by their respective incentive structures, but the incentive structures among them differ. Whereas the private sector may have one-dimensional incentives to increase revenues and returns on investments, the objectives of public organisations may be more complex and multifaceted.

Public and private sector innovation compared

How different is innovation in the public sector and the private sector? Can innovation in the two sectors be measured in the same or in a similar way? There are a number of issues related to these questions.

The management incentives may serve as an example of how the private and the public sector may differ, as public sector may differ from the private sector in terms of being less risk seeking than the private sector. Public managers are in general more likely to receive lower and less performance based benefits, which may influence their willingness to take risk. It may also be that the public sector – on an aggregate level – recruits fewer risk-taking entrepreneurs than the private sector relatively speaking, due to the expectations of rewards or penalties of entrepreneurial activity. Risk aversion in the public sector may also be connected to limited budgets and responsibility towards taxpayers.

The question of how different innovation is in the public and the private sector not only requires looking at how the public sector innovates, but also revisiting views of how innovation takes place in the private sector. This issue was examined in detail in the Publin project (Koch and Hauknes 2005; Røste and Miles 2005). A key difference that can be identified is that public sector organizations do not operate in a market based framework and are thus not driven by profit-seeking motives. While this is for the most part true, this can on the one hand be argued to reflect too simplistic a view of businesses – that their incentive structures are shaped by much more than profit maximization – and on the other hand that while public sector organizations may not maximize profits, they are goal-oriented with negative consequences if these goals are not achieved. Koch and Hauknes (2005) write:

"...it is really not a question of organizations being 'goal-directed' – or reward-maximizers, to use a somewhat more neutral term than profit-maximizers. Though responding – reactively and proactively – to incentives, we should never see incentives structures as complete and beyond any difference of opinions in how they are understood and interpreted. Furthermore, global incentives

are supplemented both by local and intra-organizational incentives, where the latter are crucial parts of the incentives facing the individuals comprising the organization [...] It is more than likely that private company employees find their motivation from a large number of reasons, the urge for profit being only one of many. As in the public sector, private sector workers may be motivated by idealism, the joy of creating something new, an intense interest in the topic at hand, friendship and a sense of belonging, career ambitions, etc. In the Publin case studies we have found that idealism and the urge to develop a better society is an important driving force for public innovation."

Miles and Røste (2005) similarly argue that differences between private and public sector innovation are less distinct and more nuanced than simplistic views would imply. This is of course very relevant for measurement of the two sectors and the question whether completely different tools are required. The table below (from Miles and Røste, 2005) outlines main differences between the private and public sector that may be relevant for innovation.

Archetypal Features of Private and Public Sectors and their possible relations to the Propensity and Direction of Innovation

	Private Sector	Public Sector
Organising Principles	Pursuit of Profit, of Stability or of Growth of Revenues. – <i>Changing market conditions may require innovations to enhance perceived value for money or generate new products. Market as a selection process for innovations.</i>	Enactment of Public Policies. – <i>New and Changing Policies may require Innovations of many kinds Often the problems with which these policies are meant to contend are highly complex, not always well-understood, and policies may thus have contradictory effects.</i>
Organizational Structures	Firms of many sizes, with options for new entrants.	Complex system of organizations with various (and to some extent conflicting) tasks
Performance Metrics	Return on Investment	Multiple performance indicators and targets
Management Issues	Some managers have considerable autonomy, others constrained by shareholders, corporate governance, or financial stringency. Successful managers liable to be rewarded with substantial material benefits and promotion. – <i>Variation among firms in ability to innovate and take risks in general. Managers liable to pursue innovations that they believe will be successful in meeting company objectives – and thus in furthering their own careers.</i>	While there are efforts to emulate private sector management practice, managers are typically under high levels of political scrutiny. Successful managers likely to receive lower material benefits than comparable private sector managers. – <i>Major innovations are likely to require approval of political masters – or even to be demanded and/or specified by them. The role of championing an innovation may be thrust upon a manager – though proactive managers can also promote major innovations to their political superiors, and may be able to proceed with less visible innovations with little interference.</i>
Relations with: ~ End-Users	Markets may be consumer or industrial ones, and firms vary in the intimacy of their links with the end-users of their products, but typically market feedback provides the verdict on innovation. – <i>Innovation often motivated by need to maintain or increase market share, and one of the most substantiated results in the innovation literature relates success in innovation to understanding of end user requirements.</i>	End-users are the general public, traditionally seen as citizens, though recently there have been efforts to introduce market-type principles and move to see them as customers or consumers. – <i>“Customer relations” have often been underdeveloped, with an assumption that public servants know best about what services are required, and thus about relevant innovations. The customer side on the relationship is somewhat different from in private sector.</i>
~ Supply Chains	Most firms are parts of one or more supply chains, with larger firms tending to organise these chains. – <i>Smaller firms may find their innovation trajectories</i>	Public sector is typically dependent on private suppliers for much of its equipment, and is important market for many firms. – <i>Scope for public procurement to impose standards and other features on suppliers; scope for suppliers to introduce</i>

	<i>shaped by large players in supply chains.</i>	<i>innovations into the public sector (e.g. new computer equipment, pharmaceuticals).</i>
~ Employees	Nature of workforce varies considerably, and relations between employees and management range from fractious to harmonious. Efforts are made in some firms to instill company loyalty and/or a customer-centric approach, but employee motivations are often mainly economic ones of securing a reasonable income	Public sector employees are typically highly unionized (economists and social scientists in the central administration and health- and social professionals as nurses, social workers, child-care workers, teachers etc in the public services). Many are also professional workers organised through professional associations. While usual concerns about status and salary are experienced, many workers enter public service with idealistic motivations.
~ Sources of Knowledge	Companies have considerable flexibility in sourcing innovation-related information from consultants, trade associations, and public sector researchers, but many smaller firms have limited resources to do so.	Despite large resources, parts of the public sector may be constrained from using private sources of knowledge (other than those of suppliers). Public sector sources of knowledge (e.g. Universities) may be highly oriented to other parts of the public sector
Time Horizon	Short-term in many sectors, though utilities and infrastructural services may have very long horizons	Often long-term (this means that responsible decision-makers may have moved on by the time that results are achieved) though many decisions do have shorter horizons.

Source: Miles and Røste (2005)

When looking at the question of how to relate measures of public sector innovation to that in the private sector, it may also be instructive to look at similar discussions for manufacturing and services. Three approaches to treating service innovation can be found in the literature: assimilation, demarcation and synthesis². Assimilation reflects an (older) passive view of service firms as technology adopters and not sources of new knowledge and technology. Service firms were essentially examined with the same glasses as for manufacturing firms, and with a predominant focus on technological innovation.

Demarcation instead argues that a distinct approach is needed for services. Technological innovation is only a small part of service firms' innovation activities; the service innovation concept needs to include a variety of forms of non-technological innovation. Drejer (2004) argues however, that non-technological innovation is also important for manufacturing firms, so while a broadening of coverage may be needed, this is the case for both sectors. This leads to the synthesis approach: while services and manufacturing firms may differ in how they innovate, we can utilize the same 'toolbox' of concepts and methods to analyse innovation in both sectors. The third edition of the Oslo Manual (OECD/Eurostat 2005) can be viewed as a synthesis approach to measuring innovation in manufacturing and services, though the basic framework is arguably still based upon manufacturing.

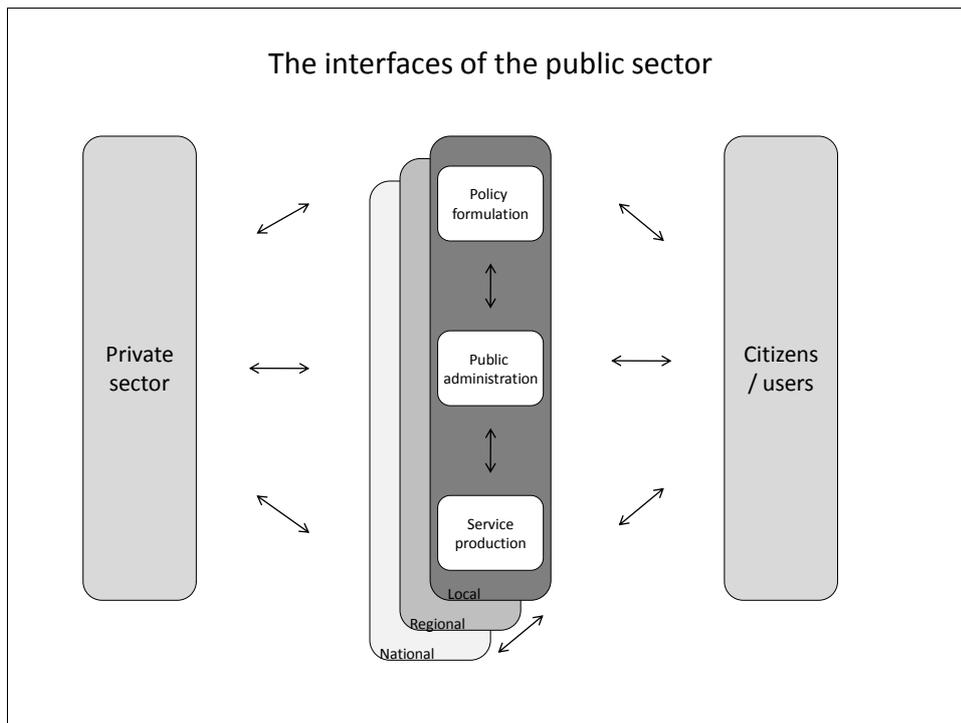
A key practical issue in comparing manufacturing and services is that it is increasingly difficult, if not impossible, to separate the two sectors. The public sector can be better isolated from the private sector; though this depends on how the public sector is conceived. For example, the government sector is to a large extent distinct from the business sector³, while many types of public services will include both companies and publicly owned organizations (see Mortensen 2010).

² See e.g. Drejer (2004), Djellal and Gallouj (2000), Coombs and Miles (2000) and Bloch et al. (2008)

³ Though some publicly owned organizations are included in business R&D or innovation surveys.

The interfaces of the public sector

The public sector is a large and multifaceted sector that comprises several activity areas. This section goes into depth on the heterogeneous nature of the public sector and discusses how this may influence innovation. Part of the multifaceted and heterogeneous nature of the public sector is the outcome of its many interfaces; 1) its interface to the private sector; 2) the interface between the public sector and the citizens; and 3) internal interfaces in the public sector, e.g. across various governmental levels and across activity areas.



The above illustration may be understood as representing primarily five types of interfaces; i.e. 1) the interface between the public sector and the private sector; 2) the interface between the public sector and the citizens; and 3) the various interfaces between the internal governmental levels within the public sector (i.e. a. policy formulation, b. public administration/policy implementation and c) service production), 4) between the different geographical levels of the public sector and 5) between the different public sectors, (e.g. health, education and defence). Together the various interfaces indicate some of the heterogeneity of the public sector which may be helpful when trying to decipher the logics of innovation in the public sector and how the public sector innovation system looks like. In particular, the form the interfaces take and which are most important may have a large impact on innovation processes in public sector organisations.

One may operate with two notions of heterogeneity in the public sector; vertical and horizontal heterogeneity respectively. Vertical heterogeneity refers to the various internal governmental levels including the policy level, the managerial level and the service provision level. Horizontal heterogeneity refers to the variety across different activity areas within public sector. Mirroring industrial and sectoral groupings in the private sector the public sector is equally divided into various public sectors, such as e.g. health care, education, public administration or defence.

The interface between the three governmental levels within the public sector deserves a closer explanation: First, the politicians constitute the top level that holds the responsibility for public services and their total costs towards the population. Second, the managers represent an intermediate level between the policy level and the professional practitioners. Third, the professionals such as teachers, doctors or nurses, and who work in their respective practical domains and who represent the production of public services towards the users and the citizens. Public administration and service production together constitute what we normally term civil service. The challenge is to make these three cultures integrated and coherent, and to implement top-down policy initiatives in the fields of the practitioners via the intermediate management. Conversely, it is a challenge to create absorptive capacity in terms of being able to put the user in focus and incorporate bottom-up impulses from the users and from the professional practitioners to the higher levels of public administration.

The interface between the public and the private sector

The interface between the public sector and the private sector is partly characterized by a wish in the public sector to regulate and support the activities in the private sector. Regulation may take place through taxation and legislation, whereas support may be through education, infrastructure, tax reliefs, and various kinds of support schemes. In this way the public sector also acts as a service provider to the business sector. Public sector also takes part in partnerships between the public and private sector. Here the public sector acts as an active innovator that both can use private sector inputs in their in-house work, and engage in active two-way cooperation with businesses. To the degree that the lines between public and private sector are increasingly blurred this typically takes place at the service level.

Due to a belief that private sector is more innovative or effective than the public sector there has been a trend towards 'privatization' of the public sector. A major reason for this is that governments believe that this will encourage public service providers to innovate and produce cheaper and more effective services. This claim may be substantiated by different structural changes within the public sector, such as:

- a) Replacing hierarchical contracts with market contracts (public services buy and sell services between themselves)
- b) Using private and third sector service providers to carry out work financed and controlled by the public sector – i.e. by exposing public services to competition. In this case, the delivery of services remains a public responsibility, but the public may pay public, private or third sector organizations to provide these services.
- c) Introducing new systems for measuring production and efficiency and through linking funding to performance (New Public Management)
- d) Giving public institutions more autonomy and responsibility (the extreme version is turning them into publicly owned companies)
- e) Substitution of public provision with private provision, i.e. the public sector leaves these services to the private market (e.g. outsourcing, state support of private institutions or privatization of state owned companies)

These tendencies together suggest that the boundaries between private and public sector are blurring and that in many regards public sector acquires many of the characteristics once associated with private sector. Moreover, these structural changes also signal that the term

'privatization' has different meanings, and that a great deal of the recent changes within e.g. Scandinavian welfare systems are not pure forms of privatization, but rather a process of establishing new contractual relationships, and of increased differentiation and interaction among the various parts of the public sector and private sector, and within the public sector itself. A great proportion of the instruments of institutional innovation in the public sector relates to the development of new forms of short- and long-term contracting (Bogen and Nyen 1998; Klausen and Ståhlberg 1998).

This process of privatization has resulted in a very heterogeneous public sector, both in terms of actors and activities. In addition to public bodies that are 100 % publicly owned, the public sector also often comprises actors such as Non-Profit Organisations (NGOs) or PNP (Private, Non-Profit) actors, often described as 'the third sector', consisting of voluntary organizations, foundations etc. operating as private actors although not having a profit-motive for their supply of services. Their operation may be organized within or outside a market framework.

Privatization or the exposure to competition of formerly public activities has created a need for new regulations and new organizations to enforce them. It also calls for reformed regulation following the deregulation of certain financial processes, for instance with the increased level of establishment of public-owned corporations. There is an overall need to develop the appropriate combination of economic instruments and regulation to meet the development of an expanded and integrated economic system. A great proportion of the instruments of institutional innovation in the public sector relates to the development of different kinds of contracting, both short- and long-term.

The various forms of privatization are both types of public innovation *and* vehicles for stimulating innovative activities in the public sector. They do tend to blur the lines between the public and the private sector, both as regards incentive structures and governance models. One should however keep in mind that large sections of the public sector are not market driven in any normal sense of the word. Moreover, even if companies, NGOs and public institutions may compete for government contracts, the public buyer itself, being this a ministry, an agency or a public institution, is not part of an open market.

On the other hand political actors may have some of the same personal qualities as are attributed to entrepreneurs, as they may try to realise a particular vision of how society should work. Politicians are often highly committed to improving social welfare or achieving particular outcomes from public services. They may thus seek innovative solutions, consulting with various sources for policy advice. Some politicians promote very radical changes in public services, since they can see a chance to make their mark on society and the risk may be low as they will probably have moved on to other fields if the particular innovation proves to be a failure (Koch and Hauknes 2005). The ability to convince other strategic actors is central for political actors as it is for economic entrepreneurs. In the innovation systems literature there has been much focus on the actor networks and socio-technical constituencies required to develop and push through major innovations (Edquist 2005; Lundvall 1992; Porter 1990). The same mechanisms also seem to be valid for politicians.

The interface between the public sector and its citizens

The public and private sectors differ in terms of the interaction with their end user, whether these are defined as “customers”, “clients”, “users” or “citizens”. Private companies will normally interact with their customers on a daily basis, and unless the company is too large, the information gained by this interaction will find its way to the managers quickly. Ultimately, a company that fails to relate to its customers will be in dire straits; “If they don’t buy, you die” This is also why companies often spend considerable resources on market research. They need additional information on what the customers demand today and what they will request in the future. In the public sector things are not so clear cut. There may indeed be a direct interaction between the service provider’s front office and the user of these services, but there is not necessarily a good feedback loop to the local management, or – which is even more important – leading public officials higher up in the hierarchy. This may represent a threat to the learning process of the public sector. Such a lack of receptiveness to signals and input from the citizens, clients or consumers similarly resembles a traditional way of perceiving the public sector as a regulatory framework for innovation in private sector, and as a passive recipient of innovations from private sector. Hierarchical structures and top-down communication has not ensured a climate for capturing ideas generated from service workers. Public employees have not been expected to come up with good ideas of how to change the public services, but rather to deliver the public services framed by the political actors. This especially applies to civil servants found in the system below the ministries.

The New Public Management philosophy (NPM) is part of the tendency towards privatization of the public sector and has transformed its role in many sectors and countries. The replacement of the term ‘citizens’ with the term ‘customers’ to describe the users of public services exemplifies this movement towards characterizing the public sector in terms of market mechanisms. The term ‘customer’ indicates freedom of choice in buying services in a market and intends effective market relationships between buyer and seller. Adopting the “customer” perspective in public administration might cause a re-thinking about the foundations of the public sector’s role. The shift towards a practice of treating the citizen as a customer may lead to a real change in the relationship between the citizen and the public sector. The traditional relationship or social contract between the citizen and the state is based on reciprocal rights and responsibilities. The individual has responsibilities towards the community. A customer has, on the other hand, no responsibility towards the company providing services, except one: to pay the bill. Hence people considering themselves to be customers may lose the sense of solidarity or communality that has been included in the traditional social democratic and social liberal ideologies. There is thus a challenge to develop a system that includes innovation and accountability, but at the same time retains the role of the public sector as a vehicle for a sense of community, equal rights and solidarity.

The privatization of the public sector or the exposure of former public sector activities to competition has created a need for new and reformed regulations and new organizations to enforce these. There is an overall need to develop an appropriate combination of economic instruments and regulation to meet the development of an expanded and integrated economic system.

The interfaces across government

In addition to the interface between the public and the private sector, the public sector also comprises the interface between elected politicians and employees of the public administration and those involved in public service provision. As between the private and public sector, the relationship between the political apparatus and the administration may also be multifaceted. Although the politically elected representatives are meant to have the power to change and improve society (public sector included), due to its size and experience the public administration also possesses power which may influence on this relation. In contradiction to Weber's ideal bureaucracy, with a clear-cut dividing line between the subordinated civil servants and the political leadership, the civil servants may play important roles in the public decision-making processes and in the improvement of public services.

In ministries, civil servants are engaged in policy development work. Hence both politicians and civil servants can be considered policy makers. This group of policy oriented civil servants extends to various policy agencies, councils and directorates that often have as an explicit role to give advice to politicians. These are often politically interested persons with a drive towards policy development and reform. Policy change is also a form of innovation, and they can thus be called innovators or even entrepreneurs. Given the size and the heterogeneity of the public sector, no politician is able to obtain deep insight into all policy areas. Politicians often specialise in one or a few policy areas, but are seldom able to gain the professionalism of the bureaucrats. Civil servants have professional education and qualifications, are full-time employed and have also often lifetime careers within their specialized fields of the bureaucratic system. Based on their long experience and knowledge, civil servants possess valuable insights into how the system works, and may come up with new ideas on how to develop and reorganise the same system. Politicians do not necessarily have the same background, or the opportunities to explore policy areas in such depth.

In this sense civil servants might both be a source of innovation or a barrier for innovation. Their professional background and insight into the policy area in question might give them quite other views than the ones held by the government in power. Civil servants might argue that the new policy will not work, based on their own gained experience of the system, and might actively try to influence on the political decision making process.

Their views may also be based on certain belief systems, world views, schools of thought or even ideologies. If these views conflict with the ones of the ruling politicians, they may – consciously or unconsciously – do their best to stop the new policies from being implemented. Sometimes the ministerial staff or civil servants may even struggle with the policy makers in other ministries. The value systems in the ministry of culture or ministry of the environment may differ a lot from the ones in the ministry of industry or in the Foreign Offices. It should be noted, though, that such differences may also lead to innovation, as the interaction between different organisational cultures may lead to the dissemination of new ideas, and hence innovation.

But the differences within the various levels of the public sector may not always be an asset. Sometimes the parallel objectives and foci within the public sector can cause conflicting objectives at different governmental levels. Windrum (2008) exemplifies how political entrepreneurs may seek efficiency gains, whereas service level staff may seek to improve service quality.

Other ways in which the public sector may represent heterogeneity is through different governmental practices, both in terms of geographical and sectoral organisation of public sector institutions and practice. Examples of this may be the size of public institutions, such as municipalities.

The preceding discussion has shown how public sector is heterogeneous in many ways, and that when attempting to understand how innovation in the public sector takes place and how it may be supported there is reason to take into account that:

- The many ways in which the boundaries between public and private sector are becoming increasingly blurred
- There seems to be a higher complexity of objectives in the public sector than in the private sector, such as parallel or contradicting objectives:
 - between various public organisations, or
 - within these: between policy makers (policy formulation), civil servants (public administration) and service level staff (service production)
 - Policy makers are often generalists whereas civil servants and service level staff are often specialists in their respective fields
- Flows of ideas across various public organisations with different cultures may ignite innovation
- Public sector innovation resembles the private sector in comprising both top-down or bottom-up generated innovations
- There is various regional and national practices regarding organisation of the public sector

Heterogeneous sources and barriers for public sector innovation

Depending on how the public sector is delineated and defined, as well as on the increasing privatization of the public sector, there can be many different sources and barriers to innovation in the public sector. Mirroring the terminology from private sector innovation studies one may distinguish between top-down innovation and bottom-up innovation (Windrum 2008). Some innovations may be national or generic top-down efforts initiated by generalists in the form of politicians or managers and then implemented at the local level in the respective service providing organisations. Other types of innovations may be bottom-up initiatives from a range of different and often specialized civil servants. Due to many public organisations being large, and due to the bureaucratic and formal organisational principles and cultures often following these, one could be inclined to believe that bottom-up initiatives are disfavoured in the public sector.

Reflecting how the learning circuit in any organisation is influenced by the prevailing incentive structure at particular junctures, drivers and barriers for innovation in the public sector should be seen as closely interlinked with the reward and penalties that may take place at the level of the individual, the organisation or the system.

In addition to the shift from a notion of the citizen to the notion of the customer there is also more attention on output and the results of public sector activity, accompanied by new indicators for measuring efficiency and expenditure. The individual public organizations are often held responsible and accountable for the achievement of certain targets. The state budgetary system acts as a controlling and rewarding mechanism of public sector activities

through established performance measures. This performance based money transfer system is intended to act as strategic and operational planning guidelines.

Risk management has received much attention in the discussion of public sector innovations. This includes on the one hand ensuring that decisions take account of risks and developing techniques to manage and reduce risk in government activities. On the other hand, it also includes developing a culture that recognizes and accepts that innovation activities are not always successful.

Risk aversion or the fear of failure has often been pointed out as a key barrier to innovation in the public sector. This is also arguably one of the largest contrasts between the public and private sector in terms of innovation (Koch et al. 2006; Koch and Hauknes 2005), both in terms of rewards to successful innovation and the potential adverse consequences of not innovating (both of which may be much larger for businesses). ReD Associates (2005), in an analysis of 9 innovative public organisations in Denmark found that all had a high degree of willingness to take on risk. And, in all cases, risk aversion at the political (or higher organisational) level was identified as one of the largest barriers to public sector innovation.

Mulgan and Albury (2003) (see also Kelly, Mulgan, and Muers 2002) argue that a key factor here is that in many cases the risks of public innovation are often greater than for businesses (e.g. health care), as may be public scrutiny of new ideas. Other factors pointed out by Koch and Hauknes (2005; 2006) are performance measures that provide disincentives to develop and introduce changes; lack of incentives for organisations and individuals to innovate; and resistance to change from users and management.

Concluding remarks

The paper has discussed some of the characteristics of the public sector, and how these have implications for innovation in a public sector context. Emphasis has been put on challenges of delimiting the public sector and approaches to address public services and output. The paper has also presented various motivations for focusing on innovations in the public sector. It has been discussed how the public sector is multifaceted and heterogeneous, not only in terms of different governmental levels, sectors and interfaces to the private sector, citizens and users, but also in terms of objectives. Some of these characteristics of the public sector, such as parallel and sometimes opposing objectives and incentives, as well as an abundance of interfaces, make it different from the private sector. Reflecting such differences there may be a need to refine and develop new concepts and tools in order to grasp the distinctive features of public sector.

But despite being different from the private sector in many ways, the paper has also shown that in terms of how innovation processes take place the public sector shares many characteristics with the private sector. Also, in terms of understanding how underlying incentive structures impact behaviour and innovation, public and private sector share common ground. The paper argues that innovation in the public sector should not be seen independent from the underlying incentive structures that structure behaviour, nor from their wider systemic context. It follows from the discussions that although possessing distinct features in relation to the private sector, there seems to be common ground as to which concepts and tools from studies of private sector innovation may also be applied on the public sector, but that these should be further developed and refined.

Therefore, maintaining the division between the private and the public sector may therefore imply a risk of ignoring the innovative activities that take place within the public sector and thus central determinants of change in modern economies. Although the public sector at first glance may seem homogenous and rigid, it comprises several dynamic dimensions internally and continuously changing interfaces to the surrounding society. Much the same way as innovation in the private sector is not a one size fits all exercise, innovative behaviour in the public sector is also highly multifaceted. Rather than constituting a static structural or institutional and regulatory framework for innovation in the private sector, the various parts of public sector should be perceived as dynamic and co-evolving actors and organisations.

The focus on innovation in a public sector context may also improve our overall understanding of innovation irrespective of sectoral foundation. In the same way as studies of innovation in services have brought about a focus on non-technological innovations, which later have also been applied to the manufacturing sector, an expansion of innovation studies to also comprise the public sector can perhaps help shed new light on innovation in the private sector.

But in addition to potentials for learning and generating new knowledge, the focus on innovation in the public sector also holds some potential pitfalls. It is vital that when formulating framework conditions for innovation in the public sector, actors in policy formulation and public administration are aware that their actions do not contradict the mandate and overall objective for the public sector. In the case of new public management the policy and administrative innovation of creating measures were used as management tools. In this particular case it has been debated (Gjørup et al. 2007; Nissen 2007) whether ensuring an effective operation of public services is in line with the overall objectives of the public sector. This example may serve as a reminder that the focus and interest on innovation in the public sector should not lead to making innovation in the public sector a management tool. Instead innovation in the public sector should be seen as means to live up to its overall objective, i.e. to provide increased welfare and a better quality of life for its citizens.

References

- Argyris, Chris. 1976. Single-Loop and Double-Loop Models in Research on Decision Making. *Administrative Science Quarterly* 21 (3):363-375.
- Asheim, Bjørn, and Arne Isaksen. 2002. Regional Innovation Systems: The Integration of Local 'Sticky' and Global 'Ubiquitous' Knowledge. *Journal of Technology Transfer* 27:77-86.
- Atkinson, T. 2005. Measurement of Government Output and Productivity for the National Accounts. Houndmills, Basingstoke, Hampshire, New York.
- Bloch, C. 2010. M1 - Conceptual framework. In *Nordic Project on Measuring Public Innovation*.
- Bloch, C. et al. . 2008. *Service Innovation in the Nordic Countries: Key Factors for Policy Design. Final Report, ServINNo project.*
- Bogen, Hanne, and Torgeir Nyen. 1998. Privatisering og konkurranseutsetting i norske kommuner: Fafo-rapport 254.
- Breschi, S., and F. Malerba. 1997. Sectoral innovation systems: technological regimes, Schumpeterian dynamics, and spatial boundaries. In *Systems of Innovation: Technologies, Institutions and Organizations*, edited by C. Edquist. London: Pinter.
- Carlsson, B. (ed.). 1995. *Technological Systems & Economic Performance*: Dordrecht: Kluwer.
- Cooke, P. 1992. Regional innovation systems: competitive regulation in the new Europe. *Geoforum* 23:365-82.
- Cooke, P, M Heidenreich, and H-J Braczyk, eds. 2004 (1998). *Regional Innovation Systems - The role of governance in a globalized world*. London: UCL Press.

- Cooke, P., M. Gomez Uranga, and G. Etzebarria. 1997. Regional innovation systems: Institutional and organisational dimensions *Research Policy* 26 (4-5):475-491.
- Coombs, R., and I. Miles. 2000. Innovation, measurement and services: the new problematic. In *Innovation Systems in the Service Economy*, edited by Metcalfe and Miles. Boston Kluwer.
- Djellal, F., and F. Gallouj. 2000. Innovation surveys for service industries: A review. In *Paper presented at the DG Enterprise Conference on Innovation and Enterprise Creation: Statistics and Indicators*.
- Drejer, I. 2004. Identifying innovation in surveys of services: a Schumpeterian perspective. *Research Policy* 33:551-562.
- Edquist, C. 2005. Systems of Innovation: Perspectives and Challenges. In *The Oxford Handbook of Innovation*, edited by J. Fagerberg, D. C. Mowery and R. R. Nelson: Oxford University Press.
- Etzkowitz, H, and L Leydesdorff. 2000. The Dynamics of Innovation: From National Systems and 'Mode 2' to a Triple Helix of University-Industry-Government Relations. *Research Policy* 29:109-23.
- Freeman, C. 1987. *Technology Policy and Economic Performance: Lessons from Japan*. London: Pinter.
- Gjørup, Jes, Henrik Hjortdal, Tommy Jensen, Leon Lerborg, V Claus Nielsen, Niels Refslund, Jacob Suppli, and Jasper Steen Winkel. 2007. Tilgiv os - vi vidste ikke, hvad vi gjorde. *Politiken*, 29.03.2007.
- Grabher, Gernot, Oliver Ibert, and Saskia Flohr. 2008. The Neglected King: The Customer in the New Knowledge Ecology of Innovation. *Economic Geography* 84 (3):253-280.
- Hood, Christopher. 1991. A public management for all seasons? *Public Administration* 69 (1):3-19.
- Howells, J., and B. Tether. 2004. Innovation in Services: Issues at Stake and Trends.
- Kelly, G., G. Mulgan, and S. Muers. 2002. Creating Public Value: An analytical framework for public service reform: Strategy Unit, Cabinet Office, UK.
- Klausen, Kurt Klaudi, and Krister Ståhlberg. 1998. *New Public Management i Norden*. Odense: Odense Universitetsforlag.
- Koch, P., P. Cunningham, N. Schwabsky, and J. Hauknes. 2006. Innovation in the Public Sector - Summary and policy recommendations. Publin Report No. D24. In *Innovation in the Public Sector*. Oslo: NIFU STEP.
- Koch, Per, and Johan Hauknes. 2005. Innovation in the public sector. Report no D20. Publin project under the EU 5th Framework Programme. Oslo: NIFU STEP.
- Lundvall, B-Å. 1992. *National Systems of Innovation: Towards a theory of innovation and interactive learning*. London: Pinter.
- Mortensen, P. S. . 2010. M2 - Survey Methodology. In *Nordic Project on Measuring Public Innovation*.
- Mortensen, Peter S. 2010. M2 - Survey Methodology.
- Nelson, R, ed. 1993. *National Innovation Systems: a comparative analysis*. Oxford: Oxford University Press.
- Nissen, Christian S. 2007. Hvad er det, vi har gang i? *Politiken*, 05.09.2007.
- OECD/Eurostat. 2005. "The Oslo Manual". Paris- France: OECD.
- Olson, Olov, Christopher Humphrey, and James Guthrie. 2001. Caught in an evaluatory trap: a dilemma for public services under NPFM. *European Accounting Review* 10 (3):505-522.
- Parsons, Wayne. 2005. Designing for Innovation in the Public Sector. *Administration* 53 (3):7-18.
- Porter, M. 1990. *The Competitive Advantage of Nations*. New York: The Free Press.
- Porter, M. 1998. Clusters and the new economics of competition. *Harvard Business Review* 76 (6 Nov/Dec):77-90.
- ReD_Associates. 2005. Bedre innovation i den offentlige sektor.
- Røste, Rannveig, and Ian Miles. 2005. Differences between public and private sector innovation. Publin Report No. D9. In *Publin - Innovation in the Public Sector*. Oslo: NIFU STEP.

- Skjølsvik, Tale, Bente R. Løwendahl, Ragnhild Kvålshaugen, and Siw M. Fosstenløyken. 2007. Choosing to Learn and Learning to Choose: Strategies for client co-production and knowledge development. *California Management Review* 49 (3):110-128.
- Vigoda-Gadot, Eran, Aviv Shoham, Nitza Schwabsky, and Ayalla Ruvio. 2008. Public Sector Innovation for Europe: A Multinational Eight-Country Exploration of Citizens' Perspectives. *Public Administration* 86 (2):307-329.
- von Hippel, E. 2005. *Democratizing Innovation*. Cambridge, Massachusetts: MIT Press.
- Windrum, Paul. 2008. Innovation and entrepreneurship in public services. In *Innovation in Public Sector Services - Entrepreneurship, Creativity and Management*, edited by P. Windrum and P. Koch. Cheltenham, UK; Northampton, USA: Edward Elgar.