Managing service innovation: firm-level dynamic capabilities and policy options

den Hertog, P.

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
Is there a rationale for service innovation policies?

A menu-approach

This chapter is largely based on P. den Hertog and L. Rubalcaba (2010), ‘Policy Frameworks for Service Innovation. A Menu-Approach’ in J. Gadrey and F. Gallouji (eds), Handbook of Innovation and Services, Edward Elgar Publishing Ltd: Cheltenham, pp. 621-52 and reproduced with permission of Edward Elgar Publishing Ltd. I am indebted to my co-author Luis Rubalcaba. This contribution is based on practical experience gained while conducting innovation and policy studies in service innovation. I would therefore like to thank collaborators on several service innovation projects and especially Bart van Ark, Faiz Gallouj, Jeremy Howells, Jari Kuusisto, Ian Miles and Bruce Tether.
7.1 Introduction

The development towards a service-driven economy is a process that has been under way for some decades now. It is increasingly acknowledged that in advanced economies most room for productivity growth stems from services and service innovation. In both our private and professional lives new (combinations of) service concepts and experiences, new type of service organisations and occupations and associated – mostly information and communication technology (ICT)-based – service technologies are ubiquitous. Developing and exploiting these innovative services requires technological as well as non-technological innovation, knowledge and capabilities.

The concomitance between the role of services in modern economies and the role of innovation in economic growth has increased the interest in service innovation from different angles, from academic research to statistical developments, from new theories and typologies to a wider management and specific business plans for services innovation, from the inclusion of services in existing research and development (R&D) programmes to the development of new policy interventions. An increasing number of firms are managing service innovation more explicitly. In some countries innovation policy-makers have started to explore new, more services-innovation-friendly R&D and innovation policy frameworks, and in a few even service innovation schemes (den Hertog, 2010).

The overall goal of this chapter is to discuss policy frameworks for furthering service R&D and innovation and to offer some policy options for furthering service innovation. By way of introduction we will in section 7.2 present three well-known approaches to services R&D and innovation (assimilation, demarcation and systemic approach; see also Chapter 1). Here it is argued that the current debate on service innovation and service innovation policies still suffers from too much assimilation and demarcation thinking and lacks a vision as to how services are part and parcel of wider innovation systems. In section 7.3 we continue by reviewing possible rationales for having service innovation policies in the first place. We start off by reviewing some of the more practical macroeconomic argumentation when considering furthering service innovation. Subsequently, we will deal extensively with the market failure argumentation which is still dominant in most administrations. We will argue that some service industries do invest in technological R&D and innovation, and here market failure argumentation is as relevant as it is in manufacturing industries. Additionally, we will argue that when investments in non-technological R&D and innovation are made – which are strongly associated (but not exclusively, we would say) with service

---

131 In den Hertog (2010) it is observed that the communities of researchers and statisticians, policy-makers and practitioners do interact and learn from each other. For a long time the three communities have been trapped in the same dominant view or technologist paradigm or view on innovation and to a certain extent their interaction reinforced this. Changing the dominant paradigm regarding service innovation has proved to be an uphill battle and nothing less than a paradigm switch.
 Managing Service Innovation

industries – the different categories of market failure might apply as well to all service industries and indeed manufacturing (although not in a similar fashion). Finally, we argue to look beyond market failure argumentation and take into consideration systemic failure. In section 7.4 we analyze how service firms – within the limitations of statistical datasets available – benefit from standing European Union (EU) R&D and innovation policies. The empirical evidence suggests that services receive relatively less public support to their innovation, but results vary depending on the type of service and country considered. It will be argued that – although ‘fair shares’ cannot be the starting point of any R&D and innovation scheme – participation in ‘industry-neutral’ standing schemes seems to point at discrimination against some service industries and, more widely, service innovation. Section 7.5 then discusses some emerging policy frameworks and initiatives for furthering service innovation. Based on the proposition to consider services innovation as a systemic dimension of innovation systems, we offer a simple menu-approach with some policy options for furthering service innovation. Here we also argue that there is no fixed recipe available, as for every individual innovation system a (temporary) mix of instruments and policies will have to be developed to suit that particular innovation system. In section 7.6 we summarize and make a plea to develop the systemic approach towards service innovation (policies) further to counterbalance the current myopic view on services R&D and innovation (policies).

7.2 Three perspectives on service R&D and innovation

Quite a number of innovation scholars, statisticians, policy analysts and policy-makers have analyzed, measured, reported and discussed services R&D and innovation. This has not yet resulted in a coherent vision as to how to conceptualize, categorize, measure and facilitate services R&D and innovation. Innovation policy-makers seem to be increasingly aware of the key role service R&D and innovation play in driving economic growth. Some of them even recognize that there is a mismatch between the sheer size and economic role played by services and service innovations, and the sort of policy initiatives taken to further services R&D and innovation. However, in practice and with a few exceptions (Finland, Germany, Denmark, the European Commission), only a few countries have managed to define a policy framework for furthering service innovation and to design concrete programmes and schemes aimed at furthering service R&D and innovation. In our view this is to an important degree due to principally opposing views on the role of services R&D and innovation in innovation systems and the best way – if any – to facilitate these. Earlier, the many ideas and views on service R&D and innovation have been reduced to basically three approaches (see Boden & Miles, 2000; Coombs & Miles, 2000; and

---

132 This section is largely based on den Hertog et al. (2008) and Rubalcaba (2006).
earlier, Gallouj, 1994; see also chapter 1).\footnote{Extensions of these approaches have been done by Drejer (2002), Nahlinder (2002), den Hertog et al. (2006), Rubalcaba (2006) and den Hertog et al. (2008). The latter is partly reproduced here.} These approaches – leaving out the approach of complete ignorance, as we presume this approach is no longer seriously supported\footnote{However, the 'productive-sectors (i.e. goods industries)-are-what-really-matters approach' still pops up every now and then. Typical arguments used are, e.g., goods-oriented R&D is led by the most advanced countries; intangibility of service innovation results prevents their evaluation; results of service innovation can hardly be appropriated; support for innovation could distort competition in the service sector, etcetera (based on Rubalcaba, 2007).} – are summarised in a nutshell in figure 7.\footnote{This figure was not included in the final version of den Hertog and Rubalcaba (2010) on which this chapter is based.} and then introduced briefly below.

### 7.2.1 Assimilation approach

The assimilation approach mainly starts from the idea that R&D and innovation is still about technological R&D and technological innovation,\footnote{The less important role given to services stems from the classical economic tradition, for which services do not generate any 'value', so they contribute little to productivity and innovation. This approach is echoed in the well-known innovation taxonomy by Pavitt (1984) where services were mainly depicted as receivers of the innovations developed in other sectors, i.e. supplier-dominated. Although some services (computing or telecommunications) were later recognised in an innovative role, these cases were considered to be notable exceptions.} that some services industries may play a role here, and that existing policies mostly need to be made somewhat more accessible for those service firms that perform technological R&D and innovation as there are no theoretical reasons justifying the exclusion of services. The central idea is that services and innovation in services can be analyzed and supported using or adapting the concepts and tools developed for manufacturing and innovation in manufacturing (Tether, 2005). In policy terms this means unavoidable biases for technological support as most services innovation is less technology-driven (Howells and Tether, 2004), even if there are indeed indications that technological R&D and innovation in service firms are under-reported (Miles, 2005; den Hertog et al., 2006). Most EU and national innovation policies can be characterized as belonging to the assimilation approach: services are ignored or are considered together with manufacturing under generic innovation policies. The horizontality is more theoretical than real since the bias towards technological R&D and innovation is more useful to goods industries than to service activities.

### 7.2.2 Demarcation approach

The demarcation approach is quite popular among services innovation researchers. They pointed at and reported on the peculiarities of services, the predominance of types of innovation other than pure technological innovation, and the different innovation processes or innovation styles of services R&D and innovation. As services R&D and
innovation are conceptualised as rather different from the ‘regular and well-known’
technological R&D and innovation, a plea is made for new ways of measuring it and
developing specific policy initiatives suited to services R&D and innovation. This would
mean a development towards more specific or vertical R&D and innovation policies.

There are also some views in favour of a specific focus on services. Heterogeneity of
individual (service) industries and the fact that not all services are similar in structure,
innovation behaviour and barriers to innovation encountered, would lead to the need
for specific measures in particular markets. It is for example, not so easy to argue that a
horizontal policy – beyond supporting business R&D – is enough to fulfil the interests of
such uneven sectors as telecommunications, tourism, retailing or professional services.
At the same time it can be argued that a demarcation approach would require a quite
detailed understanding of individual industries by policy-makers.

Further, the increased intertwining of services and manufacturing industries, the rise
of service innovations deriving from manufacturing industries, and the fact that most
innovations in both manufacturing and services are about combinations of technology
and new services concepts and about how these are translated into sound business
propositions, makes the demarcation approach a form of overshoot which in the end might

---

**Figure 7.1 Three approaches to services R&D and innovation (den Hertog, 2006).**

---
not be that productive. Examples of typical demarcation-type service innovation policies are specific innovation programmes for health services or the promotion of innovation in the tourism sector.

### 7.2.3 Systemic approach

The synthesis or systemic approach refers to a more integrated view of the service economy and is based on the idea that technology and non-technological innovation, manufacturing and services innovation typically support and need each other. Most innovative firms realize that they also have to differentiate themselves from the competition by adding extra service functionality to both manufactured goods and services. It has even been suggested that the differences within industry and within services are in many cases more marked than between the two main categories (see Preissl, 2000; Gallouj & Weinstein, 1997; Sirilli & Evangelista, 1998). It further acknowledges the decisive role that intangible elements play in innovation and growth, and hence their relevance as objects of innovation policy-making. Seen from a systemic or evolutionary innovation perspective, a two-way approach is in our view relevant.

Firstly, is the established innovation system (especially in terms of the wider institutional setup, built in incentives) designed and modeled well enough towards facilitating services R&D and innovation? Service innovation is understood as a horizontal dimension or intrinsic quality of an innovation system, and the lack of service innovation, as a failure of the system.

Secondly, do the sets of firms dealing with or playing a role in service innovations contribute well enough to the overall quality of the NIS? Service innovation capability is a system characteristic that may help in improving the overall functioning of an innovation system. The systemic approach in this context points to the need to improve the relationships between ‘goods’ companies and ‘service companies’. Especially, the role of knowledge-intensive (business) services is key here as these may provide necessary intermediate input to improve the competitive and innovative capacity of any manufacturing or service company (Rubalcaba, 1999; Antonelli, 2000; Wood, 2001), their connections with new technologies and especially their consolidation as part of the innovation system (Antonelli, 1999; Miles, 1999; Boden & Miles, 2000; Metcalfe & Miles, 2000; Muller, 2001; Zenker, 2001; Hipp & Grupp, 2005). Given existing evidence we consider that innovative services (in both manufacturing and services) improve the dynamics of the overall innovation system or sectoral innovation systems (Miles et al., 1995; den Hertog, 2000; OECD, 2006; Rubalcaba & Kox, 2007). We think that especially business-related services – and probably most importantly knowledge intensive business services (KIBS, see chapter 8) – can play multiple roles in making innovation systems more dynamic and better-performing. Increasingly KIBS are seen as being part and parcel of an effective entrepreneurial or innovation climate,
and as a basic element necessary for developing wide and deep clusters and networks. In almost all competitive clusters and networks you will find highly specialized service firms that help other firms to become more innovative and competitive. Therefore, in our view, adopting a systemic perspective when looking at services R&D and innovation explains not only how the innovation impacts upon the service firm, but also how a well-built-in service sector or ‘service functionality in the innovation system can increase the overall performance of this innovation system considerably. This requires a widening in terms of the rationale used for (service) innovation policies. This critical issue will be discussed in the next section.

7.3 Arguments for a service innovation policy

A logical question when discussing a policy framework for service innovation policies is whether or not there is a rationale for having these in the first place. In our view we should differentiate here between contextual and macroeconomic argumentation, and the more microeconomic argumentation to have service innovation policies. In the latter category we make a distinction between the well-known market failure argumentation and evolutionary systemic failure argumentation, which in some cases in some industries may both apply to services innovators.

7.3.1 Macroeconomic and contextual rationale

There are policy-makers and scholars that advocate not having any specific service innovation policy at all. Typical macroeconomic assumptions include in the first place the idea that high economic and productive growth rates are localised in countries where manufacturing industry is performing well. This is due to their relative costs (China, India) or because of the higher manufacturing performance associated with a high technological capability (e.g. some industrial medium- and high-tech sectors in Europe and the United States). This assumption forgets that many high-performance countries and sectors around the world are based on services and a high service performance. Moreover, service innovation may be at least as important as innovation in goods in explaining performance differences among countries.

A second assumption is the notion of ICTs having a multipurpose character, making them suitable to fit into the needs of any economic activity, in such a way that the promotion of ICT and other technological programmes may be enough to achieve a horizontal policy affecting all sectors without any sector discrimination. This assumption ignores the complementarity between technological and non-technological innovation though, which has proved to be important (see e.g., Bresnahan et al., 1999; Brynjolfsson & Hitt, 2003).
A third assumption often mentioned for having generic or horizontal rather than service-specific innovation policies is the huge heterogeneity among services. This would make it almost impossible to address different service innovation particularities without inferring too much into the markets. The idea then is that it is better to have a horizontal policy that follows the established and tested logic of supporting technological innovation without distorting competition, than to have a specific services innovation policy supporting service innovations which are seen as ‘too close to the market’ and might be in conflict with competition policies. In our view this assumption underestimates the complexity of modern economies, the interrelationship between economic activities and the proximity to the markets existing in many goods innovations in manufacturing industries and, increasingly so, in the policies supporting these.

The following macroeconomic or contextual arguments can be given for including service innovation more explicitly in innovation policy-making (most of them already included in Rubalcaba, 2006):

- Innovation has been proved to be an essential factor for economic growth (Schumpeter, 1939; Griliches, 1986; Fageberg, 1988; Freeman, 1994). Given the fact that services represent around 70 percent of more advanced economies, service innovation will be a key factor for economic growth.

- A sluggish productivity growth in services – behind goods productivity rates – may be the consequence of a low performance of service innovation: structural changes require new innovative efforts to balance specialization changes.

- Service innovation is a stimulant for innovation generally, and for investment in intangibles and knowledge, factors of endogenous growth and total factor productivity. There is empirical evidence proving the importance of service innovation in productivity and economic performance (e.g. Cainelli et al., 2006; Rubalcaba & Gago, 2006).

- There is relatively low productivity and performance in many service sectors (European Commission, 2003) and reduced use of ICT in some important services branches in

---

In OECD (2005a; 2005b) this line of argument is followed when it is observed that there are no particular obstacles affecting service innovation that cannot be found in technological innovation in manufacturing industries. So similar problems would lead to similar solutions. This assumption is based on the statistical indicators used by European surveys where obstacles are isolated from modes, drivers and effects. However, differences between goods and services in terms of modes, drivers and effects of innovation are significant and may justify different policy actions. Similar obstacles according to CIS indicators cannot be a necessary condition for arguing policy horizontality. For example, two companies may have similar degrees of difficulty in protecting their innovation results, but the requested solutions may be different: one has difficulties in producing a patent while another is looking for a different instrument. Similar obstacles according to CIS indicators cannot be a necessary condition for arguing policy horizontality.

All these factors are based on a twofold view, macroeconomic and political, unlike market and systemic failures focusing more on micro and meso-level angles. Even if there are interrelations among the different types it is possible that the identification of challenges derived from structural change, e.g. leading to new evolutions in service productivity influenced by the use or non-use of service innovation.
Europe, as detected for ICT service users in O’Mahony and van Ark (2003).

- The relatively low participation of services companies – with some exceptions – in R&D programmes. This raises in an EU context the question whether the Lisbon Strategy and the aim to achieve 3 per cent of gross domestic product (GDP) in R&D investments in Europe can be attained without including services R&D and innovation more explicitly. Raising the R&D level in services and measuring thus far hidden services R&D, although questionable as a good indicator for measuring service innovation in the first place, would contribute considerably to accomplishing this goal.

- The lack of formalization and organization of service innovation, which requires the promotion of new instruments of business support. Beyond R&D, other inputs and drivers should be analyzed, monitored, and, if appropriate, promoted.

- The recent deregulation and liberalization in many service sectors, which means that businesses forsaking their protected market niches need to find new strategies to boost competitive levels. Innovation driven growth in these once sheltered markets will need to rise.

- The current phenomenon of relocating services to lower-cost countries or countries with a higher specialization demands that businesses in advanced countries should find new competitive strategies based on innovation.

### 7.3.2 Market failure rationale

Macroeconomic arguments for not paying attention to service innovation in innovation policies are mirrored in more microeconomic arguments focusing typically on the notion of market failure. As stated in a previous contribution (den Hertog et al., 2008), among innovation policy-makers there is a received wisdom that services perform less technological R&D. Service firms are less focused on technological innovation compared to manufacturing firms. The result is that all too often it is concluded that no specific attention to R&D and innovation in services needs to be paid. This is at least remarkable as there are numerous service firms that do invest in technological R&D and innovation and these need at least to be treated in a similar vein as their peers in manufacturing.

Another argument used for not developing R&D and innovation policies that are more suited to service innovators is that innovation in services typically takes place close to the market. This would imply that the case for intervention aimed at facilitating innovation is less obvious. Put differently, service innovation is not sufficiently fundamental to be supported and policy-makers fear that intervention might distort competition. Further, it is believed that there is little scope for spillovers across firms as services innovation involves so much organizationally specific development. Put differently, externalities from investments in non-technological R&D and innovation are less obvious than externalities
from investments in technological R&D and innovation. Typically, these are the sort of arguments on the basis of which, for example, national ministries of finance judge the acceptability of R&D and innovation schemes.

Den Hertog et al. (2008) continue to argue that it can be questioned whether the line of argument above is based on the right assumptions. Firstly, service firms and service industries are more active in technological R&D than is mostly anticipated. R&D and innovation in business-related services and in particular knowledge-intensive business services are performing substantial technological R&D, mostly considerably higher compared to the average for manufacturing firms (den Hertog et al., 2006). These services are more likely to engage in R&D than other service industries and than most firms in manufacturing industries. Standard market failure argumentation is as relevant to these industries as it is to manufacturing firms and industries.

Secondly, it seems to be forgotten that investing in technological R&D is just one of the ways through which firms become more innovative (and eventually more productive and competitive). There are simply innovations that do require relatively more investments in non-technological innovations such as new organizational or marketing concepts, new client interfaces, new types of delivery organizations or new smart combinations of service and product elements. These investments are more difficult to pinpoint and to assess, but they are as real as investments made in technological R&D. Further, as these intangible investments trigger innovations that eventually lead to economic growth, there is no fundamental reason to not facilitate these. However, a prerequisite is still that there should be externalities involved and these softer types of innovations do come at a cost and require serious investments, i.e. social benefits are higher than private benefits and the individual entrepreneur would have to invest substantially.

Thirdly, it can be seriously questioned whether technological R&D and innovation and non-technological R&D and innovation can be treated separately. These two are in economic reality increasingly difficult to disentangle and treat separately, as most innovations today are multidimensional, i.e. smart combinations of new or advanced technology in combination with new service elements or smart services enabled by innovative use of technology.

139 The classical argument for supporting private and collaborative (technological) R&D in firms is that through these externalities, social returns to investments made in R&D are higher compared to private returns for the firms making these investments. The resulting underinvestment in technological R&D and innovation is a market failure which could be corrected through supporting private R&D efforts.

140 For an introduction into market failure argumentation and its applicability to service innovation see van Dijk (2002), van Ark et al. (2003), Cruysen and Hollanders (2008) and den Hertog et al. (2006).

141 At the level of firms and industries, the artificiality can be observed as well by manufacturing firms developing into hybrid firms realizing a considerable part of their turnover in service activities, and service industries developing into firms with a sometimes impressive technological capability.
Managing Service Innovation

Typically, the market failure argumentation used in standing R&D and innovation policy and its applicability towards services R&D and innovation needs to be reviewed. Do market failures inhibit new innovations in services R&D and innovation? We also need empirical research to see if these alleged market failures can be found in practice. Van Dijk (2002) studied three different types of market failures in service innovations: externalities, market power and asymmetric information. Cruysen and Hollanders (2008) used a different set of market failures in services innovation and linked these to possible policy intervention, namely: market power; externalities; nature of certain goods or the nature of their exchange; resource immobility; and market failures associated with property rights. Rubalcaba (2006) has, in a somewhat different vein, also reviewed the applicability of the market failure argument to services innovation and linked this more directly to policy options. He makes a similar differentiation between uncertainty and risk; externalities; scale economies; and market power. Market failures can be analysed in the following way.

Uncertainty and asymmetric information. Uncertainty is developed around innovation since this is produced in a context where expectations and information are distributed in a very asymmetric way (Dosi, 1988; Stiglitz, 1991). Since innovation requires different means and levels of interaction between seller and purchaser, the problems of asymmetric information could hamper innovation, as one party might be distrustful about unknown features of the other party (e.g. attitude, skills). The problem of uncertainty does not only justify public investment – to take risks derived from a potential failure – but also financing intermediation (soft credits, grants). The particular case of asymmetric information limits the demand for new services and requires public action affecting demand and market transparency and information; not only action directed towards the supply side is requested. Perceived risk and uncertainty of market players may justify public investment, some financing facilities, or attempts either to boost demand for new services or to increase the transparency of markets. Lack of information or overinformation in service markets may act in a similar way. An example of misinformation is the one given by the banking system when credits and loans are negotiated. The lack of tangible assets is used as an excuse for underfunding service innovation. Accurate information about intangible assets may solve part of the problem.

However, this market failure may lead to another type of failure in which lack of coordination between business accountancy, financial practices and the legal environment reveal a more systemic failure. A similar asymmetric information problem is revealed when public administrations are in a better position to assess the potential growth of strategic technologies or sector (Krugman & Obstfeld, 1994), or the reverse, when their position is worse due to their distance from the real world. This has important policy implications, for example, when trying to promote high dynamisms in service sectors like KIBS that may offer strategic growth areas for innovation. For this purpose statistics and analyses are needed to base decisions upon.
**Externalities.** When societal returns to innovations exceed the private returns, firms may innovate too little, because innovations may ‘leak’ to competitors due to imitation or employees switching jobs. This is related to appropriability, but also to entry and exit conditions for firms and individuals. Externalities are derived from the public nature of knowledge and its spillovers, which generate problems of appropriability and use of innovation without the need to pay their market value (free-riding). This market failure justifies the intellectual property protection policies (intellectual property rights) on the one hand, and direct government intervention on the other hand, although the latter is only justifiable in the case that the intervention implies the maximization of net social welfare. Market failure theories advocate policy actions to cope with externalities only when they clearly produce higher social benefits and cannot be appropriated by private enterprises (Heijl, 2001). Given the fact that information is a good hardly to be appropriated (Arrow, 1962), economic activities very intensive in knowledge face a greater problem. As far as services are concerned, appropriability problems seem to be even greater than in the case of goods, due to the limited use of patents, the insufficient protection offered by copyright systems and the intensive role of information in KIBS. Therefore, externalities arguments may support services innovation policies even more than goods innovation ones. From a policy perspective, a reinforcement of the appropriability system in services should consider the potential negative impacts that may have on potential innovation growth or market competition. This leads to consideration of service innovation policies beyond IPR issues.

**Scale economies.** These are related to the indivisibility of technological activities requiring a minimum critical mass. The problem of indivisibility in the world of services is probably smaller than in the case of goods, where R&D processes are better structured and require a higher quantity of inputs. As innovation processes are more diffused in production processes, as in the case of services, it seems to be easier to reach a critical mass. On the contrary, when innovation effort concerning inputs is put into qualified human capital, an active policy is justified in the field of education and training. At the same time, services operate in small and medium-sized enterprise (SME) markets to a greater extent than in the case of goods. This reinforces the traditional justification of SME-oriented policies, where reaching a critical mass and sufficient human capital is more difficult. Most service companies are SMEs, in proportion even higher than in goods sectors, so the critical mass obstacle may be higher than in goods.

**Market power.** This may be the result of high sunk costs, natural monopoly, low transparency or high switching costs. This is clearly related to industry market structure. Market power also has a particular interest for services, where the lack of competition can act as a disincentive for generating innovation. As many services operate in highly segmented markets with a high monopolistic power, this market failure is particularly important.
Differences among service industries

All these four market failures affect services, but not all to the same degree in all services activities. Heterogeneity matters according to what was included in den Hertog et al. (2008). In that contribution, we surveyed several authors such as van Dijk (2002), who concluded that the strong heterogeneity in services makes it difficult to generalize as to the prevalence of these market failures. He therefore developed an alternative, more functional typology of service industries, to show the large variety in service innovation and to be better able to identify possible market failures. He further concluded that in each type of service industry a different mix of market failures is likely. According to van Dijk, externalities are most visible in innovations in transport, post and telecommunications, financial services and some personal services. Market power can be observed in (again) post and telecommunications, banking and financial services and business and personal services. Asymmetrical innovation was found to be most prevalent in telecommunications, financial services and business services. He noticed that these market failures can be reduced through policies, but that may be harder as service innovation is difficult to define and in some cases the costs of these policies may be higher than the benefits.

Whether or not the intervention argument for technological innovation also applies to non-technological innovations – i.e. market failure – depends, according to van Ark et al. (2003), on two questions:

1. whether or not a (long and hence expensive) learning process precedes the non-technological innovation;
2. whether or not other firms can easily use or copy the non-technological innovation; in other words, are there knowledge spillovers?

They argue that non-technological innovations may require extensive learning processes for individual firms (hence considerable investments), while future returns are uncertain. They indicate that non-technological innovations come about as a learning (by doing) process, and are not easily implemented and transferred. For example, a study by Kox (2002) showed that firms in the business service industry are quite often strongly dependent on inherent tacit skills of key employees in the firm. Such tacit skills take much time to acquire and cannot be easily transferred to other employees in the firm. As the lead time to obtain the returns from investment in skills can be quite long and the future returns themselves are quite uncertain, firms may be supported to make such investments nevertheless.

Van Dijk differentiates between the following (overlapping) categories: intermediary services; capital-sharing services; network services; knowledge- or skill-sharing services; trade and repair services; transport and storage; post and telecommunication; banking and insurances; staffing agencies; business services and personal services (see Van Dijk, 2002, p. 7-10).

The discussion on the applicability of this type of argumentation for supporting nontechnological innovations included here is based on den Hertog et al. (2008).
Van Ark et al. (2003) indicate that they find it harder to assess whether knowledge spillovers are present regarding non-technological innovation. This depends for instance on the type of non-technological innovations, whether these are internally focused or not, and how easily they can be observed from the outside. Put differently, how easily and at what costs can non-technological innovations be copied by other firms? Typically, new marketing concepts are directly visible and can easily be copied. New organizational types of innovation also easily transfer between firms as employees move between firms, and when firms cooperate in networks or within value chains. Van Ark et al. (2003) also observe that:

However, non-technological innovations are also strongly correlated to each other. Hence when one type of non-technological innovation is easily imitated, it implies changes in other innovations as well. Still imitating firms can perhaps find a way to implement such additional changes at lower costs than the originally innovating firm, although adaptation to the specific firm-culture may still be costly. In any case the original innovating firm may refrain from engaging in non-technological innovations when the social returns of these innovations are much higher than the private returns. On this basis non-technological innovations may become the subject of government intervention, e.g. by assisting in the adjustment of the organizational structures when private incentives are lacking.

They conclude that if long and costly learning processes are, in practice, mostly combined with relatively easy imitation (at least the costs of making the ‘stolen innovation’ work should be considerably lower as there is also the lead time and possibly a reputation advantage for the innovator) it would most likely result in economy-wide underinvestment in service R&D and innovation. This would make it more logical to consider an R&D and innovation policy that more explicitly pays attention to services R&D and innovation.144 At least we may conclude that – although more academic and policy research is needed on market failures in service industries – it cannot be taken for granted that market failure is perceived to apply exclusively to technological R&D and innovation and not to non-technological R&D and innovation. In practice, the two are more interlinked and hard to separate.

### 7.3.3 Systemic failure rationale

The technological bias in innovation policy is partly due to the persistency of the linear innovation model that sees technology as the key aspect between the use of R&D inputs and the final innovative products or processes. A different interactive innovation model

---

144 See van Dijk (2002), Lipsey and Carlaw (2002) and Navarro (2003) for more on these issues.
Managing Service Innovation

was developed since the 1980s, for which the design, management, implementation and diffusion of results require continuous interactions and learning-by-doing among different actors. This has been used mostly to understand technological innovation in manufacturing better. However, services innovation has to a much lesser extent been conceptualized using this interactive and systemic context, let alone service innovation policies. In our view we need to look beyond the market failure argument and adopt a broader view on service innovation and the possible need or rationale for service innovation policies, i.e. possible systemic failures. There has been a growing body of thought that market failure argumentation is insufficient to deal with innovation dynamics and the rationale for R&D and innovation policies. In this section we look beyond market failure argumentation at another type of failure i.e. systemic failure. The argumentation used here is mostly based on evolutionary rather than neoclassical approaches to innovation (key references here are, e.g., Edquist, 1997, and linked to services, Metcalfe & Miles, 2000).

Observing the need to correct the systemic failures in wider innovation systems, the evolutionist theory suggests some innovation models or systems without simple one-way relationships between knowledge generation and absorption (O’Doherty & Arnold, 2003; Arnold & Kuhlman, 2001). Therefore, a systemic approach is necessary to understand the relationships between science, technology and innovation, as well as an evolutionist approach, indicating that there is a specific situation for each case according to the cumulative processes generating changes in the systems. It will be very difficult to cope with service innovation if innovation systems are not suited to facilitate and benefit from service innovation. In this subsection we will use the typology of four types of systemic failures as introduced by O’Doherty and Arnold (2003). For each of the four non-market types of failure,145 we tentatively provide a number of examples to illustrate that there is some room to improve the way in which services, services R&D and service innovation is facilitated. This also implies making use of ‘non-innovation policies’, i.e. policies originally not designed to facilitate innovation which can be beneficial in furthering service innovation. Cruysen and Hollanders (2008, p. 8) define systemic failures as ‘structural, institutional and regulatory deficiencies which lead to suboptimal investment in knowledge creation and other innovative activity’. They choose not to differentiate between different categories of systemic failure as they find many linkages between the different types of systemic failures. Based on a previous contribution (den Hertog et al., 2008) we present the four systemic failures as introduced by O’Doherty and Arnold (2003) separately, as we find that they are related, but nevertheless inherently different.

**Capability failures.** These are defined by O’Doherty and Arnold (2003, p. 32) as ‘inadequacies in potential innovators’ ability to act in their own best interests’. If one translates this to the

---

145 O’Doherty & Arnold mention five systemic failures and include market failure here as just one of the five types.
case of services (or rather service functions within innovation systems) one can think of:

- Service firms and their employees that might lack the right knowledge, skills, information and contacts to realize technological and non-technological innovations.
- Service firms that are not capable of identifying the actual needs of their clients.
- Service firms that are not capable of articulating their knowledge needs.

Some of these capability failures are more or less generic and may not be services-specific, but others are services-specific. The wider system should be designed in such a way as to reduce these typical capability failures.

**Failures in institutions.** These are defined by O’Doherty and Arnold (2003, p. 32) as: ‘failure(s) to (re)configure institutions so that they work effectively within the innovation system’. This is probably one of the systemic failures that does apply most clearly to the services case. Typical examples one can think of are:

- Schools that do not educate and train students (i.e. future service professionals) with the right set of capabilities for service firms.
- Innovation management courses that are biased towards manufacturing.
- Tax credit schemes that discriminate against service innovation.
- Financial and credit systems that do not always value the intangible assets of services companies. Such assets are quite often not registered in the businesses’ balance sheets (Green et al., 2001). Despite the present efforts (Zambon, 2003) towards accountants acknowledging much better intangible assets, the current credit system penalizes those activities of uncertain risk based on intangible assets, which are often considered as expenses and not as investments.
- Statistics that do not record services and service innovations properly.

We think that these examples illustrate how the institutional setup of an innovation system might lag considerably behind economic reality. Swift institutional adaptation can help considerably in laying the foundations for and facilitating much better services and hence services R&D and innovation.

**Network failures.** This related category of failures related to the ‘interactions among actors in the innovation system’ (O’Doherty & Arnold, 2003, p. 32) similarly illustrate how the innovation system as a whole might not have adapted well enough to the increased role played by service firms in general and their (potential) role in R&D and innovation. Typical examples refer to problems such as:

- Public knowledge infrastructure that primarily caters for the needs of manufacturing firms. How come that in quite a few innovation systems, new intermediary centres of excellence have been created that are seldom about ‘service technologies’?
Managing Service Innovation

- Government purchasing policies that do not challenge service firms (innovation is quite often not rewarded).
- The lack of an appropriate system for knowledge management and structural capital. These can be highly useful to cope with the non-technological innovations. Network infrastructures such as technological centres, scientific parks and other business services centres may continue to a large extent to deal with this type of network failure.
- An industry-science relations (ISR) debate that is strongly biased towards high-tech industries, but pays hardly any attention to the role of ISRs between the science base and services.

Framework failures. These relate to the fact that ‘effective innovation depends partly upon regulatory frameworks, health and safety rules, etc., as well as other background conditions, such as the sophistication of consumer demand, wider culture and social values’ (O’Doherty & Arnold, 2003, p. 32). Under this label various failures are hidden that are real for quite a few innovative service firms and industries such as:

- All sorts of regulations that do not provide the right incentives for innovation in services (e.g. trade policies, spatial planning, environmental regulation, market regulation).
- Particular failures and legal and financial obstacles hampering entrepreneurship and dynamism, mainly affecting SMEs.
- Consumers who are not prepared to pay for innovative services.
- Foresight and road mapping exercises aimed almost exclusively at high-tech and manufacturing industries.
- Governments that are not investing (enough) in innovative public services (which can act as ‘role models’).
- Mobility schemes that focus mostly on scientists and engineers.
- Innovation debates dominated by technological innovation.
- A lack of a services innovation culture.

This last category ultimately illustrates that there may be many failures which discriminate against services and services R&D and innovation. At the same time it demonstrates that the numerous contexts in which innovative service firms have to operate can be improved through various lines of policies ranging from typical R&D and innovation to educational, competition, government procurement and other lines of policy-making that are not primarily aimed at R&D and innovation.
Summarising the rationale for a service innovation policy

Most innovation systems – or at least how most innovation analysts and policy-makers typically think about their design and functioning – are lagging behind in adapting to an economy that is considerably service driven. However, bearing in mind the systemic perspective provides us at the same time with both analytical tools and a somewhat broader set of policy tools to make the innovation system as a whole better suited to support services R&D and innovation. Especially, some of the ‘non-innovation policies’ are identified as significant in providing the right framework for services R&D and innovation to take place.

In the above we have explained why in most countries R&D and innovation policies are still mostly biased towards technology and manufacturing R&D and innovation. A combination of factors can explain this. Most dominant here are: the rather slow recognition of the pivotal role played by service functions and service innovation in the economic growth process; the dominance of market failure argumentation within government; and the hesitance to adopt the notion of systemic failures and apply these to the role of services in innovation systems. Figure 7.2 shows the most significant elements justifying a service innovation policy, not only from the neoclassical point of view of market failures, but also from the contextual facts that reveal challenges from macro and political changes and the systemic or evolutionist approaches. Obviously, the three types of arguments are interrelated and each one cannot be understood in isolation. For example, asymmetric information creates a natural barrier resulting in a competition deficit in many services markets with consequences in productivity and innovation; at an institutional level, these facts are not sufficiently recognised, and for this reason pro-innovative and pro-competitive actions are underdeveloped. Another example concerns the lack of recognition of intangible assets which is, at the same time, a market failure linked to the asymmetric information problem and a systemic problem linked to the functioning of financial and accounting systems. Between macro-economic context-structural failures and systemic failures there are obvious interrelations too. For example, regulatory framework obstacles affect different levels – micro, meso and macro – functions and conditions requested by service innovation development.

146 This is particularly important in the case of some regions where service innovation capabilities are rather poor, partly explained by the high concentration of KIBS in more developed regions, and few endowments are located in less developed regions. In these regions market and asymmetric failures apply with a higher degree of intensity than in other regions.
In sections 7.2 and 7.3 we have argued that existing policy approaches and rationales for policy intervention are mostly less well developed and attuned to service industries and service innovation. The European Community Innovation Surveys (CISs) allow us to analyze the importance of public funding in innovative firms at sectoral level. Generic policy programmes for supporting innovation would lead to similar rates of public funding in different economic sectors. However, recent evidence shows there is a significant bias in public funding against services in general and some services in particular. Both according to CIS3 and CIS4, funding reaches a higher percentage of innovative companies in manufacturing compared to service industries. CIS4 results show that overall funding

**Figure 7.2  The rationale for a service innovation policy.**

### 7.4 Services firms in innovation programmes

In sections 7.2 and 7.3 we have argued that existing policy approaches and rationales for policy intervention are mostly less well developed and attuned to service industries and service innovation. The European Community Innovation Surveys (CISs) allow us to analyze the importance of public funding in innovative firms at sectoral level. Generic policy programmes for supporting innovation would lead to similar rates of public funding in different economic sectors. However, recent evidence shows there is a significant bias in public funding against services in general and some services in particular. Both according to CIS3 and CIS4, funding reaches a higher percentage of innovative companies in manufacturing compared to service industries. CIS4 results show that overall funding

---

147 It should be noted that many of the arguments discussed in this section also apply to other services-related policies, not just innovation policies. For example, employment and training policies or regulatory policies for services may be based on similar arguments (Rubalcaba, 2007).

148 The main author of this section is Professor Luis Rubalcaba.

149 Unfortunately official statistics hardly record service innovation within manufacturing firms, so this is a limitation in our analysis. Therefore we will have to stick for the moment to the sectoral categories in current statistics and focus on service industries.
of manufacturing firms is almost twice as high as for services firms (in terms of shares of innovative companies receiving public support). On average 28 per cent of innovative manufacturing companies versus 16 per cent of service companies receive public funding. This funding bias against services can be observed (see table 7.1 below) at all different levels at which innovation policies are being used, i.e. at the local, regional, national and EU level (Rubalcaba, 2007; Gallego & Rubalcaba, 2008).

It should be kept in mind, however, that this bias does not apply to the same extent to all cases, all countries and all subsectors. Regarding the type of innovation funding, a more balanced distribution between services and manufacturing can be found in the funding deriving from the European Union, as previously observed by den Hertog et al. (2006) for CIS3 and by van Cruysen & Hollanders (2008) for CIS4 data. This can be mainly explained by the active role of (mostly knowledge-intensive) business services in getting EU public funding. These business services in their turn represent a dynamic sector that receives important funds in all countries. Figure 7.3 shows that there is a significant bias in public funding against the whole set of services, but also that this bias is not true in the case of business services in a number of countries. Typical service industries with lower shares of public funding for innovation are distributive trade companies, transport and finance sectors.

The heterogeneity of services regarding public support is also illustrated in table 7.2. It represents a distinctiveness coefficient, where different service branches are benchmarked with respect to the total of manufacturing industries. Figures are given for policy-related variables that are chosen among the set of possible CIS4 indicators. The percentage of innovative enterprises is interesting in order to promote policies to spread and to disseminate innovative behaviour and attitudes among the business society. In this case, business services and financial services show high shares of innovative companies, unlike distributive trade and transport services. Concerning intramural and extramural ratios, business services use both R&D categories more than other services branches, except financial services which contract quite a lot of extramural R&D. In R&D only business and financial services offer similar or higher shares of companies than manufacturing, while other services show lower shares, in line with previous studies about the role of R&D in services (Miles, 2005; den Hertog et al., 2006).

---

150 CIS3 and CIS4 are not fully comparable as, for example, the definition of an innovative firm is different. In CIS3 the manufacturing and technology-biased criterion is very strong while in CIS4 non-technological innovations such as marketing and organizational innovation are recognised. Anyway, the variables related to public funding are quite similar and allow for some comparative analysis.

151 This bias in public funding against services is more important than the differences in terms of shares of innovative firms. In the latter, differences between manufacturing and services are markedly lower, as can be noticed from table 7.1. This suggests that the possible discrimination against services is not due to the fact that services companies are less innovative.

152 This table was not included in the final version of den Hertog & Rubalcaba (2010).
### Table 7.1: Share of innovative enterprises receiving public funding to support innovation, 2002-2004

<table>
<thead>
<tr>
<th>Country</th>
<th>Total public funding</th>
<th>Funding from local or regional authorities</th>
<th>Funding from central government</th>
<th>Funding from the European Union</th>
<th>Funding from the 5th or 6th FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Industry</td>
<td>Services</td>
<td>Industry</td>
<td>Services</td>
<td>Industry</td>
</tr>
<tr>
<td>Belgium</td>
<td>29.34</td>
<td>14.35</td>
<td>19.69</td>
<td>10.75</td>
<td>12.02</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>5.44</td>
<td>3.93</td>
<td>0.7</td>
<td>0</td>
<td>1.65</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>16.83</td>
<td>12.73</td>
<td>2.17</td>
<td>3.07</td>
<td>11.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>21.6</td>
<td>8.04</td>
<td>2.45</td>
<td>2.6</td>
<td>12.09</td>
</tr>
<tr>
<td>Germany</td>
<td>17.8</td>
<td>9.96</td>
<td>9.46</td>
<td>4.77</td>
<td>3.49</td>
</tr>
<tr>
<td>Estonia</td>
<td>10.9</td>
<td>1.1</td>
<td></td>
<td></td>
<td>8.9</td>
</tr>
<tr>
<td>Greece</td>
<td>31.78</td>
<td>7.33</td>
<td>21.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>27.93</td>
<td>19.33</td>
<td>20.7</td>
<td>13.76</td>
<td>11.12</td>
</tr>
<tr>
<td>France</td>
<td>25.84</td>
<td>11.29</td>
<td>10.63</td>
<td>4.9</td>
<td>19.13</td>
</tr>
<tr>
<td>Italy</td>
<td>43.63</td>
<td>24.34</td>
<td>29.28</td>
<td>16.94</td>
<td>16.73</td>
</tr>
<tr>
<td>Cyprus</td>
<td>45.51</td>
<td>19.11</td>
<td>0.54</td>
<td>0</td>
<td>43.54</td>
</tr>
<tr>
<td>Lithuania</td>
<td>12.27</td>
<td>10</td>
<td>3.2</td>
<td>0.51</td>
<td>5.41</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>45.48</td>
<td>19.09</td>
<td>5.98</td>
<td>2.12</td>
<td>42.38</td>
</tr>
<tr>
<td>Hungary</td>
<td>30.08</td>
<td>24.28</td>
<td>3.79</td>
<td>0.58</td>
<td>27.87</td>
</tr>
<tr>
<td>Malta</td>
<td>26.51</td>
<td>3.61</td>
<td>22.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>49.42</td>
<td>25.89</td>
<td>8.65</td>
<td>4.59</td>
<td>43.39</td>
</tr>
<tr>
<td>Austria</td>
<td>41.83</td>
<td>25.27</td>
<td></td>
<td></td>
<td>31.07</td>
</tr>
<tr>
<td>Poland</td>
<td>16.23</td>
<td>8.9</td>
<td>3.1</td>
<td>1.24</td>
<td>8.01</td>
</tr>
<tr>
<td>Portugal</td>
<td>12.92</td>
<td>8.37</td>
<td>1.24</td>
<td>1.06</td>
<td>8.01</td>
</tr>
<tr>
<td>Romania</td>
<td>12.59</td>
<td>11.3</td>
<td>2.59</td>
<td>2.37</td>
<td>4.04</td>
</tr>
<tr>
<td>Slovakia</td>
<td>14.6</td>
<td>10.43</td>
<td>4</td>
<td>2.39</td>
<td>6.1</td>
</tr>
<tr>
<td>Finland</td>
<td>45.07</td>
<td>9.67</td>
<td>39.47</td>
<td></td>
<td>10.72</td>
</tr>
<tr>
<td>Norway</td>
<td>52.35</td>
<td>33.86</td>
<td>1.95</td>
<td>1.46</td>
<td>51.95</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>27.65</strong></td>
<td><strong>15.60</strong></td>
<td><strong>7.72</strong></td>
<td><strong>4.19</strong></td>
<td><strong>19.92</strong></td>
</tr>
</tbody>
</table>

Source: CIS4 database, Eurostat.
Concerning impacts, it is clear that innovation in service industries promotes less cost-related impacts compared to innovation in manufacturing industries, while the impacts related to the capacity to respond to customer needs is higher in service industries. In quality impacts the situation is more balanced among sectors. This suggests that the orientation of particular R&D and innovation funding should take into account the different expected impacts that such funding can result in. Possible specific approaches may follow, even if overall problems for innovation are the same in goods and in services (a similar balance is obtained on the obstacles perceived for innovations). In other words, evidence on impact suggests that policies should not just take care of the volume of public spending addressed to services but the public programmes design as well. The latter may be in need of some customization to the particular features of service innovation.

Differences are important in other policy-related variables such as the protection systems. As expected, patents are much more important in manufacturing than in services, while regarding the copyright system the opposite applies. Intellectual property rights (IPR) may be underdeveloped in services or/and services require another type of approach for protection of results. In any case, all this empirical evidence should be considered when

Figure 7.3 Share of firms receiving public funding for innovation by economic sector (source: CIS4 database, Eurostat).
### Table 7.2 Distinctiveness coefficient in some key policy related indicators: services versus goods, Europe-16

<table>
<thead>
<tr>
<th></th>
<th>Total goods industries</th>
<th>Manufacturing</th>
<th>Total services</th>
<th>Distributive trades</th>
<th>Transport and communications</th>
<th>Financial services</th>
<th>Business services</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of innovative firms</td>
<td>1.00</td>
<td>1.004</td>
<td>0.773</td>
<td>0.699</td>
<td>0.625</td>
<td>1.204</td>
<td>1.070</td>
</tr>
<tr>
<td>Intramural R&amp;D</td>
<td>1.00</td>
<td>1.060</td>
<td>0.791</td>
<td>0.601</td>
<td>0.627</td>
<td>0.815</td>
<td>1.213</td>
</tr>
<tr>
<td>Extramural R&amp;D</td>
<td>1.00</td>
<td>1.017</td>
<td>0.964</td>
<td>0.932</td>
<td>0.873</td>
<td>1.142</td>
<td>1.112</td>
</tr>
<tr>
<td>Impacts on costs</td>
<td>1.00</td>
<td>1.005</td>
<td>0.677</td>
<td>0.656</td>
<td>0.841</td>
<td>0.888</td>
<td>0.576</td>
</tr>
<tr>
<td>Impacts on quality</td>
<td>1.00</td>
<td>1.010</td>
<td>1.033</td>
<td>0.907</td>
<td>1.063</td>
<td>1.118</td>
<td>1.170</td>
</tr>
<tr>
<td>Impacts on respond time</td>
<td>1.00</td>
<td>1.007</td>
<td>1.227</td>
<td>1.250</td>
<td>1.330</td>
<td>1.307</td>
<td>1.113</td>
</tr>
<tr>
<td>Patents</td>
<td>1.00</td>
<td>1.033</td>
<td>0.517</td>
<td>0.575</td>
<td>0.254</td>
<td>0.125</td>
<td>0.825</td>
</tr>
<tr>
<td>Copyright</td>
<td>1.00</td>
<td>1.014</td>
<td>1.598</td>
<td>1.065</td>
<td>0.531</td>
<td>0.764</td>
<td>3.632</td>
</tr>
<tr>
<td>Obstacles</td>
<td>1.00</td>
<td>1.005</td>
<td>0.901</td>
<td>0.878</td>
<td>0.799</td>
<td>1.004</td>
<td>0.989</td>
</tr>
<tr>
<td>Total public funding</td>
<td>1.00</td>
<td>1.005</td>
<td>0.574</td>
<td>0.470</td>
<td>0.463</td>
<td>0.239</td>
<td>0.944</td>
</tr>
</tbody>
</table>

Note: Europe-16 refers to Belgium, Czech Republic, Denmark, Spain, France, Italy, Cyprus, Lithuania, Luxembourg, Hungary, Netherlands, Poland, Portugal, Romania, Slovakia and Norway. In boxes those coefficient for which service stand 20% below or above the total goods average. Source: CIS4 database, Eurostat.
the formulation of policy implications is envisaged. On the one hand, possible biases should be identified in order to assess explicit or implicit discrimination against services innovation in terms of total distribution of public funding and discuss rationale behind these biases. On the other hand, attention should be paid to the qualitative design of innovation policies; the problem is surely more qualitative than quantitative. The appropriate policy mix might be different for different industries, i.e. innovation policies – at least to some extent – need to be customized, even within service branches.

7.5 An emerging policy framework for service innovation

Having discussed possible rationales for having services innovation policies we here provide a menu-approach or set of policy options available to policy-makers wanting to further service innovation. We offer a simple menu-approach taking the three approaches to services and service innovation – i.e. the assimilation, demarcation and systemic approaches – as outlined in section 7.2 as our point of departure. The assimilation approach – applied to policy-making and according to den Hertog et al. (2008) – can be summarized as a ‘no-regret’ scenario as it does not imply a specific services R&D and innovation policy. It mainly is about increasing the service sensibility of existing generic R&D and innovation schemes. The demarcation approach as applied to furthering service innovation asks for services-specific R&D and innovation policies. The heterogeneity of the service sector at large, and the peculiarities of some specific service markets, in practice require specific measures. In the synthesis or systemic approach services are perceived as a systemic dimension of economic activity and thus a potential focus of innovation practically anywhere. Policy initiatives originating from the systemic perspective have passed the services-manufacturing distinction, take a broad approach to innovation and see both R&D and innovation as well as ‘non-innovation’ policies as vehicles for supporting R&D and innovation. Services are understood not only as an economic sector, but also as a horizontal dimension of the overall innovation system that may boost overall innovation and competitiveness.

153 It should be noted here that initiatives taken and studies funded by the European Commission (see for example European Commission, 2003, 2007, 2009; Expert Group on Innovation in Services, 2007; Howells & Tether, 2004; PREST et al., 2006; den Hertog et al., 2006; Kuusisto, 2007; Arundel et al., 2007; Cunningham, 2007; Tekes, 2007), OECD (2005a, 2006; Tamura et al., 2005; and earlier, Pilat, 2001) as well as in individual vanguard countries such as Finland, Germany, Norway and Denmark (see Tekes, 2007 for some examples) have played an important role in starting off the discussion on service innovation policies in the first place. In 2009 the EPISIS innonet started a three year programme where European service innovation policy-makers discuss and exchange experiences with the design of service innovation policies and schemes. In 2010 AMSI provided an update on how four countries in particular (Germany, Finland, South-Korea and the UK) as well as the European Commission are shaping their service innovation policies (see den Hertog & van der Aa, 2010).

154 This subsection summarises the argumentation included in den Hertog et al. (2006) and den Hertog et al. (2008) and is also included in den Hertog (2010).
A menu of some possible policy options in each of the three approaches is given in figure 7.4. We do differentiate here between R&D and already wider innovation policies, and policies not originally developed to spur R&D and innovation but having a considerable impact on the scope for service innovation (i.e. ‘non-innovation’ policies). The three approaches might suggest that policy-makers would have to make a choice between the three columns whereas in practice policy options from all three may be combined. The key issue is that there is not one single solution, as for every individual innovation system a (temporary) mix of instruments and policies will have to be developed to suit it. This mix not only depends on the economic structure, history and institutional set up of a particular innovation system, but also on the preparedness and willingness present among actors in such a system to experiment and invest in mutual learning. Further, in our view the development towards service innovation policies at the various policy levels will be evolutionary rather than revolutionary. We are already experiencing that there is no fixed recipe available as every individual innovation system (and for that matter sectoral innovation system) will need a customised (temporary) mix of instruments and policies that suits it.

7.6 Conclusions and some final remarks

In this chapter we have discussed policy frameworks and policy options for furthering service innovation. We have subsequently taken stock of the possible policy rationales for having service innovation policies in the first place, reviewed the participation of service firms in (EU) innovation programmes and some of the more recent (mostly EU) service innovation policy programmes and initiatives. Finally, we have offered some policy options along the lines of the assimilation, demarcation and systemic approach towards service innovation.

Our claim is that a systemic view on service R&D and innovation is needed where the link between an innovation environment or rather innovation system and service R&D and innovation is the point of departure. This linkage is two-sided. Firstly this perspective looks at how well the innovation system caters for or is adapted to the needs of service innovators. Does the overall innovation system provide the right incentives for triggering and diff using service innovation or not. Secondly, the systemic perspective takes into consideration how services R&D and innovation contributes to the overall quality of the innovation system. We see the level and integration of service R&D and innovation as an intrinsic quality of innovation systems that might spur the overall quality in terms of innovativeness, competitiveness and economic growth and welfare created.

155 The importance of other policy areas for innovation, and the need to develop more integrated policies, are argued at length in Lengrand et al. (2002).
<table>
<thead>
<tr>
<th>Assimilation policies</th>
<th>Demarcation policies</th>
<th>Systemic policies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R&amp;D policies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase accessibility of existing R&amp;D support schemes</td>
<td>Support public R&amp;D in services</td>
<td>Understand and support role of R&amp;D services (KIBS) in innovation systems</td>
</tr>
<tr>
<td>Include services in technological foresight &amp; road mapping exercises</td>
<td>Introduce vertical R&amp;D programmes aimed at service industries (logistics, trade, etc.)</td>
<td>Support for services R&amp;D in and through hybrid firms</td>
</tr>
<tr>
<td>Include services firms in policies aimed at improving industry-sciences relationships</td>
<td>Services IPR instruments</td>
<td>Integrated R&amp;D programmes paying attention to technological and non-technological R&amp;D and innovation</td>
</tr>
<tr>
<td><strong>Innovation policies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase accessibility of existing innovation support schemes</td>
<td>Introduce courses on services innovation management</td>
<td>Innovation &amp; business support systems also supports service innovation</td>
</tr>
<tr>
<td>Innovation management training &amp; practices more geared towards supporting all types of innovation in all industries</td>
<td>Awareness campaign on the importance of services innovation</td>
<td>Availability and use of specialised services / KIBS</td>
</tr>
<tr>
<td>Mobility schemes no longer limited to qualified scientists and engineers</td>
<td>Identify service innovation role models (including innovation in public sectors)</td>
<td>Increase transparency in KIBS markets</td>
</tr>
<tr>
<td><strong>Non-innovation policies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase coverage of services in regular and R&amp;D and innovation statistics</td>
<td>Use deliberately policies such as trade, competition education &amp; training policies for fostering R&amp;D and innovation in services</td>
<td>Insight into &amp; international competitiveness of key service functions</td>
</tr>
<tr>
<td></td>
<td>Regulations that might trigger service innovations</td>
<td>Cluster and network type of policies that deliberately include services</td>
</tr>
<tr>
<td></td>
<td>Analyse offshoring in services</td>
<td>Government procurement policies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Support role of users in innovation</td>
</tr>
</tbody>
</table>

Figure 7.4 Examples of assimilation, demarcation and systemic policies aimed at facilitating Services R&D and Innovation. Source: Hertog, P. den, Rubalcaba, L. and Segers, J. (2008) ‘Is there a rationale for services R&D and innovation policies?’, in International Journal of Services Technology and Management special issue on service innovation, copyright Inderscience and reproduced with permission.
This systemic perspective implies that the rationale for having service innovation policies needs to be thought through much more thoroughly and go beyond the standard market failure argumentation and include wider macro-economic considerations and systemic failures as elements. In parallel the way service innovators benefit (or not) from existing – and more importantly future – innovation policies as well as other policy areas which jointly provide the framework conditions for spurring service innovation needs to be reconsidered as well. Service innovation policy frameworks and policy options need to be adapted accordingly. In this chapter we have provided a first analysis and some stylized conclusions are given below.

- The three well-known approaches towards services innovation (the assimilation, demarcation and systemic approaches) are mirrored in existing and developing policy approaches towards service innovation.

- Three categories of argumentation need to be taken into account when discussing service innovation policies, i.e. rationale based on market failure; contextual and macroeconomic rationale; and rationale based on systemic failures. The latter two categories are often ignored and market failure argumentation not always used properly.

- All four categories of market failure (uncertainty and asymmetric information, externalities, scale economies and market power) may affect services, but not all to the same degree and in all services activities. Some service firms and service industries are more active in technological R&D than is mostly anticipated. Here market failure argumentation is as relevant as to manufacturing firms investing in technological R&D and innovation. It can further not be taken for granted that market failure is perceived to apply exclusively to technological R&D and innovation and not to non-technological R&D and innovation. In practice innovation is multi-dimensional, the two are interlinked and hard to separate. In cases where firms have to deal with long and expensive learning processes preceding non-technological innovation and knowledge spillovers (i.e. the risk of imitation of the non-technological innovation), market failure can be said to exist.

- There are many macroeconomic reasons to consider service innovation policies. High-performing countries and industries around the world are increasingly based on services, high service performance, high levels of service innovation and the ability to successfully link complementary technological (associated with manufacturing, although not exclusively) and non-technological innovation (associated with services, although decreasingly so). Service innovation is a key factor for economic growth, and there is a clear need to improve the low productivity and performance in many service sectors, especially in once sheltered markets that are opening up to international competition.
It will be very difficult to cope with service innovation if innovation systems are not suited to facilitate and benefit from service innovation. Therefore we consider the presence of systemic failures (capability failures, institutional failures, network failures and framework failures) as a relevant argumentation for considering (service) innovation policies. This also implies that the arsenal of potential policy options is widened, as next to R&D and innovation policies other types of policy actions – i.e. policies originally not designed to facilitate innovation – might prove beneficial in furthering service innovation.

Although ‘fair shares’ cannot be the starting point of any R&D and innovation scheme, participation in ‘industry-neutral’ standing schemes as measured in the EU through both the Community Innovation Surveys 3 (2000–2002) and 4 (2002–04) seem to point at discrimination against some service industries and, more widely, service innovation. However, the public funding bias against services does not apply to the same extent to all cases, all countries and all subsectors as diversity within the services sector is huge. However, this diversity within the service sector should not be used as a sufficient argument to deny its specificity and different needs (Rubalcaba, 2007).

Evidence on the role of services in R&D and innovation policies suggests that these should not just take care of the volume of public spending addressed to services, but the public programmes design as well. The design of individual schemes as well as the appropriate policy mix might be different for different industries, i.e. innovation policies – at least to some extent – need to be customized. Even where there are no significant differences observed in the obstacles experienced by innovating service firms as compared to manufacturing firms, this does not necessarily lead to the conclusion that there is no need for a services innovation policy, as not all firms experiencing similar problems are necessarily in need of the same solution.

Both the EU and the European Commission – though in a different fashion – have played a key role in putting the notion of service innovation and policies to facilitate service innovation on the agenda. At the national level (at least in EU-countries) the interest in service innovation policies is on the rise and service innovation policy frameworks are emerging. However, specific innovation programs designed or implemented to fulfil the needs of service industries are still the exception rather than the rule.¹⁵⁶

In our view the development towards service innovation policies at the various levels will be evolutionary rather than revolutionary. A menu approach – taking respectively the assimilation, demarcation and systemic approaches as the point of departure – was offered here. Eventually, in every individual innovation system, a (temporary) mix of instruments and policies will have to be developed that suits it best.

¹⁵⁶ This conclusion was not included in den Hertog & Rubalcaba, 2010.
By way of conclusion, we reiterate that innovation systems need to be designed in such a way as to cater much better for the needs of service innovators. There are numerous examples of innovative services and service functions (importantly so in manufacturing industries and firms) that are key assets of dynamic and adaptive innovation systems. All businesses in all sectors need service innovation to improve their competitiveness and employment- and wealth-creating capacity. In our view the systemic approach to services R&D is especially most promising, as it recognizes this key role of innovative service functions in developing competitive innovation systems. In our view the current debate on service innovation and service innovation policies is still too much dominated by the assimilation and demarcation perspectives and lacks a vision as to how services can be better embedded in innovation systems, and how innovative services may contribute to the overall innovativeness and competitiveness of these innovation systems. This missing vision is to an important extent due to the persistence of old and new myths regarding the services economy (low productivity, low innovativeness, low tradability; see Gallouj, 2002; Rubalcaba, 2007) and the still predominant ‘technological view’ on innovation (Gallouj, 2002). Developing the emerging systemic approach further is needed to counterbalance this myopic view, and for developing new and more effective services R&D and innovation policies.