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Socio-economic dimensions of innovation

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SOCIO-ECONOMIC DIMENSIONS OF INNOVATION

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1. Introduction

It is increasingly evident that complex problems, such as pressing societal challenges (aging population, climate change and other environmental problems, energy issues, etc.) call for a systemic approach to solutions and shift to a combination of multiple types of innovation. The quest is reinforced by the ongoing crisis, severe budget constraints and increasing unemployment that challenge present economic models, threaten citizens' welfare and increase inequalities in European economies. The comparison of the innovation performance of EU economies indicates that after a period of convergence this process has come to a halt in 2012. Less innovative countries as a group are no longer catching-up with the best innovation performers while the innovation performance of the EU on average still marks growth, albeit weak (IUS, 2013). By observing the indicators of the innovation performance that leads to growth and economic prosperity one does not get any insight into social aspects of these developments. Eurostat Survey on Social inclusion and living conditions reveals that in 2011 approx. 24% of EU27 population (120 million) were at risk of poverty or social exclusion with the trend increasing since 2008 (Eurostat Survey, 2013). The evidence on contrasting trends in economic and social indicators could be substantiated with additional data. It seems however that the data sets mentioned suffice to illustrate the emerging dichotomy in the European economies and to call into question the inclusiveness and sustainability dimension of EU2020 Strategy. In this context the objective of the paper is to point to the gaps in understanding innovation and its implications on social dimensions of economies. Better understanding of innovation that goes beyond R&D and new technology implications is of high relevance for macro-economists when constructing models that forecast the direction and strength of impacts on different variables, as well as for public policy that uses such analyses for designing policies.

The discussion on innovation has for long focused on technological innovation in manufacturing as the key to providing technical solutions and leveraging the competitiveness of economy. Yet, the structural changes in favour of services that dominate value added and employment in advanced economies¹ have not been well understood, integrated into macro-

¹ The share of services in EU27 accounted for 72,7% of GDP in 2011 with substantial differences among member states (52,6% in Romania, 66,2% in Germany, 79,3% in Greece and 94,7% in Luxembourg) (Eurostat, 2012).

modelling and translated into different domains of public policy. It is of particular importance to acknowledge that service innovation is a horizontal phenomenon covering both the innovation activity in the service sector and innovation activity with service like attributes that can occur in manufacturing, agriculture, at the intersection of different sectors or in the civil society². Efficient implementation of new technology and its broad uptake depend critically on non-technological and services-related innovations. Manufacturing firms recognize that apart from technological breakthroughs they need high quality services to leverage their innovation capacity and in particular to win the market. They have moved beyond simply »making things« to introducing new business models where services become an essential part of their value chain strategies (Sissions, 2011). The boundaries between goods and services production are being blurred bringing additional complexity into the economy. The potential of service innovation to complement technological innovations is revealed by its role in furthering sustainable development (e.g. shift from ownership of products to providing the service of using products – car sharing/pooling) or in transforming the provision of public services (e.g. health, education, social services)³. The latter are faced with the decline in public budgets across Europe that may jeopardize their provision and increase inequality in access. In this respect, service innovation could induce organisational changes, new models of provision, improvement in efficiency and quality of services. Furthermore, effective deployment of new technologies and their roll-out for coping with major societal challenges critically depends on new services, new models and holistic solutions adapted to citizens and society at large. Finally, service activities have a fairly small environmental footprint compared to manufacturing, while at the same time producing essential socioeconomic effects in generating the bulk of jobs. Some scholars claim that social innovation in businesses and/or by citizens and NGOs is always a service innovation (Drewe, 2008; Harrisson et al., 2010; Franz et al., 2012). There might be overlaps between service and social innovation, but also distinctions suggesting that the relation between both needs additional insight (Vienna Declaration, 2011). Anyhow, the implications of different dimensions of service innovations remain insufficiently explored.

2 A Report of the Expert Group on Innovation in Services defines ‘innovation in services’ as innovation processes within service industries whilst ‘service innovation’ covers any innovation activity with service like attributes that can occur in any part of the economy: manufacturing, agriculture, services or even informal parts of the economy (EC, 2007).

³ Public services on average account for 28% of the total employment in the EU.

The paper aims to contribute to better understanding of service innovation and to point to some of its social aspects. After the introductory observations we discuss various dimensions of service innovation and its distinctive features in order to improve the apprehension of the phenomenon. Brief overview of theoretical approaches to service innovation is focused on social implications of service innovation, in particular on employment. We illustrate the importance of service innovation across EU27 economies by data from two most recent Community Innovation Surveys (2006-2008 and 2008-2010) that depict the intensity of innovation in the service sector and the propensity to introduce technological and non-technological innovations. Furthermore, we highlight the specific role of the knowledge intensive business services in fostering innovation capacity of European economies. We conclude with the observation that the impacts of service innovation reach beyond economic performance and influences a broader set of societal dimensions that bear implications for macro –modelling.

2. Service innovation types and its features

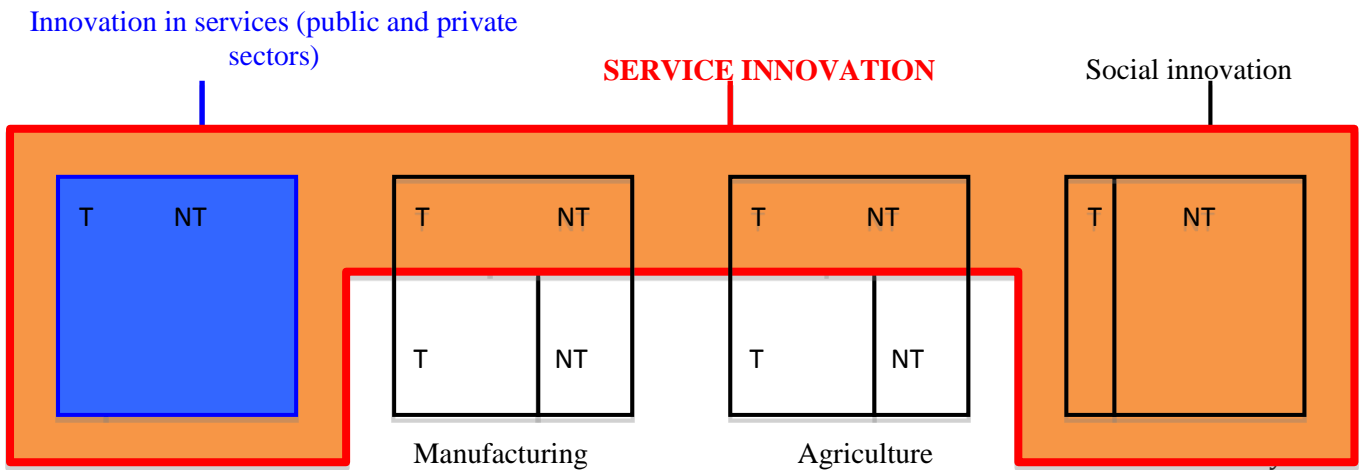
Service innovation is often intangible, less visible and thus difficult to define, to conceptualise and measure, including its impacts on turnover or employment (Miles, 2001; Gallouj, 2002, Tether, 2005). The definition proposed by TEKES⁴ integrates the most relevant elements pertaining to service innovation: »service innovation comprises new or significantly improved service concepts and offerings as such, irrespective whether they are introduced by service companies or manufacturing companies, as well as innovation in the service process, service infrastructure, customer processing, business models, commercialisation (sales, marketing, delivery)«. Nevertheless ambiguities remain on how to draw a line between different types of innovation and potential overlapping between them. Figure 1 serves to clarify some misinterpretations by (i) delineating sectoral and functional dimensions of service innovation, and (ii) pointing at the technological and non-technological innovations in a cross-sectoral framework⁵. It follows that service innovation is more than innovation in service sector and that service innovation is not synonymous with non-technological innovation. Social innovation in businesses and/or by citizens and NGOs could

⁴ Finnish funding agency for technology and innovation.

⁵ The size and delination within boxes does not suggest the actual proportion of technological or non-technological innovation in any sector.

also be considered as service innovation (Drewe, 2008; Harrisson et al., 2010; Franz et al., 2012).

Figure 1: Illustration of broad definition of service innovation



T:Technological innovation; NT: Non-technological innovation.

Source: Stare, Gallouj, 2012.

The most distinctive features of service innovation pertain to its incremental nature, intangibility, interactivity between the suppliers and customers, focus on demand and user centrality. Service innovation has a *lower R&D intensity* in the traditional meaning of the term for technological innovation. Research in services relates rather to a composite of technology (especially but not exclusively ICTs), humanities, social sciences and organizational engineering (Gallouj, 2010; Djellal et al. 2003). In addition, it is usually less formalised and rarely carried out in research and development departments; it is *incremental* rather than radical and consequently less visible. Accordingly, *intangible assets* such as multi-disciplinary skills, organisational and marketing competences, and methodologies play a particularly important role in services innovation. Service innovation is easily and rapidly imitated and difficult to protect (Blind et al. 2010). As a consequence of the previous features, service innovation raises appropriation and intellectual protection issues.

Service innovation is largely a distributed phenomenon that depends on *cooperation and interactions among stakeholders* (including the suppliers, research and university, intermediate and final customers) to a greater extent than in technological innovation. Service innovation is mainly *demand driven* and emerges as a response to user needs (intermediate

and final users) that provide critical incentives (Sundbo and Toivonen, 2011). Innovation in public services includes further specificities such as non-market and monopolistic nature, need to align to the principles of public services and broader socio-economic impacts (equality of access, fairness, continuity), their facilitating role for innovation in the other sectors (Bugge et al., 2011; Windrum and Koch, 2008; Djellal and Gallouj, 2012). Due to large heterogeneity of service activities the above mentioned features may apply differently to individual services complicating further the conceptualisation of service innovation and the design of supporting policies.

While the differences between the technological and non-technological innovation exist, both types are in most cases highly complementary and intertwined. Non-technological innovations are not satisfactorily grasped by traditional indicators (such as R&D expenditures, patents, etc.) and their effects not sufficiently evaluated even if they create new value for the suppliers and customers or. In addition, the border between various types of service innovation is not clear cut and in many instances service innovation appears at the intersection (or as a combination) of various types of innovation that address the needs of business or final users.

3. Theoretical context of service innovation and its socio-economic dimensions

Traditional approaches treated innovation as a technical change, centred on radically new or improved technical solutions to problems in manufacturing. However, already Schumpeter defined innovation as “the introduction of new elements or a new combination of elements in the production or delivery of manufactured and service products” (Schumpeter, 1934). His concept of innovation embraces different areas of innovation activity, some even more service sector specific (for example market and organisational innovation). There are three main approaches to research of innovation in services: the technologist or assimilation approach, the service-oriented or demarcation approach and the integrative approach (Gallouj, 2002). The *technologist approach* focuses on the introduction of enabling technology into service sectors. To the contrary, the *demarcation* or service-based approach highlights service-specific forms of innovation (e.g. ad hoc innovation, intangible processes and products) that play an important role in service activities, apart for technical innovation.

The *integrative or synthesis approach* however suggests that there is no need to treat innovation in services separately from innovation in manufacturing due to the growing convergence between goods and services production. Scholars confirmed the need for a synthesis approach to innovation pointing to the inadequacy of the traditional technology approach even in manufacturing, where non-technological innovations play a complementary role to the technological innovations (Drejer, 2004, Van Ark et. al., 2003; Howells, Tether, 2004). Whereas technological and non-technological innovations are complementary their importance differs between various service activities (Van Ark et. al., 2003). In this respect the debate on innovation in services very early revealed the special role of knowledge intensive business services (KIBS) and their spillover effects on industries using those services.

Sundbo (2001) considers the types of innovations in services as mainly social with intensive relations between the producers and customers, compared to manufacturing, where innovations are focused more on physical objects.⁶ The reasoning of Sundbo introduces social properties of service innovation from a general *relational* perspective, while there are much more direct social implications in several areas. Here, we point in particular to the link between service innovation and employment. The discussion on the relations between innovation and employment effects in the service sector emerged rather late in economic literature and only mirrors the neglect of innovation in services in general. Djellal and Gallouj (2007) observe the need to distinguish between employment impacts of innovation in services on one hand and innovation by services on the other hand. Whereas the former relates to technological innovation (product, process) and to services specific types of innovation (organisational) introduced in the service sector the latter concerns the effects that take place due to the catalytic role of knowledge intensive services in encouraging innovation in any sector.

4. Evidence on different dimensions of service innovation

Using data from Community Innovation Surveys (CIS6 and CIS7) we illustrate the intensity of innovation activity and the types of innovation to depict differences/similarities in

⁶ Social innovations, as opposed to technological innovations, are intellectual or behavioural (Sundbo, 2001).

innovation patterns in manufacturing and services across EU27. Table 1 shows innovation intensity in the service sector is lower than in the manufacturing sector in most EU countries. Comparing the evidence in two periods shows that growth in innovation intensity of the service sector was higher than in manufacturing in the majority of EU economies. Perhaps this could indicate that the crisis period offers more opportunities for innovation in services than in manufacturing since the former necessitates fewer funds than the latter. It can as well be assumed that service firms increasingly engage in innovation activity to enhance their competitiveness. Three EU economies performed

Table 1: Innovation intensity in the EU* in %, 2006-2008 and 2008-2010

	2006-2008			2008-2010			
	Total	Manufacturing	Services	Total	Manufacturing	Services	KIBS**
EU27	51,6	54,5	48,5	52,9
Austria	56,2	59,4	53,8	56,5	60,6	53,4	64,2
Belgium	58,1	63,0	54,8	60,9	67,9	55,9	73,8
Bulgaria	30,8	37,2	22,3	27,1	31,5	22,0	31,6
Cyprus	56,2	62,9	49,4	46,2	48,2	44,7	60,2
Czech Republic	56,0	56,4	56,9	51,7	54,0	49,4	59,4
Denmark	51,9	53,0	51,1	54,7	57,8	52,7	55,3
Estonia	56,4	59,8	52,6	56,8	61,0	53,4	61,2
Finland	52,2	57,1	48,6	56,2	61,1	53,5	65,2
France	50,2	53,0	47,6	53,5	56,1	51,5	64,8
Ireland	56,5	62,2	54,1	59,5	67,1	55,9	57,3
Italy	53,2	56,0	48,1	56,3	59,2	51,8	66,4
Latvia	24,3	30,9	19,3	29,9	32,6	28,4	39,5
Lithuania	30,3	30,2	29,5	34,5	32,0	36,5	53,2
Luxemburg	64,7	63,6	65,2	68,1	65,7	68,7	67,4
Hungary	28,9	28,4	29,6	31,1	30,4	31,4	40,7
Malta	37,4	45,2	33,7	41,5	45,6	39,8	49,0
Germany	79,9	86,3	73,6	79,3	83,0	76,7	86,5
Netherlands	44,9	50,2	41,9	56,7	60,2	54,6	67,8
Poland	27,9	29,2	26,1	28,1	28,5	28,0	39,3
Portugal	57,8	54,1	63,9	60,3	56,1	66,8	75,9
Romania	33,3	35,0	31,3	30,8	30,4	31,7	39,0
Slovakia	36,1	37,3	35,0	35,6	36,6	35,2	46,3
Slovenia	50,3	54,6	46,1	49,4	54,4	44,7	52,7
Spain	43,5	44,7	42,6	41,4	43,9	39,0	60,8
Sweden	53,7	57,9	50,8	59,6	61,1	59,1	71,3
UK	45,6	49,5	43,0	44,2	48,1	41,1	45,1

* No data is available for Greece.

**Knowledge intensive business services include publishing activities (J58), telecommunications (J61), computer programming, consultancy and related activities (J62), information services activities

(J63), financial and insurance activities (K64-K66) and architectural, engineering and technical testing activities (M71).

Source: Eurostat portal page - Science and Technology - Community innovation surveys.

better in service sector innovation intensity than in manufacturing in both periods, with only Portugal recording substantially higher levels of innovation activity in the service sector compared to manufacturing. Owing to the heterogeneity of the service sector the extent of individual services' capability to innovate differs as well. Here, special mention should be made of the knowledge intensive business services (KIBS) that show higher innovation intensity than manufacturing in most EU member states and points to their important contribution to the overall innovation performance of the economy.

It is worthwhile observing that innovation activity in a large part of the service sector i.e. public services is not included in CIS. The gap in measurement is recognized and a number of activities were launched⁷ to address it since the public sector accounts for between one third and one half of GDP in most OECD economies (OECD, 2010). In addition, innovation in the public sectors induces innovation in other sectors of the economy in a similar way as KIBS. Having in mind that public administration, health services, education and social services are provided mostly by public actors the social implications of public sector innovation loom large, but are however not explored sufficiently.

Additional dimension of innovation activity is displayed when we distinguish it by innovation types (Table 2). Overall, the service firms are more prone to introduce non-technological innovation than the manufacturing ones, reflecting the nature of innovation in the service firms. In most EU economies manufacturing firms rely more on technological innovations than non-technological innovations, but several economies exhibit the opposite performance. As expected, service firms show much greater reliance of on non-technological than technological innovations in the large majority of EU economies, with the exception of some most advanced countries (for example Belgium, the Netherlands). There is however much larger similarity between the manufacturing and service firms as regards the combined

⁷ Innovation Index developed under the project Measuring Public Innovation (NESTA, 2009), Eurobarometer Survey of public agencies innovation (Arundel, Hollanders, 2011), OECD Task Force for Observatory of Public Sector Innovation (2012).

innovations that are the most frequently introduced by both sectors clearly illustrating the complementary nature between the technological and non-technological innovations. From the perspective of firms technological and non-technological innovations cannot be isolated as both are needed for market success and for aligning with users' needs. Recent analyses confirm beneficial effects of combining various types of innovation as this bears strategic importance for firms' current performance and for generation of more innovations in the future (Inno-Grips, 2012). Also, firms that jointly introduce product, process and organisational innovations have a competitive advantage over firms with narrow innovation approach irrespective of the sector (Evangelista, Vezzani, 2010).

Table 2: Share of firms by type of innovation in the EU*, 2008-2010, in %

	Manufacturing			Service sector		
	TI	NT	CI	TI	NTI	CI
Austria	25,7	16,9	57,4	18,3	27,1	54,6
Belgium	32,4	13,5	54,1	26,4	16,6	57,0
Bulgaria	43,6	27,6	28,8	22,7	46,1	31,2
Cyprus	24,4	20,2	55,4	11,0	25,0	64,0
Czech Republic	20,6	27,5	51,9	13,7	40,3	46,0
Denmark	24,6	17,4	58,0	15,5	24,8	59,8
Estonia	38,7	13,0	48,3	30,1	24,1	45,7
Finland	32,8	12,1	55,2	23,5	22,8	53,6
France	23,0	27,6	49,4	12,6	43,7	43,8
Ireland	28,5	12,7	58,8	18,3	26,3	55,4
Italy	25,7	21,9	52,5	15,7	40,6	43,7
Latvia	26,6	40,1	33,2	15,8	48,4	35,7
Lithuania	26,0	30,8	43,4	13,0	38,7	48,4
Luxemburg	19,5	18,5	62,0	10,2	28,4	61,5
Hungary	25,7	38,1	36,2	21,8	44,4	33,8
Malta	30,2	16,0	53,8	16,3	34,3	49,4
Germany	23,8	13,5	62,6	20,2	24,4	55,4
Netherlands	37,3	11,3	51,4	30,3	20,3	49,5
Poland	28,0	36,5	35,5	17,9	51,7	30,3
Portugal	24,0	21,7	54,2	20,1	30,9	74,1
Romania	17,0	45,7	37,3	10,6	62,4	27,0
Slovakia	23,0	14,4	62,6	11,3	28,0	60,7
Slovenia	24,1	20,6	55,1	14,8	41,4	43,8
Spain	35,4	23,2	41,4	26,0	36,8	37,2
Sweden	32,2	15,0	52,8	24,5	20,8	54,7

*Data is not available for Greece and UK.

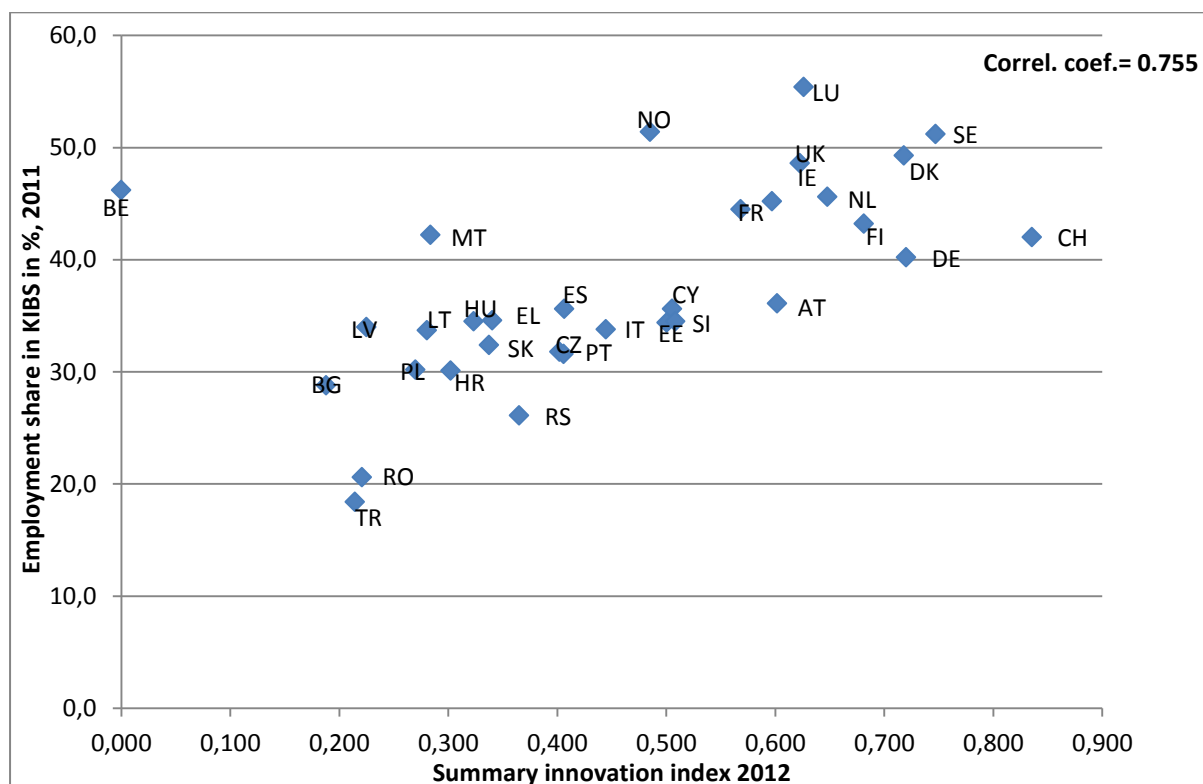
TI – technological innovation; NTI – non- technological innovation; CI – combined innovation

Source: Eurostat portal page - Science and Technology - Community innovation surveys.

There is as broad agreement that knowledge intensive business services (KIBS) play a special role in innovation. Besides being the most innovative among services KIBS are the catalysts of innovation capacity throughout the economy (Muller, Zenker, 2001, Den Hertog, 2002; Gallouj, 2002). They generate new knowledge, process it and diffuse it within the innovation systems (Miles, 2001) and co-produce innovation by interacting with their client firms (Den Hertog, 2010). A number of firm-level analyses confirm knowledge spillovers from KIBS and their facilitating role for innovation, productivity and export performance of manufacturing firms (Wolfmayer, 2011, Doloreux, Shearmur, 2012, Foster et al., 2012). The role of KIBS is especially important for the service firms that are more prone to apply non-technological innovation. The implementation of this type of innovation in the service sector critically depends on the availability and sophistication of non-technological knowledge and skills typical for the provision of KIBS. If the supply of the latter is deficient it may also deter the innovation capability of the total economy. Figure 2 demonstrates a robust correlation between the share of KIBS in total employment in services and overall innovation performance of European economies as illustrated by the Summary innovation index⁸ (correlation coefficient 0.76). From the perspective of individual country the relation suggests that climbing up

⁸ Summary innovation index is a composite of 25 indicators that depict enablers of innovation activity, firm innovation activities and outputs of the innovation activity in European economies.

Figure 2: Knowledge intensive business services employment (KIBS) and innovation in European economies



Source: own calculations based on European Innovation Scoreboard 2012 (IUS 2013).

the ladder of the overall innovation performance *inter alia* requires increasing share of employment in KIBS. As the skills needed in KIBS is skewed to more complex and sophisticated knowledge the implications of intensive use of KIBS on employment inequalities seem to be fairly straightforward.

The short overview of data on individual dimensions of service innovation compared to innovation in manufacturing points to the importance of the phenomenon for the businesses and the public policy. However, the relevance of descriptive data increases when they are used to assess the implications of different types of innovation on economic and social variables. So far, the impacts of service innovation were analysed mainly from the perspective of productivity gains and other performance indicators while the effects on employment were fairly overlooked. Recently we may observe an increased interest in the topic that could be attributed to improved knowledge and data on service innovation that capture different types of innovation. In addition, employment related issues are of high

relevance for the governance of socio-economic consequences of the crisis. What follows is a brief summary of analyses dealing with employment effects of innovation, in particular in services.

Studies report that product innovations in services have positive employment effects, since they broaden the variety of services and open up new markets. Process innovations are however more likely to downsize employment by improving the efficiency in services production and substituting labour with capital. However, Harrison et al. (2010) finds no evidence of displacement effects from process innovation in the service sector and suggest that the results are at best the inconclusive or fragile effects of process innovation. Evangelista and Vezzani (2012) bring additional insight into the assessment of the relationship between innovation and its impact on employment by exploring technological and non-technological innovation. They found that product innovation exerts the strongest employment impact when complemented with process and organizational innovation in both the manufacturing and service industries. The introduction of only organisational changes alone also contributes to employment growth. In addition, the authors detect that process innovation does not displace employment in service sector that contradicts prevalent theoretical discussions on labour saving impact of this type of innovation. They however assume that the result could be related to the level of analysis where neutral results at the micro level could be compatible with the negative effects at a more aggregated level. Finally, Evangelista and Vezzani point to indirect positive effects of all types of innovation on employment via improved performance brought about by innovation (2012).

Only few studies have empirically addressed the impact of technological innovation on skills composition in services and even fewer the effects of organisational change. In general, the introduction of ICT to services is assumed to increase demand for higher skills however this may hold true only for some services. Examples of country studies confirm such reasoning - the analysis of service firms in Germany found that firms with larger expenditures in ICT employ more educated workers, however the strength of this relation depends on the service sector (Falk, Seim, 1999); in Sweden the analysis revealed that innovation has positive effect on employment and upskilling in knowledge-intensive services (Nählinder, Hommen, 2002). Large number of service industries use ICT mainly to rationalize the delivery processes and communications with suppliers/ customers that may reduce the number of employees, in particular those with lower skills. ICT induced innovation in Italian firms leads to the

replacement of low-skilled employees with high- skilled employees in all service industries (Evangelista and Savona, 2003). At best, the above results are inconclusive and need to be supplemented with empirical evidence of the influence of the technological and non-technological innovation in services on skills composition based on more recent data.

The discussions above suggest that positive effects of technological innovation on employment in services tend to prevail over the negative ones at the firm level and also that the positive effects are amplified with simultaneous adoption of organisational innovation. When the link between innovation in services and employment is analysed at the sectoral or macro level the results are inconclusive and much less clear that causes difficulties in understanding the phenomenon. Not entering deeper into the discussions on the impacts of service innovations on employment the conclusion arises that existing ambiguities reflect the complex nature of service innovation as well as the lack and imperfections of data, in particular on non-technological innovation.

5. Implications of service innovation on macro analysis

The paper shows that along with the rapid pace of technological innovations introduced in manufacturing and services non-technological innovations appear to be complementary for achieving market success in both sectors. Top performing firms in terms of innovation activity introduce and combine both types of innovation, irrespective of the sector. Nonetheless, non-technological types of innovation (e.g. organisational and marketing) are of particular relevance in service innovation. Service sector on average displays lower innovation activity than the manufacturing sector, still knowledge intensive business services are found to be the most intensive innovators in most EU economies surpassing the manufacturing firms. Besides, these services co-produce innovation with their customers and foster the overall innovation capability of economies.

Yet, the implications of service innovation reach much beyond the increase of economic performance and concerns broader set of societal dimensions that should be of interest for macro-economists in various analyses. Not entering into the debate how broadly could social impacts of innovation be defined we refer to some of those that that raise many questions and are relevant for macro modelling, such as:

- The size of the service sector in terms of employment and value creation in advanced economies is an important dimension in itself. Service sector creates the bulk of new jobs and will most likely have a substantial effect on employment trends, skills and occupational structure of the workforce also in the future. In addition, services and goods production are tightly interrelated and some services provide key inputs to manufacturing.
- Service innovation displays different properties such as intangibility⁹, different nature and lower R&D intensity, less reliance on patents protection, essential role of demand and users as the main drivers of innovation. These properties relate in particular to non-technological innovation. How There is an open issue on which indicators to use in macro-models to incorporate technological and non-technological innovation in services?
- Fairly large part of the service sector is engaged in providing public services (e.g. health, education, social services) where social implications for citizens and the society are direct and substantial. Public services are not driven predominantly by efficiency concerns, but rather by social benefits for the citizens related to their social inclusion, access, equality and sustainability in the provision of services and, etc. (Burger, Stare, 2010). These characteristics should also be reflected in innovation performance of the public sector, yet the measurement of innovation in public services is in its infancy.
- Innovation in services impacts the changes in employment directly but also indirectly via spill-over effects in other sectors where service inputs are used. Does service innovation generate or destroy jobs in those sectors, which type of jobs, are there gender disparities? Which services produce the largest spill-overs?

The above issues are all the more relevant in the current crisis with high levels of unemployment in several European economies and with public budget cuts that challenge the existing policies and models of public services provision. Social implications of service

⁹ Preliminary estimates of intangible capital in the EU were made only recently (Corrado et al., 2012).

innovations are extremely relevant for the design of the innovation policy. Nevertheless, policy makers still hesitate to promote service and social innovation to a larger extent on the ground of insufficient evidence. This opens up large space for macro-modelling to incorporate social aspects into their research and analysis. It is hoped that new insights from such analyses could contribute to better informed and evidence-based public policy in order to address the gap between economic and social developments in Europe.

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