‘READING’ THE BUSINESS LANDSCAPE - WHEN BUSINESS NETWORKS ARE SUPPOSED TO BE AFFECTED BY INNOVATION POLICY

Competitive Paper

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ABSTRACT

To contribute to the development of innovative and prospering companies has become one of the most important contemporary policy issues, on national as well as trans-national levels. This implies that to act on a relevant understanding of the basic processes in the business landscape is crucial for politicians as well as for policy practitioners.

The first impression of contemporary policy analytical framework, for example as presented by EU, is that the systemic features of the business landscape are taken into account.
Policy documents that addresses the issue of how to create innovative companies reveals an awareness of the systemic features, for example through emphasizing the importance of cooperation between different kinds of stakeholders such as public authorities, users, regulators, industry, consumers and “poles of excellence”.

However, if we consider *how* the content and effect of innovative and other processes are understood, a rather atomistic view is still outlined. Firstly, the most important *source* of potential innovations is seen in non-business; mainly in research but also other parts of the public sector. Secondly, the most important *means* to embed knowledge stemming from research based or other public sources in business is seen in *knowledge transfer*. Thirdly, the most important innovation processes are seen in those going on *within* individual companies.
Thus, under the surface of a systemic approach a rather traditional market model inspired understanding is hiding. Furthermore, when innovation policy is broken down to a) national and regional programmes from which companies can apply support and b) to analytical framework through which policy practitioners can analyse company applications, the systemic features of the business landscape is more or less absent.

The aim of this paper is to discuss:

a) What are the basic characteristics of innovation in practise in the business landscape?
b) How are the basic processes of innovation in the business landscape, interpreted by contemporary policy?
c) What effect does contemporary research and innovation policy have for academic knowledge development and use of knowledge in business respectively?

INTRODUCTION

Utilising academic research results as a source of innovation and growth has become one of the most important contemporary policy issues, on both national and trans-national levels. However, this ambition implies that it is crucial to act on a relevant understanding of the basic processes of research and business. Ideally, policy strategies are based on a deep understanding of, on one hand, what constitutes academic research and, on the other hand, what constitutes use of knowledge in business, and finally, what constitutes the relationship between these processes. However, experiences of empirically oriented scholars engaged in these issues show that there is a rather large gap concerning how the practises of research and business, as well as of the relationship between them, are interpreted in model-based policy strategies and empirically based research (Håkansson and Waluszewski, eds. 2007; Pavitt, 2004).

The points of departure of this paper are empirically based, process oriented research on the basic characteristics of innovation, and contemporary EU research and innovation policy. The understanding of a network-like business landscape characterised by interdependencies stretching across firm boundaries, and where innovation and efficiency are intertwined processes, are largely inspired by research conducted in the IMP setting.[1] Data concerning EU research and innovation policy and how it is broken down to advice for member states concerning national and regional research and innovation programmes as well as into analytical frameworks through which policy practitioners are analysing applications for financial support, has been collected through the authors' participation in a Seventh Framework financed project on the gap between policy frameworks and business in practice, where policy representatives from 10 EU member states participated[2] (Waluszewski, 2010).

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b) How are the basic processes of innovation in the business landscape interpreted by contemporary policy?
c) What effect does contemporary research and innovation policy have on academic knowledge development and use of knowledge in business?

[1] The first IMP (Industrial Marketing and Purchasing) project started in 1976 as a research project among researchers from five European countries. The study included investigations of the content and effect of more than 1,000 supplier–customer relationships and revealed that business in practice is far removed from the assumption of universal agency in an atomistic market (Håkansson, ed., 1982; Turnbull and Valla, 1986). Since then the IMP group has emerged into an informal network of some 300 researchers with a shared interest in the content and effect of interaction in the business landscape. (See www.impgroup.org for an overview of research areas and publications.)

[2] The so called Gloval project (Global Value Chains as an Emerging Challenge for National and European Research and Technological Development Policies), was initiated by European policy practitioners facing the conflict between regional and national research oriented innovation policies and trans-national, business oriented companies. A first analysis of the content and function of national, traditional market based policy versus trans-national, interdependent business is reported in Waluszewski, 2010.

RESEARCH AND INNOVATION POLICY IN PRACTICE

Before we proceed with considering how the relationship among research, innovation and growth presents itself in empirically based research and in contemporary policy, let us consider a short empirical illustration[3] of policy in practice.

Innovation efforts as an attempt to create new life for a downsized company

A national 'Research and Technological Development' policy agency in a small European country is approached by a company in trouble. The company is a subsidiary of a global company engaged in the development, production and marketing of advanced electronic components. To increase efficiency, the US based head office has decided to move the main part of the production to a low cost country. The only activities that remain in the European subsidiary are administrative work, which means that about 400 of 500 jobs will move abroad. However, despite the head office decision to close down all of the local subsidiary's production activities and concentrate on the administrative side, the local managers want to continue a newly started innovation project. If the development work concerning a new component succeeds and results in it becoming embedded in the mother company's, and in its customers' user units, it will have positive benefits for several other units both within and outside the global company. Consequently, the development project is of great importance for the applying company's future development. Instead of being only an administrative subsidiary in a global company it has the ability to become an important knowledge provider in a global producer-user network. Finally, the project is considered to have positive effects for four external domestic suppliers.

The policy practitioners faced with the development project's funding request are put into a tricky situation. They agree with the applying company that if the development project succeeds it likely will have positive effects for the region; it will strengthen the applying units and four of its external suppliers' positions within a global business network. The policy practitioners also agree with the applying company that no easily measurable effects will occur *inside* the unit itself, at least not in the short run. Even if the development project succeeds, there will be no radical, accountable effects in terms of new investments, new production, or increased employment. Instead such effects will be found among the four external regional suppliers, while efficiency effects are supposed to be found in user units within the global company. Thus, this means that the main benefits will occur *outside* the applying company. Furthermore, the innovation project is *not* based on any interaction within academic research or any private R&D institute. Instead, it is based on the company's re-combination of established technological solutions whose connections to research are centuries old.

This means that the policy practitioners were forced to reject the funding application. First, it did not fulfil the requirement of being a project that included co-operation between research and business. Second, it did not fulfil the evaluation criteria concerning the employment and investment effects that must occur inside the applying unit. Network effects, i.e., effects that occurred in the interplay between companies within a region or a nation, were left outside the evaluation criteria. Thus, despite the fact that the policy practitioners exposed to the funding request could easily identify p
otential positive effects for at least five domestic business units, their policy strategy forced them to reject the application.[4]

[3] The case is based on reports made by the participants of the Gloval project, but some details are changed in order to make it anonymous.

[4] The fact that only internal effects of the applying company are taken into account is true for all of the participating European policy agencies in the Gloval project. None of these policy agencies had strategies or frameworks for identifying direct and indirect effects occurring outside the applying company.

INNOVATION AS AN ON-GOING PROCESS AMONG SPECIFIC COMPANIES AND ORGANISATIONS

The empirical illustration above clearly demonstrates a basic characteristic of contemporary policy analytical framework. The analytical framework that policy practitioners rely on is rewarding *measurable effects of knowledge transfer* and the effects are searched for *inside the borders* of a focal company. Furthermore, it also illustrates a basic characteristic of the process of innovation for which companies/organisations seek policy support: the *empirical business landscape rewards innovation processes that are beneficial for related commercial resources* and the *costs and benefits of the innovation process are unequally distributed among a number of related company/organisations.* The latter empirical observation is no surprise for scholars engaged in process oriented studies of technological development and industrial renewal.

INNOVATION AS A PROCESS ACROSS DIFFERENT RATIONALITIES

The fact that the main part of the innovation journey takes place outside of any initiating company or organisation means that it stretches across many different technological, organisational and economic rationalities (Utterback and Abernathy, 1975; von Hippel, 1976; Rosenberg, 1982; Håkansson and Waluszewski, 2002, 2007). In the following section we will take a closer look at three related – but in many aspects also distant and different – settings into which anything new has to be embedded in order to become a successful innovation.

A potential innovation has to be embedded in a user setting

First, for anything new to become an innovation it has to have widespread use. And the use of anything new, whether the user is an individual consumer, a company or a non-business organisation, does not takes place in isolation. Contrariwise, in order for anything new to gain widespread use it needs interfaces to a number of products and services in a *user setting*. For example, for an electric car to gain widespread use, a number of products and services in the user setting have to be developed; the batteries must be able to be reloaded and maintained wherever the use takes place. This implies that actors other than the focal user must find it economically beneficial to engage in the use of the new in terms of investing in and adapting related material and immaterial resources. Thus, for anything new to gain widespread use, interfaces between the new and a number of direct and indirect technological and organisational resources must be created. Consequently, whether any new product, service or process will ever have widespread use is largely determined by whether it will clash with or create new benefits to established material and immaterial investments in the user setting (Håkansson and Waluszewski, eds. 2007; Bijker, 1987; Yates, 2009).

A potential innovation has to be embedded into a producer setting

Second, for anything new to become an innovation it needs large-scale production. For any new solution to become an innovation with widespread use it must be 'locked' and embedded into an efficient production structure. Whether the innovation is a product, a service or a process, in the contemporary, highly specialised business landscape, the end-supplier is generally only responsible for a minor part of the total cost. This implies that the end-supplier as well as a number of related sub-suppliers and complementary units, with a number of existing material and immaterial investments, must find it economically beneficial to adapt their production structures in relation to the new. The large scale production of an electric car, for example, implies that a number of new interfaces among material and immaterial investments must be created by suppliers related to car production and suppliers related to

production of batteries. Thus, established production structures have a strong influence over the shape in which any new solution is locked and embedded into a large scale production structure. The more established the interfaces in the producer setting fit with the new solution and can take advantage of it, the greater the efficiency. Consequently, whether any new product, service or process will ever be embedded into a large scale production is largely determined by whether it will clash with or create new benefits for material and immaterial resources (Håkansson and Waluszewski, 2007; Piore and Sabel, 1984; Utterback and Abernathy, 1975).

A potential innovation has to be embedded into a developing setting

Third, something new has to be developed. Whether the developing setting is a company R&D department close to the commercial setting where the new is supposed to be used, or if it is an academic research milieu with no or weak links to the business world, the development of something new will be influenced by the developing settings, established knowledge bodies and technologies. This means that a number of ideas, which are partly unknown, will be tried out in parallel in trial-and-error like processes. Furthermore, whether the developing setting is close or distant to any commercial user and producer setting, the effects the new has on related interfaces in these settings can never be outlined in advance. But, the closer the developers are to a producer and a user setting, the more likely that their representatives will be involved in the development work, and that the new will emerge in relation to established interfaces in the producer and user settings. This circumstance has some important consequences for the policy ambition to create a closer connection between science and business, which will be discussed in the last section (Håkansson and Waluszewski, 2007; Latour, 1984; Pavitt, 2004).

The intrinsic tensions between use, production and development of something new

As discussed above, for anything new to become an innovation it has to, more or less in parallel, become embedded into a using, producing and developing setting, and interface with a number of related resources. An interesting complication is that the way return-on-investments (ROI) are created differs in these three settings. In the using setting the ROI is mainly determined by the interface between the new and a number of related products. In the producer setting the ROI is mainly determined by the interface between the new and a number of related production facilities. And in the developing setting the ROI is mainly determined by the interface between the new and established knowledge bodies. Despite these differences, in each setting involved/affected actors must be able to create a positive ROI in relation to the new, in order for it to become a successful innovation (Håkansson and Waluszewski, 2007).

The different ROI patterns in the user, producer and developing settings imply that the 'innovation journey' (van der Ven et al., 1999) is largely in the hands of others with different rationalities than an initiating company/organisation. Other companies and organisations, and all their investments in material and immaterial resources, including how they are related, will be affected by any attempt to create change. Furthermore, these others are not affected in any uniform way. Instead, depending on the size of the changes that are required in each affected material and immaterial resource, there will be a great variety in how the costs and benefits are divided among the actors behind them. This great impact that others' investments have on the innovation journey was observed by Utterback and Abernathy thirty-five years ago, making the authors warn against too high expectations on potential innovations. For example, the expectation of what a new scientific result or new technique can contribute might be very high as long as it is the new in itself that is in focus. However, as soon as the new is considered in relation to all investments in place, made inside and outside the innovating

company/organisation, the expectations generally have to be modified. 'Unfortunately, the pay-off required to justify the cost of change is large while the potential benefits are often marginal' (Utterback and Abernathy, 1975, p. 644).

The necessity of considering the 'cost of innovation'; i.e., the intrinsic tension between something new and investments in place (between innovation and efficiency), has also been a common message among scholars that during the last decades of the 20th century have been engaged in empirically based, process oriented studies of technological development, industrial renewal and innovations (Rosenberg, 1982; Hughes, 1983; van der Veen et al., 1999; Gudeman, 2001; Håkansson and Waluszewski, 2002; Håkansson et al., 2009). The tension between innovation and efficiency is further complicated by the fact that costs and benefits tend to appear at different times and at different spaces, affecting related companies and organisations unequally. However, the more it is possible for anything new to build on investments in place, i.e., the more anything new increases the value of the main investments in place in a user, producer and development setting, the more likely that the innovation journey will be successful. This means that the innovation journey is economically conservative; the use, production and development of something new protect the main part of investments in place (Håkansson and Waluszewski, 2002).

INNOVATION IN A NETWORK-LIKE BUSINESS LANDSCAPE

The above described characteristics of innovation are closely related to another observation of the basic processes in the business landscape; that this is 'rugged' (van de Ven et al., 1999), or characterised by the circumstance that the resources of one company/organisation are adapted to be activated in combination with other resources of other companies/organisations. How these resources are adapted and combined across organisational borders may not be obvious to anyone before a crisis or an attempt to create change occurs. For example, when GM decreased its car production, it became obvious which companies, in what countries and regions adapted their material and immaterial resources to the requirements of materials, components and subsystems related to GMs' end-products. The existence of interdependencies across company/organisational borders and the ability to utilise them as sources of innovations and/or efficiency may also explain why companies/organisations tend to interact over time in a way that results in the emergence of stable business relationships (Håkansson ed., 1982; Piore and Sabel, 1984; Powell, 1990; Nonaka, 1991; Ford et al., 2003). Close interaction among main suppliers and customers – which over time tends to stabilise into long-lasting business relationships – is significant for how companies struggle with and utilise interdependencies in innovation and efficiency issues. Under a surface of stability, where the relationship between suppliers and customers often holds on over decades, companies and organisations are more or less constantly adapting in relation to directly and indirectly related counterparts. In other words, each company's economic benefits depend on how they can be utilised by counterparts on its supplying and using sides (Håkansson et al., 2009).

A 'network-like' business landscape with dark and light sides

The network-like characteristics of the business landscape, where companies and organisations direct their development and efficiency endeavours in relation to some specific other companies and organisations, have both light and dark sides, not least in relation to innovation (Waluszewski, 2006; Hasselberg, 2003). Both the dark and the light sides of business networks are due to the fact that a network-like business landscape has a specific

structure[5] that exercises a specific influence over how positive and negative effects are spread among its actors.

The light side of a network-like business landscape is that the benefits of innovation are efficiently spread, although not in an equal way, among directly and indirectly related companies/organisations. For example, the benefits of a successful, large scale production and use of an electric car would most likely be spread, in smaller and larger shares, among related suppliers, sub-suppliers, and complementary companies and organisations. Similarly, if some large companies with excessive resources commit themselves to the technological/organisational development and industrial renewal necessary to get an electric car in production and use, this innovativeness may spread, again not in an equal way, among a number of related companies and organisations on the supplier and user sides (Waluszewski, 2006; Håkansson et al., 2009).

However, along with the light side comes the dark side of a network-like business landscape. The dark side has at least three facets that appear in relation to innovation. First is that a network-like business landscape influences the direction of the innovation journey in an unequal way. Investments in place, including how these are related, are powerful in terms of giving the innovation journey a certain direction. However, this means that the innovation journey is far from fair or neutral; it is path-dependent in that new cross-roads are influenced by material and immaterial investments in place. Thus, the innovation journey is economically conservative as it protects the main part of investments in place (Håkansson and Waluszewski, 2002; Magnusson, 2009).

A second dark side is that a network-like business landscape not only spreads the benefits of innovations, but also the drawbacks in an efficient but unequal way. This aspect is often forgotten, but becomes visible as soon as an end-product faces a crisis of any kind. When, for example, a successful innovation in terms of a new type of loan in the financial setting over time results in a crisis for some large financial actors, the disadvantages are effectively and unequally spread among both directly and indirectly related companies and organisations, across regional and national borders. Thus, a network-like business landscape, where the resources of one company/organisation are embedded into other companies/organisations, does not stabilise the effects of drawbacks of different kinds, but rather increases their effect (Håkansson et al., 2010).

A third dark side is that a network-like business landscape is unequal in terms of who has influence over the innovation journey. Networks are non-transparent. Networks have no intrinsic fairness. Networks do not operate in a common interest and they do not provide the same opportunities to all those related to it whether they are companies, organisations or individuals. Thus, networks can, as Hasselberg and Peterson (2006:358) underline, 'exercise an indirect influence over decision making which is almost invisible'. [6] This implies that a network-like business landscape is unequal in terms of who has influence over the innovation journey, and consequently over how costs and benefits are shared (Waluszewski, 2006; Håkansson et al., 2009).

[5] In the IMP business network approach (see www.impgroup.org for an overview and references) the content and function of business networks is analysed in terms of three different but related dimensions; resource ties, activity links and actor bonds (Håkansson and Johanson, 1992; Håkansson et al., 2009).
[6] Authors' translation

The dark sides of a business-network have consequences for companies/organisations that are initiated or affected by innovation journeys as well as for the larger society. In the next section we will take a closer look at how the phenomenon of innovation is considered in contemporary policy.

UPON WHAT VIEW OF THE BUSINESS LANDSCAPE IS CONTEMPORARY INNOVATION POLICY FRAMEWORK BASED?

A common denominator in contemporary policy is the great trust in the benefits of innovation. Characteristic of the EU research and innovation policy, which as Eklund (2007) underlines, is inspired to a large extent by OECD research and innovation policy, is that innovation is seen as a solution to a number of economic and societal challenges.

First and foremost innovation is seen as a growth engine. However, in parallel with its ability to create growth, innovation is also supposed to deliver solutions to a number of economic and societal challenges, stretching from global warming to food and water supplies and health issues. This means that innovation policy is a prioritised issue on the trans-national policy agenda in order to, as expressed by OECD, help governments 'to harness innovation to strengthen growth and address global and social challenges'.[7]

The first impression of contemporary innovation policy is that the interdependencies or systemic aspects of the contemporary network-like business landscape are taken into account. An increasing awareness of the content and effect of interdependencies is expressed as follows in the EU's innovation policy: 'Initially, a research-based linear approach was adopted, although a systematic approach which includes all the factors involved in innovation is more appropriate. The systemic model needs to be developed in order to gain an understanding not just of technological innovation, but of other forms of innovation as well. The European Union must therefore deepen its knowledge of this process in order to develop an effective policy.'[8]

How to catch the systemic aspects of innovation in policy framework is largely influenced by the theoretical models Innovation System and Triple Helix models (Eklund, 2007). What these models have in common (e.g., Freeman. 1982; Nelson, 1993; Perez and Soete. 1988; Lundvall. 1988; Etzkowitz and Leyersdorff, 2000) is that they have made space in economic thinking for subjects that traditionally only attracted the attention of anthropologically or empirically oriented researchers who were concerned with the role of interaction and relationships in economic exchange (Wilk, 1996). Thus, what the innovation system and triple helix based models have contributed is an understanding of the innovation process as being non-linear, and furthermore that it is influenced by the systemic features among a) companies as a group, b) knowledge producers as a group and c) the state.

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[7] ''The OECD Innovation Strategy is built around five priorities for government action, which together can underpin a strategic and broad-based approach to promoting innovation: Empowering people to innovate; Unleashing innovation in firms; Creating and applying knowledge; Applying innovation to address global and social challenges; and Improving the governance of policies for innovation.'' (OESD SG/INNOV, 2010:1, p. 3)

[8] www.europa.eu/legislation_summaries/research_innovation/research_in_support_of_other_policies/n26021_en.htm

When these economic models are translated to policy framework, the observation of systemic aspects on a group level makes it possible to identify some important 'nodes' in non-business knowledge producing commercial knowledge using a business setting and design an 'innovation system' that will promote the transfer of material and immaterial resources from the first to the latter. Such created connections between certain nodes of a knowledge producing setting and a business setting are assumed to stimulate innovations but also give them directions (for example, in terms of 'green tech') which both creates growth and solves some particular societal challenges.

Hence, a common strike in contemporary OECD and EU innovation policy framework is that the systemic features of the settings where the innovation process takes place are considered, but only on a group level. The main systemic feature to overcome is the weak link between particular nodes in the non-business knowledge producing setting and a knowledge using business setting. This means that reducing hindrances for an efficient commercial supply and demand of knowledge is a prioritised policy issue for the EU as well as for each member state including the creation of strong information channels between specific nodes in a non-business knowledge producing setting and business. For example, both the OECD and EU policy frameworks emphasise the importance of cooperation among different kinds of 'stakeholders' such as public authorities, users, regulators, industry, consumers and 'poles of excellence' in order to overcome 'information barriers' and reach commercial use of new knowledge.[9] However, a closer look at how the content and effect of the innovation process is understood reveals that the specific interdependencies among established material and immaterial resources, in both the knowledge producing and the business settings, are more or less assumed away. The interdependencies are assumed to appear between a non-business knowledge-producing setting and business knowledge using setting, while the relationship among the resources activated within this setting is assumed to be atomistic. This has some important consequences for understanding how policy can 'harness' innovation.

First, the most important *source* of potential innovations, business prosperity and growth is considered to be non-business; mainly academic research but also other parts of the public sector. To direct these sources of knowledge to *ex ante* identified business areas is a prioritised issue. For example, the EU Commission's report[10] on how to implement the Lisbon strategy (with the illustrative name 'More research and Innovation') explicitly underlines the importance of policies that direct research to expected commercial exploitation: 'Innovation and research policies are central to this, as together they cover the full spectrum of issues affecting the genesis of new knowledge and ideas, their use and commercial exploitation.'(COM 2005, 488, p. 3)

Second, the most important *means* of embedding potential innovations stemming from research based or other public sources in business is seen in *knowledge transfer*. Knowledge transfer is identified as the 'key obstacle to overcome' between 'public research organisations, particularly universities, and industry'. Thus, another key mission is to adopt 'EU guidelines to improve research collaboration and knowledge transfer between Public Research

[9] www.europa.eu/legislation_summaries/enterprise/industry/n26022_en.htm
[10] COM (2005) 488 final. Implementing the Community Lisbon Programme: COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS: *More Research and Innovation - Investing for Growth and Employment: A Common Approach.*

Organisations and Industry' (COM 2005, 488, p. 3). A similar view on transfer is expressed by OECD, with the following suggestions on how this can be stimulated: 'Ensuring that researchers, public research institutions and higher education institutions have incentives and opportunities to collaborate among themselves and with industry is essential.' (OECD SG/INNOV, 2010:1, p. 18).

Third, in the business landscape, the processes occurring within individual companies, which are assumed to act independent of other companies, are treated as most important for reaching innovation. The innovative processes occurring within companies are assumed to, as mentioned above, be able to support policy measures that facilitate the transfer of knowledge from a public or private knowledge producing setting to companies. The effect of transfer processes can also be fuelled by adaptations of tax, labour and other regulations, and by the supply of capital. Furthermore, policy can support these processes by encouraging companies to locate within certain *clusters,* specific geographical spaces where knowledge spill-over is assumed to take place between competing, independent but still complementary companies[11].

Thus, under the surface of a systemic approach that takes companies into account as a group of independent units, a view of a business landscape that in its main features is rather close to how it is sketched in traditional market theory is outlined. Both the supplying and using sides of a focal, innovating company are considered in terms of anonymous environments. The knowledge supplying side is approached in terms of an innovation system metaphor that has market like features; knowledge is assumed to be absorbed by competing but complementary companies if it is made available in terms of commercial resources. The knowledge user side is approached in terms of a market metaphor and the most important feature of this market is to be 'receptive' to innovations. Thus, innovation processes are treated as if the companies involved were operating independently of each other, as if they were independent of their own and others' existing material and immaterial investments, and as if the main relationships among companies were antagonistic. With this view as a basic foundation, the main role of policy is to create an 'innovation system' in terms of a 'pipeline' between a non-business knowledge producing system and a market like business landscape. In the next section we will take a closer look at how the basic features of this market are understood and what imprints this gives to policy framework.

A POLICY CLOSE TO THE MARKET MODEL OF THE BUSINESS LANDSCAPE

A policy view that is inspired by traditional economic thinking takes its point of departure from a model that assumes that the resources supplied and used are economically homogeneous, which means that the economic value of a resource is independent of how it is combined with other resources. This in turn means that 'producers, buyers and sellers, in firms, households and markets have perfect knowledge' (Wilk, 1996:62) of the resources in the market, and that the only thing they need to know about a resource is the price. As long as the market is active and the process of allocating scarce resources is not disturbed, new resources that are in demand will automatically be absorbed and result in new equilibrium between supply and demand. This means that if the traditional assumption of a market is the

[11] COM(2005) 488 final. Implementing the Community Lisbon Programme: COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS: *More Research and Innovation - Investing for Growth and Employment: A Common Approach.*

underpinning of innovation policy, the basic policy advice is rather straightforward; reduce all types of regulations that hinder the market from being vivid.

However, as has been added by institutional economics (Perez and Soete, 1988; Freeman, 1982; Nelson, 1988) there is also the complementary assumption that there are particular types of knowledge that the market has difficulty absorbing, especially those stemming from science and advanced technologies. This type of knowledge is described as being 'information sticky'. However, 'information sticky resources' is a special case; an exception to the general exchange pattern on the market, where the main relationship between those populating it is antagonistic. Wilk (1996:62) expressed this exception: "When information is hard to come by there are many reasons for people to stick together and cooperate, even when they otherwise may do better on their own" Thus, if the information is 'sticky' there are reasons for policy to stimulate the development of informal and formal relationships between specific nodes in the non-business knowledge producing setting and the business setting.

Hence, the complementary basic policy advice is also rather straightforward; to facilitate the interaction between producers of 'sticky information' knowledge and business. The more policy can facilitate the transfer of 'information sticky' knowledge to companies located within certain nations or regions, the more innovative and competitive this group of companies is assumed to be in relation to other groups of companies located within other regions and nations. With the basic assumption that the systemic features between the knowledge producing setting and business occurs on a group level, and that the interactive features of the business landscape are an exception to the market as depicted in the model world, there is no need to consider the content and effect of interdependencies within this group. Instead, the basic assumptions of a market are translated to the following basic requirements on a policy analytical framework:

a) It must be able to catch general demands on the market.
b) It must be able to identify sources of radically new science and technology based knowledge within certain regions and/or nations.
c) It must be able to suggest how transfer of such knowledge is facilitated from these nodes to companies located within certain regions and/or nations.

With these assumptions as a starting point it is probably rather natural that when embedded into the OECD and EU innovation policy framework, the interdependencies among material and immaterial investments in place in the user, producer and developing settings, are more or less absent. Furthermore, if networks are just an exception to the market, with only positive features in terms of bridging production and use of knowledge, there is no need to consider the dark sides of networks. When the EU innovation and growth framework is broken down to a) national and regional programmes from which companies can apply support and b) to analytical framework through which policy practitioners can analyse these applications, there are no analytical tools available that can catch the content and function of specific interdependencies in a network-like business landscape.

RESEARCH AN INNOVATION POLICY AS A DOUBLE DISSERVICE

What effects for academic research and business can be expected in the wake of a contemporary research and innovation policy that rests on the understanding that an increased use of knowledge in business and society has to go through a market-like arrangement? What effects for academic research and business can be expected from the ambition to stimulate the

development of a market for knowledge because; 'unlike product, labour and financial markets, markets for knowledge are in their infancy'?[12] And finally, what effects for research and business can be expected from the idea that it is possible to stimulate the emergence of a knowledge market with relevance for business through steering research and evaluating research towards what, *ex ante,* is assumed to create positive effects in business; 'research performance evaluation criteria should be adjusted to reflect the multiple missions of research institutions, including knowledge transfer'?[13] In the next section we will consider some positive and negative effects of contemporary research and innovation policy, for academic research as well as for business.

Positive effects for academic research

The contemporary research and innovation policy has some positive effects for academic research – at least for particular parts of it. In order to be transformed to a commercial resource able to be exchanged in a 'knowledge market', research results have to be able to be 'packaged' and 'productified' in terms of a patent, a prototype, etc. A first effect, which can be positive for researchers behind research results possible to productify, is that they get a shape that makes them visible and possible to sell to economic actors. A related effect, which can be positive for both the researchers behind a research result possible to productify *and* for the academic organisations they belong to, is that productified research results are easy to measure. Finally, if researchers are interacting with economic actors investing in commercialisation of research results, their ability to create research results possible to package and productify will probably increase. In total, this means that the contemporary research and innovation policy creates advantages for particular academic research areas; those research results are possible to be packaged and productified and that furthermore can be sold due to expectations that future economic benefits will appear in a short period of time from when they where developed.

Negative effects for academic research

The contemporary research and innovation policy also has some clear negative effects that probably will affect the main part of academic research. A first negative effect is that research that cannot be packaged, productified and sold to commercial actors due to an expected ability to deliver economic benefits shortly after they were developed will be less prioritised, i.e., research where the effects on business or other parts of society is difficult to outline in advance. Research that, through learning and teaching, is embedded into people and whose use is indirect, hidden, and appears in a different time, at a different place and in a different shape compared to when it was developed, does not fit the idea of a direct knowledge market. Thus, research that cannot be adapted to the limiting requirements of a knowledge market cannot expect support from contemporary research and innovation policy. This means that contemporary research and innovation policy will have negative effects for the variety of research – especially for such research that does not adapt to short term interests.

[12] ''This can be done through policies which encourage securitisation of intellectual assets through knowledge brokerages, thereby enabling value to be captured on a much broader range of knowledge assets.'' (OECD SG/INNOV, 2010:1, p. 19)

[13] ''Clearly defined expectations and boundaries for collaboration and well trained technology transfer personnel are essential for achieving this goal.'' (OESD SG/INNOV, 2010:1, p. 18)

Positive effects for business

The contemporary research and innovation policy has some positive effects for business – at least for particular parts of it. As soon as a research result has been productified in terms of a patent, a prototype or a product, economic actors can invest in it based on expected future economic benefits. One way for economic actors to realise economic benefits of research results is to 'bet' on them. Economic actors, for example, venture capitalists and other financiers, can 'bet' on which economic actors, representing which productified research result, will yield a positive return on investment within a certain amount of time. This type of knowledge market is based on the first investors' speculation in the ability to be bought out by other investors. For example, if the productified knowledge is embedded into a start-up company, an 'exit' can be created through the introduction on the stock-market. Another way for economic actors to 'bet' on economic benefits of research results is through established companies' investments in productified research results, based on the expectation that these will create future benefits in terms of new/renewed products, processes and/or services. Whether it is venture capitalists or R&D organisations of established companies that are buying productified research results, the common denominator is that they are acting on expectations of future innovations. This means that contemporary research and innovation policy has positive effects for investors and/or established companies with such heavy economic muscles that they can 'bet' on the ability of productified research results to be transformed to innovations.

Negative effects for business

The contemporary research and innovation policy also has some clear negative effects for the use of knowledge in business. If, as suggested by policy, the use of knowledge in business increasingly takes place through a knowledge market, the use will also be directed to a limited group of economic actors; those who can 'bet' on or invest in productified research results based on the expectations of future innovations and return on investments. Furthermore, when larger research fields are adapted to the requirement of research results possible to productify and sell on a knowledge market, it is a rather narrow group of economic actors that will influence the types of research results that will be available on this market.

Perhaps the most severe negative effect stems from contemporary research and innovation policy's limited understanding of the using and producing settings into which any new economic resources must be embedded in order to become an innovation. Consequently, companies in need of knowledge development starting out from established user and producer settings will not be favoured by contemporary research and innovation policy. Research results that are packaged and productified are locked in a way that makes them uninteresting for companies struggling with how to renew investments in place. Thus, business that does not engage in 'betting', and businesses that do not have the economic muscle to invest in 'locked' productified research results, but have to start out from investments in place in a user and a producer setting, are not helped by contemporary research and innovation policy. Companies that want to radicalise their ability to be innovative in terms of finding new ways of combining established resources in a using and a producing setting are not supported by policy, especially if they cannot point at any direct relationship to new research results. This circumstance was clearly demonstrated by the short empirical illustration in the beginning of this chapter. Thus, even if it is hard to imagine a company whose development efforts are not dependent on research of any kind (just try to imagine all research that indirectly is embedded into any company's use of PC's and into the people working with them), this type of 'hidden' economic use of research does not matter when applying for support from contemporary research and innovation policy. If a company cannot present any direct link to newly

developed research results and it cannot account for any rapid economic effects within the borders of the applying company in terms of increased investments or employment, then contemporary research and innovation policy will be of no help.

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