Over the recent years the system-level approaches to innovation – systems of innovation (SI), regional innovation systems, (neo-) developmental state, open innovation etc. – have been converging on a common notion that globalization and decentralization of production and innovation systems should inevitably be paralleled by decentralization of innovation policy systems. These ideas can be found both in the literature of developed economies (e.g., Block, 2008; Block & Keller, 2011; Borras, 2009; Breznitz, 2007; O’Riain, 2004) and developing economics (e.g., Chaminade, Lundvall, Vang, & Joseph, 2009; Lundvall, Chaminade, Joseph, & Vang, 2009; Radosevic, 2009; Rodrik, 2004; also Hausmann & Rodrik, 2006). In this paper this consensus is described as ‘decentralization thesis’ positing that traditional hierarchical government structures (classic institutions of industrial policy) are not suitable for supporting private sector activities, which are characterized by growing modularity, decentralization, networking, unpredictability, experimentation etc. Therefore, political systems need to develop more flexible, adaptive, networked, experimental and decentralized policy institutions to parallel the techno-economic and private sector dynamics. Different approaches emphasize decentralization of both institutions and processes of innovation policies to provide greater access for new ideas and relevant stakeholders, which would ideally lead to higher levels of policy capacities for designing and implementing policy measures and mixes.

In this context, the key academic challenge of the economics research on innovation is to extend the economic theories closer to the policy-making realities (e.g., Chaminade & Edquist, 2005; Edquist, 2001a, 2001b; Edquist & Chaminade, 2006; Mytelka & Smith, 2002; Smith, 2000). In recent years, innovation policy scholars have developed new approaches to refine the traditional economic analysis of innovation policy from explaining the rationales for public policies towards understanding the ‘black box’ of policy-making. On the one hand, studies like Flanagan, Uyarra, and Laranja (2011), Laranja, Uyarra, and Flanagan (2008), and Uyarra (2009) have used the ‘policy studies’ perspective

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1 Note that the discussion of this paper is limited to the nation state level. Thus, the popularity of sectoral or regional perspectives on innovation (implying systemic analysis on these levels) does not fall under the ‘decentralization thesis’. Rather, on the sectoral and regional level the ‘decentralization theses’ is revealed in politico-administrative developments, where differences between national and regional policy contexts and institutions matter. This is not explicitly discussed in this paper.

2 In this article ‘innovation policy’ is understood in broad terms, i.e.: actions by public organizations that influence the development and diffusion of innovations (Edquist & Hommen, 2008b, pp. 8–9).
of policy systems. This approach seeks to explain how certain policy ideas emerge within and ‘travel’ through the policy-making system and it places the key emphasis on agenda setting, policy actors and agents, and interactions as the key variables of the policy systems. On the other hand, studies like Karo and Kattel (2010a, 2010b), Suurna and Kattel (2010) and to an extent Braun (2008a, 2008b) use ‘public management’ perspective. This approach places the key emphasis on institutional constraints and the ‘transformative’ power of the politico-administrative system, which in turn shape policy ideas and its’ acceptance within the policy-making and implementation systems. This paper claims that public management perspective offers more useful tools for increasing the policy-level relevance of innovation policy research. The analytical lenses of this perspective are able to explain the institutional constraints of the policy systems and assess the emergence of recent fashions in innovation policy governance – such as the ‘decentralization thesis’ – more contextually than the policy studies perspective.

This paper reviews the ‘systems of innovation’ literature as one of the key perspectives for innovation policy design and governance, at least at the national level.3 The aim is to provide a critical analysis of the policy relevance of the SI literature and the coherence and relevance of the ‘decentralization thesis’ in relation to innovation policy-making (see Borras, 2009 and Chaminade et al., 2009 as recent examples of the analysis of the ‘decentralization thesis’ in the context of SI research). The next section discusses the rationale and limits of the SI research in the context of innovation policy. This will be followed by the introduction of the public management perspective of policy systems into the SI based policy approaches. The concluding sections highlight the benefits, limits and implications of the broader approach to innovation policy studies and the ‘decentralization thesis’.

**SYSTEMS OF INNOVATION AND INNOVATION POLICY**

**Policy relevance of the systems of innovation approaches**

One of the self-criticisms of the SI scholars (e.g., Edquist, 2001a, 2001b; Mytelka & Smith, 2002; Smith, 2000) has been the recognition that while the SI approach has enjoyed increasing popularity among academics and policy makers, it has lacked a proper theory for the role of the state. Especially through the works of Charles Edquist (e.g., Chaminade & Edquist, 2005; Edquist, 2001a, 2001b; Edquist & Chaminade, 2006) the SI approach has been refined from the ‘broad’/Aalborg (Lundvall, 1992) and ‘narrow’/US (Nelson, 1993) approaches into an ‘activities-based’ conceptual framework. The activities-based approach, departing from the broad understanding of the SI but focusing on the processes within the system as opposed to focusing on the constituents and its’ interactions, claims to offer better insights into the activities and functional scope of SIs (Edquist & Chaminade, 2006; Edquist & Hommen, 2008b). Also, public policies are seen to be an element in most activities that are distinguished by the SI approach. Table 1 the key activities of the SI as used by Edquist and Hommen (2008a), which is one of the broadest (but still not definite) accounts.

Overall, while the activities-based approach seems to be able to go more into the details of specific policy areas that constitute innovation policy and highlight explicit actions where government activities may be of importance, the broad approach has remained rather vague on the role of government activities.4 The common problem of both approaches is that

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3 Since the end of the 1980s the SI approach (i.e., Lundvall, 1992; Nelson, 1993) has emerged as the key theoretical or conceptual approach for discussing innovation policy (for overviews see Godin, 2009; Sharif, 2006; Lundvall, 2010; also organizations such as the OECD and the EU are consciously using SI as the analytical framework; countries like Finland and Sweden have used the SI framework as the explicit and symbolic policy model etc.).

4 For example, see Lundvall, Johnson, Andersen, and Dalum (2002, p. 227) for the rather generic understanding of public policies – i.e., mentioning social policy, labor market policy, education policy, industrial policy, science and technology policy etc. as necessary parts of innovation policy. Similarly, the narrow/US perspective has been criticized for its over-concentration on formal science and research issues and policies leaving broader concerns related to learning etc. in the background. Therefore, the broad approach is seen to be superior especially in the context of building/developing SIs through policies (Lundvall et al., 2009).
that the scope of policy networks in terms of actors or agents and institutions remain dynamic and difficult to define. Overall, SI approaches are better at ex-post and short-term analysis than providing ex-ante and long-term perspectives for innovation policy. Yet, the latter is what most policy-makers seek from innovation policy research as short-term and medium-term actions are often determined by past legacies and policy commitments. In addition, as the SI approach emphasizes interactions between different stakeholders and constituents of the SI, also the government policies and activities are mostly analyzed from this perspective without specific attention to the internal logic and processes of policy-making.

The theoretical rationale and its limits for public policies for innovation

The theoretical approach for deriving the activities of the SI starts from analyzing the potential rationale whereby the state can and should design and implement policies and actions to support innovation in firms. In this context, the SI perspective has extended the neo-classical market-failure approach to include ‘system failures’ or ‘system problems’ (see Chaminade & Edquist, 2005) to emphasize that as evolutionary systems never reach equilibrium (a neo-classical expectation), there is no point in talking about optimal policies (a neo-classical goal). According to the activities-based approach, theorizing or thinking about the role of the state in innovation processes means to ‘focus on changes in the division of labor between the private and the public spheres, and on changes in those activities already carried out by the public agencies’ (Hommen & Edquist, 2008, p. 459). Accordingly, Edquist (2001b, p. 18) has argued (Edquist & Chaminade, 2006, p. 116; Hommen & Edquist, 2008, p. 458) that there are two crucial conditions that determine when and where the state should intervene in innovation activities through policy action:

1) Capitalist firms and market mechanisms fail in achieving the objectives formulated, i.e., there exists a systemic problem that is not spontaneously solved by the private sector actors and market forces (labeled as public policy opportunity);

2) The state (national, regional, local) and its public agencies must have, or be able to build up,

<table>
<thead>
<tr>
<th>Table 1: Key Activities in the Systems of Innovation</th>
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<tbody>
<tr>
<td>I Provision of knowledge inputs to the innovation process</td>
</tr>
<tr>
<td>1. Provision of R&amp;D and, thus, creation of new knowledge, primarily in engineering, medicine and natural sciences.</td>
</tr>
<tr>
<td>2. Competence building through education and training the labor force for innovation and R&amp;D activities.</td>
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<tr>
<td>II Demand-side activities</td>
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<tr>
<td>3. Formulation of new product markets.</td>
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<td>4. Articulation of quality requirements emanating from the demand side with regard to new products.</td>
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<tr>
<td>III Provision of constituents of SI</td>
</tr>
<tr>
<td>5. Creating and changing organizations needed for developing new fields of innovation. Examples include enhancing entrepreneurship to create new firms and intrapreneurship to diversify existing firms; and creating new research organizations, policy agencies, etc.</td>
</tr>
<tr>
<td>6. Networking through markets and other mechanisms, including interactive learning between different organizations (potentially) involved in the innovation processes. This implies integrating new knowledge elements developed in different spheres of the SI and coming from outside with elements already available in the innovating firms.</td>
</tr>
<tr>
<td>7. Creating and changing institutions – e.g. patent laws, tax laws, environment and safety regulations, R&amp;D investment routines etc. – that influence innovating organizations and innovation processes by providing incentives for and removing obstacles to innovation.</td>
</tr>
<tr>
<td>IV Support services for innovating firms</td>
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<tr>
<td>8. Incubation activities such as providing access to facilities and administrative support for innovating efforts.</td>
</tr>
<tr>
<td>9. Financing of innovation processes and other activities that can facilitate commercialization of knowledge and adoption.</td>
</tr>
<tr>
<td>10. Provision of consultancy services relevant for innovation processes, e.g. technology transfer, commercial information and legal advice.</td>
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</table>

an *ability* to solve or mitigate the problem (labeled as *policy competences*).

The activities-based approach allows conducting conceptual policy analyses whereby (Hommen & Edquist, 2008, p. 459):

One can identify the organizations performing the ten activities and examine the relationship among them as well as the institutions constituting constraints for the organizations when to pursue the innovations processes. When part of an activity is performed by a public organization, it is a matter of innovation policy – and most activities have a policy element … With respect to innovation policy, we can analyse the division of labour between private and public organizations with regard to the performance of each of the activities in the innovation system and determine whether this division of labour is justified or not.

Overall, while the SI approach seems to offer a dynamic and evolutionary theoretical rationale for the role of the state in the SI, it seems to fall short on expectations in terms of opening up the ‘black-box’ of policy-making. Namely, the SI and activities-based approaches have theoretical and analytical tools for discussing the division of tasks between the public and private sector and evaluate the performance or outcomes of the activities (and to determine areas where change of the division of tasks is likely to bring about higher effectiveness). At the same time, innovation policy-making (especially in its evolutionary understanding) is about making choices between policy alternatives (what the policies are for the future and how to steer policies of the past). For this type of analysis, the SI approaches seem to be less well equipped.

The different perspectives on the ‘decentralization thesis’ argue that in addition to understanding the rationale for public policies, global techno-economic development require ‘modernization’ of policy instruments and mixes to provide policies that complement the changing governance principles in the private sector. Therefore, the ‘policy competences’, in the language of the SI, need to be modernized. Yet, these theoretical perspectives lack critical analytical capabilities for analyzing the contextual fit of different strategies for modernizing policy competencies. The ‘decentralization thesis’ approaches emphasize decentralization, flexibility, experimentation etc. mostly relative to the perceived model of the East-Asian developmental state – that is, the model of highly capable Weberian bureaucracy implementing industrial policy through hierarchical structures and key development agencies (i.e., Wade, 1990). Yet, this prevalent reading of the East-Asian developmental state (see Block, 2008; Breznitz, 2007; Radosevic, 2009 who describe the developmental state and industrial policy contexts as ideal-type Weberian) de-emphasizes contextual institutional deviations from the Weberian model such as the role of state-led public–private partnerships (PPPs) explicitly discussed in the original contributions to the East-Asian developmental state concept (i.e., Johnson, 1982; see also Haggard, 1990, 2004 who has discussed this institutional diversity of East-Asian development models in even greater detail). Thus, the prevalent generalizations or ‘lesson-drawings’ from historical models, while recognizing the contextual differences of economic strategies, seem to homogenize and de-contextualize the diversity of governance models.

In other words, from the innovation policy perspective it can be said that it not only matters what kind of activities/policies (and why) are carried out by governments but also, maybe even more importantly, how (and why) these countries have arrived at specific policy systems in terms of division of labor between state and market, choices of specific mixes of activities/policies, institutions and structures for managing policy mixes. Although, the activities-based approach and the SI in general seek answers to both questions, it seems clear that it has been more difficult to comprehend the dynamics of the policy systems. Flanagan et al. (2011) also Laranja et al. (2008); Uyarra (2009) have argued that the ‘policy studies’ perspective of policy systems offers a useful avenue for overcoming this problem. From this perspective, it is possible to highlight the rationale for policy actors for adopting certain policy ideas, creating networks, controlling interest representation etc. As will be argued below, although useful in its ability to shed light on the policy processes, this strand of literature and theorizing is still limited in its ability to comprehend the institutional constraints and opportunities of particular politico-administrative contexts. It will be argued below that instead of looking at
innovation policy developments in an ‘idealized’ or ‘tabula rasa’ form (what kind of state intervention is ideally necessary based on the SI – and/or what are the constraints of policy networks in taking on the ideas and models of innovation policy) – it would be more beneficial to start looking at innovation policy as a dynamic or evolutionary phenomenon, or as a ‘policy reform’ in a broad sense that includes the context/system of policy (public organizations and institutions influencing policy). There are several implicit reasons for that, for example:

1) Context wise, innovation policy can be seen as a new horizontal policy (covering several traditional policy areas) that in some countries is complementing and in others replacing industrial, or R&D, or S&T policies and affecting a range of traditional policy areas (e.g., Soete, 2007). Therefore, policymaking takes place in a policy arena or context with significant legacies, external pressures and interest conflicts.

2) Content wise, innovation policy can be seen as a combination of efforts that include the reform of existing state activities and design of new activities, but it also has to be recognized that in some cases existence of no policy may be a conscious decision from the past (e.g., de-regulation) and the design of a new activity may in all cases demand complex changes in the existing legacies and activities. This been visible most radically in the cases of fundamental politico-economic changes as faced by the socialist economies in the early 1990s (see Karo & Kattel, 2010a), but also in the less radical structural transformations of the East-Asian developmental state during the 1990s (see Edquist & Hommen, 2008a).

3) Process wise, policy makers (politicians and also bureaucrats) have independent preferences (e.g., party ideas, personal preferences or past successes that are ‘protected’, contextual bureaucratic competences that contradict academic findings etc.) and also conflicting expectation to respond to (especially in innovation policy as the policy field is sharing the policy arena with other policies). These factors in turn complicate and reduce the feasible policy space. Breznitz (2007) shows how Ireland, Taiwan and Israel faced different political and policy constraints in developing their development strategies and institutions and how these determined the eventual evolution of the institutional systems even within the same industry. Also, Block (2008) shows how ideological cleavages in the US over the role of the state in innovation led to the ‘hidden developmental state’.

The list of these arguments and examples could be extended, but the key idea is that while the SI approach may be able to define ‘problems’ which require state activities and ‘desirable’ or theoretically good ‘solutions’, the SI approach is weaker at predicting and analyzing the contextually ‘feasible’ solutions. Implementation of the SI-based policy activities is constrained by policy legacies and competing policy interests, but these are left out of the theoretical perspectives on the role of state in the SI. Similarly, policy studies and public policy perspectives are likely to reduce the importance of contextual and institutional characteristics, legacies and capacities, which may affect policy trajectories. For example, the policy studies perspective is rather weak in its ability to constructively analyze and criticize institutionally embedded arguments such as proposed in the ‘varieties of capitalism’ literature, which argues (although controversially) that liberal market economies are more likely to succeed in creating institutions that are supportive of radical innovations while coordinated market economies are more likely to succeed in creating institutions that are supportive of incremental innovations (see Hall & Soskice, 2001). From the perspective of policy studies, these macro-institutional characteristics are generalized into (Laranja et al., 2008, p. 824):

meta-rationales (high-level philosophies about the proper modes and limits of government action – often informed by ideological positions), which influence in turn the way in which specific ideas are taken up and interpreted in the policy process. Those ideas which are taken up become specific policy rationales.

Thus, in many ways the policy studies perspective takes the meta-rationales as given and analyzes and designs policy approaches accordingly. Indeed, one of the meta-rationales, or ideological perspectives, could also be the ‘decentralization thesis’.
Instead, reforms (ideal-type perceptions of policies, organizations, institutions) are translated, edited and adapted, i.e., policy-makers have limited freedoms to initiate changes and are constrained by environmental factors (technologies, ‘global ideas’ etc.), national policy-administrative structures, and cultures. In addition, the attitudes and actions of policy-makers are formed and molded by these factors. Therefore, ‘problems and solutions are interpreted, edited, modified and revealed in a process of complex institutional change’ (Christensen & Laegreid, 2001, 2005). Overall, this perspective emphasizes three contexts that matter for the evolution and content of the politico-administrative systems (Christensen & Laegreid, 2007): external (international) pressures; national historical-institutional context; and constitutional features and political-administrative structures.

Thus, somewhat similar to the developments of the SI approach, the issue of institutions and institutional change (path dependencies, windows of opportunity for change etc.) has become one of the central issues of public management research, though, from a different angle and with different scope (Peters, 2005; Pierson, 2004; Pollitt, 2008).

Rationale and logic of policy intervention according to public management
It has been indicated above that the activities-based SI approach follows a two-level analysis for deriving a rationale for policy: a) there must be a public policy opportunity; and b) policy competences for seizing the opportunity. In this context, it is recognized that sometimes, even if there is a policy opportunity, the state cannot solve the problems straight away because it needs to develop its ability to solve it – e.g., by creating a new organization or institution or reforming existing ones (Edquist, 2001a, p. 222). It can be said that the conceptualization of ‘policy competences’ or the ability to solve the problem may be one of the key areas where public management perspective can contribute to SI by clarifying the meaning of the term and providing avenues for a more detailed analysis of this necessary qualification that determines the role of the state in innovation policy.

In discussing the relevant state abilities or policy competences, public management distinguishes between three concepts where a discussion of the

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5 While being useful for analyzing the organizational and institutional set-up of the policy arena, public management approach does not look into the detailed goals and emergence of ‘desirable’ activities in policy areas (such as activities of innovation policy); it takes these as given and seeks to explain how the set-up of the policy arena may influence the outcomes of the policy process (or the performance of policy activities).
role of the state and public policies is of relevance (based on Painter & Pierre, 2005, pp. 2–7):
1) The broadest concept can be defined as ‘state capacity’, which means achieving appropriate outcomes such as sustainable economic development and welfare (based on values such as legitimacy, accountability, compliance, and consent). In essence, the SI touches upon this level when discussing the existence of public policy opportunities – or whether the state has the legitimacy to intervene, which can be seen as a societal consent that the involvement of the state can lead to higher goal achievement. It can also be viewed as the legitimate extent and depth of state’s involvement in the policy area, or a type of ‘meta-rationale’ (as perceived by the policy studies perspective) creating constraints on government intervention.

Public management perspective elaborates on this concept by distinguishing two interlinked concepts (each with its own theoretical and analytical approaches) that are both preconditions for the state capacity to emerge:
2) ‘Policy capacity’ refers to the ability to make intelligent policy choices (based on values such as coherence, public ‘regardingness’, credibility, decisiveness, resoluteness); in the context of innovation policy, policy capacity may refer to the ability of the political system to decide or compromise on the best approach (what is desirable and what is feasible) to support innovation processes.
3) The level or quality of policy capacity is partly dependent on the third concept, ‘administrative capacity’, which refers to effective resource management (based on values such as economy, efficiency, responsibility, probity, equity); this capacity refers to the ability of the political system to use its resources for implementing the policy choices that have been made.

Accordingly, administrative and policy capacity have to be seen as interdependent because the institutional memory of a political system that is pivotal for making intelligent policy choices is largely stocked both in the policy and administrative institutions and organizations of the state. Further, the administrative aspects (context) of public policies have historically been developed somewhat separately from the content of policies; that is, states have been built based on different policy goals and generic governance principles. Therefore, although ideally these two aspects of capacity should be mutually reinforcing, these trajectories tend to get out of sync. This has been shown by evolutionary economists who analyze the historical strategies, policies and state competencies for economic development (e.g., Perez, 2002; Reinert, 2007), but also by public management scholars who have studied the path-dependent emergence of modern state administrations, or governance systems (e.g., Verhoest & Bouckaert, 2005; Verhoest, Bouckaert, & Peters, 2007). At the same time, in the policy studies literature this potential caveat is largely neglected and it is implicitly presumed that in the process of policy-making the differences between policy and administrative (or bureaucratic/technocratic) perspectives are resolved, or the emerging compromise (even if dysfunctional) can be at least rationally explained according to actor preferences, strategies etc. As we will show in the next section, public management scholars have argued that in many cases (especially in case of significant external and international pressures) this process may lead to rhetorical convergence, but divergence or contradiction within actual policy practices, where policy goals and policy instruments and mixes do not match. This has also significance for the development of innovation policy and contextual fit of the generic ‘decentralization thesis’.

Administrative capacity as a missing link in innovation policy studies?
Although the transformative approach to public management has emphasized that the evolution of policy arenas is conditioned by at least three variables (external pressures, historical-institutional contexts, existing structures of politico-administrative systems), most of the research over the last three decades has started from the importance of external pressures (Christensen & Laegreid, 2007; Pollitt, 2001, 2002). Similarly to the developments in economics and economic policies, the public management systems of the 1980s witnessed rather widespread acceptance (at least rhetorically) of the neo-liberal principles and policy and governance models based on neo-classical economics and
public choice theories. This transformation became labeled as the ‘New Public Management’ (NPM) and managerialism (see Pollitt & Bouckaert, 2004), or in some contexts also as ‘Good Governance’ (see Drechsler, 2005). Public management research has been mostly studying whether there has been a (justified) global convergence towards the managerial model of state structures and institutions; that is, whether there has been a move away from the traditional Weberian state structures (emphasizing long-term policy horizons, institutional memory achieved through career system etc.) towards a managerial state model (emphasizing state-level, organizational and individual efficiency and performance; managerial autonomy and initiative achieved through decentralization; downsizing state structures and creating detailed organizational and individual incentive through performance management, measurement and reward systems).6

(See also Bouckaert & Halligan, 2008; Bouckaert, Peters, & Verhoest, 2010; van Dooren, Bouckaert, & Halligan, 2010; Verhoest & Bouckaert, 2005; Verhoest et al., 2007; Verhoest, Roness, Verschuere, Rubecksen, & MacCarthaigh, 2010). In principle, the NPM ideas represent the early emergence of the ‘decentralization thesis’ within the public management discourse; first as an orientation towards ideal-type market principles and then as an orientation towards network-principles to mitigate the failures of market-type governance reforms. The difference is that in the NPM discourse this was largely based on market ideology and neoliberal ideas transformed into public management ideas. In the current innovation policy discourse, which is somewhat critical of neo-liberal perspectives, the emphasis on decentralization has partly emerged in a technodeterministic manner; that is, global production and innovation networks require its match in the public sector (whether as neo-developmental state, or networked developmental state, or good governance, or PPP based innovation policy etc.).

At the same time, public management research has shown that NPM and decentralization-led reforms may have potentially conflicting effects on the policy arena as the organizational and institutional reforms (downsizing, contracting out, specialization, decentralization, performance management) may paradoxically reduce the motivation and incentives of the institutions to take risks (even small scale) and to pursue policy outcomes that have long time-lags.7 Thus, managerial reforms while increasing administrative capacities in a narrow sense of efficiency (in best case scenario) may have reverse effects on policy capacity in a broad sense of effectiveness (at least in long term). While the SI approach looks at the changing conditions and rationales for determining activities where state actions may be justified, public management perspective emphasizes that the policy competences (or policy and administrative capacity) of the states may be also dynamic and affected by whether and to what extent the states have followed neo-liberal reforms like NPM.

The second perspective of the transformative approach looks at the trajectories of the organizational and institutional set-up of the policy arena through the lens of national characteristics (historical–institutional context and relevance of the existing features of the governance system). From this perspective one of the crucial variables is the role of path-dependencies on the organizational–institutional dynamics (e.g., Peters, 2005; Pierson, 2004; Pollitt, 2008; Pollitt & Bouckaert, 2009). Thus, the main research question has been

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6 The NPM approach (and its sub-types) has emphasized the supremacy of the private sector incentive structures and management principles. This has resulted in international reform movements towards increased privatization and contracting-out of government services and the increased adoption of private sector management principles (like performance management to increase the managerial autonomy in the management processes and rely on the measurement of results – i.e., outputs and outcome – as the tool for control and accountability).

7 In principle, while these reforms are pursued with the expectation of bringing new incentives, motivation and management and policy principles to the public sector, they also lead to loss or delegation of a control mechanism by the state, which in turn reduces the eventual capacities of the state to reward or evaluate the application of new management and policy principles and performance. This reduces, to an even lesser scale than in traditional Weberian systems, the time-span of policies and increases risk-aversion, as most reward and penalty processes function within the same short-term time-span.
whether the emergence of the existing organizational-institutional policy system has been an incremental path-dependent process and what kind of windows of opportunities have existed that have allowed radical changes in the system. Also this lens looks at interplay of the Weberian legacies and neoliberal reform trends of the 1980s.

This research lens has been based on in-depth country studies and international (mostly OECD based) comparisons (e.g., Christensen & Laegreid, 2007; Kickert, 2008; Pollitt & Bouckaert, 2004) and long-term country studies. This has enabled to create categories of state traditions, governance systems, administrative cultures etc. (see Kickert, 2002; König, 1997; Schedler & Proeller, 2007; Torres, 2004). These categories emphasize that the public management experiences and trajectories of different countries and regions have resulted in different mixes of Weberian and NPM ideas and governance practices. In general, Anglo-American countries have faced less historical organizational-institutional obstacles for pursuing neo-liberal governance reforms, while Continental-European countries (again with different variations – see Torres, 2004) have had more historical legacies embedded in Weberian organizations and institutions and therefore the trajectories have been more incremental. Thus, current governance systems represent a mixture of both Weberian elements (ideally creating the foundation of governance) and managerial ideas (modernizing governance practices). Theoretically or conceptually these combinations are labeled as the Neo-Weberian State (Drechsler, 2005; Pollitt & Bouckaert, 2004).

Thus, it is possible to witness a great diversity of governance systems and public management research seeks for explanations for the convergences and divergences. Linking both the external-presures-centered and national-characteristics-based lenses of the transformative approach, Pollitt (2001, 2002) has argued that in principle we can talk about rhetorical convergence (policy rhetoric) on the managerialism and efficiency-based governance (i.e., revision of division of tasks between state and other sectors and transformation of administrative procedures and behavior based on these policy ideas). At the same time we can witness persistent divergence in terms of empirical organizational and institutional governance structures as national politico-administrative structures, cultures and legacies either do not support the adoption of these converging policy and governance ideas (implying also that expected ideal policy efficiencies and effectiveness may not be always achieved through these ideas) or transform them to fit local contextual constraints and opportunities. In sum, the emphasis on administrative capacity and public management highlights several aspects of the organizational and institutional context where innovation policy is made, which should be included in the policy analysis. It is also worth noting that innovation policy research taking the policy studies perspective interprets NPM-type ideas on governance, policy coordination etc. much less critically than the public management perspective and sees NPM-like governance as a modern perspective for all European and OECD countries (see Borras, 2009; Braun, 2008b; Flanagan et al., 2011; OECD, 2005).

Implications of Public Management for Innovation Policy and the ‘Decentralization Thesis’

While the SI approach on innovation policy recognizes that policy-making is highly pragmatic, risky and unpredictable endeavor, the analytical principles of the SI still implicitly presume that innovation policy actions start from the recognition of a policy opportunity and the introduction of state activities, given the proper policy competences. It is further presumed that the role of the analytical policy models is to reduce the likelihood of policy failures and shed further light on when the state should and can contribute to innovation processes. At the same time, it was argued above that the current SI approaches and their extensions based on policy studies perspective are not fully able to encompass the whole set of variables (mainly administrative capacity) that constitute policy competences, and that organizational and institutional trajectories of the policy systems tend to follow their’ own logic.

This means that the logic or cycle of public policy (problem definition, choice of alternatives, design of policy, implementation of policy, evaluation) does not always have to, and does not, start with a correct definition of a relevant problem. Indeed, it has been argued that most of the public choice theory
based on neo-liberal organizational and institutional governance reforms since the 1980s started from a 'perceived problem' (lack of performance, responsibility, accountability, trust etc.), which was defined (but not empirically proven) in order to fit the ideological (or 'meta-rational') solutions of the particular movement (for overview see also Pollitt & Bouckaert, 2004). This implies that the reality may witness potential policy logic from 'perceived problems' followed by 'solutions' that create 'new problems' (i.e., solution being also a problem) that require 'new solutions', or constant reform (e.g., see Verhoest & Bouckaert, 2005). Thus, analytically the perceptions of innovation policy tasks/activities may be flawed both from the perspective of understanding the technological or innovation processes (and the rationale for the state) and from the perspective of understanding institutional and organizational processes of the policy system (modes of contextual governance). The SI approach, and innovation research in general, is clearly stronger in preventing the former than the latter.

The current 'decentralization thesis' is a case at hand that reveals the potential value and critical insights of the public management perspective of policy systems. Indeed, we can bring out two interlinked stylized examples where the weakness of the SI approach in terms of administrative capacity is well reflected and where, departing from public management perspective, we can see that policy makers using the SI approach and following the 'decentralization thesis' are in many ways 're-inventing' and 're-experiencing' ideas that public management scholarship has centered around since the 1980s. The first is the introduction of NPM-type 'governance' and 'good governance' ideas and the second is the introduction of 'public–private-partnership' ideas to the innovation policy discourse.

First, international initiatives on benchmarking and policy learning in innovation policy (i.e., OECD, 2005, 2010; ProInno Europe & European Commission, 2009; also Braun, 2008a, 2008b) study and discuss innovation policy governance practices across the EU and OECD countries and try to derive policy lessons, best practices and implicitly also converging governance models. While raising important questions and comparing practices in terms of policy coordination across different policy domains, the division of tasks between policy-making and implementation, the role of autonomous agencies in policy delivery, performance measurement and evaluation, etc., these approaches lack significant insight into public management research on the very same issues. It is notable that these benchmarking exercises see the introduction of new organizations and institutions (coordination bodies, independent agencies, and overall splitting-up or specialization of the policy cycle) as one of the solutions to the innovation problems/paradoxes seen as the root cause of competitiveness gap between the EU and the US. Public management literature (see e.g., Bouckaert et al., 2010; Pollitt & Bouckaert, 2004; Verhoest & Bouckaert, 2005) on the other hand, argues that while most of these reform ideas come from the neo-liberal understanding of organizational and institutional set-up of state governance systems, the last decades of the experience of the OECD countries show that these reforms are more likely to cause new problems in terms of lack of accountability, loss of long-term policy horizons, dislocated policy capacities and overall lower effectiveness, as opposed to just increasing policy efficiency (i.e., making policy-making faster and cheaper). Thus, while in public management, issues of 'policy coordination' are seen as problematic legacies of the neo-liberal era and coordination is achieved through a mix of hierarchical, market-based and network-based mechanism (Bouckaert et al., 2010), in innovation policy research, the quests for better 'policy coordination' are interpreted not as a result of past and current institutional failures, but as a managerial modernization paralleling the broader 'decentralization thesis' and achieved through mostly network-type mechanism (see ProInno Europe and European Commission, 2009; OECD, 2005).

Furthermore, national comparisons of public management research highlight that NPM-type managerial ideas have been more acceptable and legitimate (which does not guarantee better results) in a limited amount of developed countries, i.e., Anglo-American countries and to a lesser extent also in Scandinavian countries.8

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8 But in the latter, the negative effects of these NPM-type reforms have been reduced by specific consensual culture and high-level trust embedded in policy-making institutions.
Overall, this implies that current notions of ‘good’ innovation policy governance systems are applicable in only limited contexts and further there is a theoretical contradiction in applying these models in the domain of innovation policy. That is, the NPM-type governance instruments were designed to increase managerial autonomy that is needed for (cost) efficiency, while most innovation policy perspectives seek to use the very same instruments for providing policy autonomy that is needed for experimentation and adaptive policies to support private sector risk-taking and experimentation (policy effectiveness). Public management research argues that the latter goal tends to become not feasible as decentralized governance systems (managerial autonomy) need parallel mechanisms for control and accountability (performance measurement, audit etc.), which in turn tends to reduce risk-taking incentives within bureaucracy.  

Second, the same OECD/EU benchmarking experiences and other influential academic sources (e.g., Block, 2008; Block & Keller, 2011; Borras, 2009; Breznitz, 2007; Chaminade et al., 2009; Lundvall et al., 2009; O’Riain, 2004; Radosevic, 2009) have complemented the above mentioned trajectory of managerial organizational and institutional reforms with a new and more participatory and network-based perspective on policy-making (i.e., priority setting and search for political compromises and commitments). The most common label for this approach has been PPP based innovation policy. In these network-based models the borders between policy design and delivery, the division of labor between different sectors and the roles of different stakeholders become more blurred and flexible. This should also mean higher expectations in terms of understanding the basic functions, processes and inter-linkages of the whole policy cycle and system. From the perspective of innovation policy discourse, the more networked and stakeholder inclusive mode of policy-making is supposed to increase the speed, flexibility, stakeholder commitment and the efficiency and adaptability of policy-making. Public management research has found (i.e., Goldsmith & Eggers, 2006; Kickert, Klijn, & Koppenjan, 1997) that network based governance practices are suitable in very specific conditions. Namely, while this approach to governance can bring substantial gains (e.g., tapping into new human and/or financial resources; utilizing local initiative etc.), there is evidence to imply that unless there is a high administrative capacity present, the impact of using networks may be also negative.  

Indeed, problems of highly open and network-type modes of policy making have been a recognized challenge in public policy research for decades (e.g., Olson, 1982). Also in the context of innovation policy, Wade (1990) noted already in the 1990s that a shift from closed to more open mode of policy-making (i.e., from state corporatism to social corporatism in the case of East-Asian economies) is likely to reduce the actual policy space and increase the interest competition among different stakeholders and partly paralyze policy-making and reduce its effectiveness in terms of adaptability and flexibility. The same findings are presented two decades later by Edquist and Hommen (2008a) as an innovation policy challenge faced by both Scandinavian and East-Asian economies. Taking into account the basic logic of policy-making, PPP-models are likely to squeeze bureaucratic or technocratic competences (administrative capacity, parts of policy competences) between two broad groups of stakeholders: on the one hand, politicians demand policy perspectives that respect the electoral cycles; and on the other hand, direct participation of labor unions, consumer groups, industry associations etc. in the policy cycle creates further constraints on the long-term horizons that the bureaucratic or technocratic administrative system is expected to represent. Thus, while in innovation policy discourse, network-based governance ideas are often seen as a solution to problems; from a public management perspective it is considered at most an inevitable challenge that needs further effort and search for solutions to manage the new governance context properly. 

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9 Positive performance, especially in the wicked domains as in innovation policy, is hard to pre-determine and therefore almost impossible to ex-post evaluate. Therefore the modern performance audit and measurement systems tend to become penalizing and reduce bureaucratic space for experimentation and risk taking.

10 For example the famous example of NASA networked model for space policies and the Challenger and Columbia disasters.
CONCLUSIONS
This paper has tried to contribute to the current debates on the relevance and future of economic research for innovation policy in two ways. First, the paper has argued that most of the innovation policy debates are converging on a 'decentralization thesis', which argues that globalization and decentralization of production and innovation systems should be paralleled by decentralization of innovation policy systems. Second, the paper has argued that by integrating economics-based discussions of innovation with 'public management' perspective of policy systems, innovation research has better potential to open-up the 'black-box' of policy-making than by using the 'policy studies' perspective, which has been already introduced to innovation policy literature. By analyzing the 'systems of innovation' literature, the paper has highlighted the weaknesses of the 'decentralization thesis' from the perspective of public policy-making and policy systems, and showed value of using public management perspective for analyzing innovation policy trajectories.

Public management research provides a critical historical account of the limited contextual fit and potential failures of many policy and institutional ideas behind the currently dominating 'decentralization thesis'. From this perspective, the 'decentralization thesis' can be criticized as being an old fashion in a new form. It has a coherent, though debatable, economics-based theoretical rationale (decentralized private sector needs its match). At the same time, the fit of this fashion and the theoretical rationale with the organizational and institutional constraints of the policy systems is a much more contextual and debatable issue than so far understood in innovation policy research. From a public management perspective, it can also be argued that the 'decentralization thesis' of innovation policy brings back, although in a changed format, a neo-liberal understanding of the state.

While the SI approach is still developing appreciative conceptual models of SIs, and is rather inter-disciplinary and open-minded towards other research fields, the same openness should also apply to public management research. The greatest contribution of a public management perspective to innovation policy could be to open up the vague but uncritically used notion of policy competences. Innovation policy could be approached from a more elaborated understanding of the policy system (content and context) as understood by a public management perspective:
1) Policy opportunity could be understood as the legitimization of or demand for the state action (thus, as is currently conceptualized by the SI approach).
2) Policy competencies/capacities could be understood as interplay between the concepts of innovation policy (a mix of the SI and public management perspectives), the legacies of innovation policy (as relatively new horizontal policy reforming existing policy systems) and the practices of innovation policy (e.g., impact of international convergence, lobby, imitation etc.).
3) Administrative competencies/capacities could be understood as tools for realizing the desirable policies into feasible policy actions and maintaining institutional memory (experiences, learning capacity etc.) and contextualizing generic models and understandings of innovation policy.

Innovation policy-making, except in very backward countries, is in reality a policy reform; reform, recombination, extension and reduction of existing policies, governance structures and institutions. This makes innovation policy-making an incremental affair that is dependent on the context, past legacies and other contextual variables. Further, as public and private sectors have different roles in innovation processes, discussions of innovation policy should also be critical of the current 'decentralization thesis'; this seems to be (re-)creating a fashion by importing the globalization and decentralization trends of the private sector into the discussions of innovation policy systems, regardless of historical and cultural legacies and characteristics of different regions and economies. Yet, so far there is very little theoretical and empirical proof that an experimental, networked and adaptive public sector has to be built on the same organizational and institutional perspectives as the private sector.

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