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The trade-off between accountability and experimentation in innovation and industrial policy: learning networks as a solution?

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The trade-off between accountability and experimentation in innovation and industrial policy: learning networks as a solution?[1][2]

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***Abstract**:*

The exact nature of the innovation policy challenges and the best way to address them are not known ex-ante. This requires a degree of experimentation, which is challenging to fit in the context of an accountable public administration. So, how to reconcile the experimental nature of innovation policy with the need for public accountability is crucial but still an unresolved challenge of new innovation and industrial policies.

We identify several distinct approaches to the issue of experimentation in innovation policy, each with its strengths and weaknesses. These are Smart Specialization Entrepreneurial Discovery Process by Foray, Experimental governance by Sabel and Zeitlin; Problem-driven iterative adaptation by Andrews et al.; Experimentation- feedback – adaptation by Crespi et al., and Directed improvisation (variation- selection – niche creation) by Ang. Also, all these approaches face the challenge of how to reconcile experimentation with the requirements for accountability.

The weakness of experimental approaches is that like in conventional public policy the existing power structure can be transposed into the policy process. When that happens, the whole process may turn into pro forma exercise rather than being transformative practice in the governance of innovation systems. In the conditions of low institutional implementation capacity, this problem gets further magnified lading to pervasive 'isomorphic mimicry'. We propose a principle of 'action learning' and governance mechanism of 'learning networks' (LN) which may overcome challenges of implementation of experimental governance in the conditions of the conventional public policy. This proposal is based on the insight that experimental innovation policy will have the most significant effect when connected to action (experimental) learning as the best way to ensure immediate feedback on what works and why.

Keywords: innovation policy; industrial policy; learning networks; action learning; policy experiments; accountability

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1. Introduction

The exact nature of the innovation policy challenges and the best way to address them are not known *ex-ante* (Rodrik, 2007; Crespi et al., 2014: Dutz et al., 2014; Radosevic et al., 2017). Even when there is agreement on policy challenges, policymakers will rarely agree on specific policy instruments to address them. Also, implementation of innovation policy requires collaboration with private and public sector actors, which often have a better in-depth understanding of the issues involved than any policy designing body. Hence, the conventional assumption about policymaker as principal and firm, research-technology organisations (RTO) or university as an agent is of limited relevance.

Industrial and innovation policies are rooted in the notion of principal as 'enlightened policymaker' and agent as the implementer, which does not contribute substantially to policy design and implementation. Instead, we have seen the emergence of new industrial and innovation policy thinking. Within this new perspective, the policy is conceptualised as 'discovery process' (Rodrik, 2007) and 'frontline level bureaucrats' (Sabel and Kuznetsov, 2011) are vital ingredients in success or failure of policy. Instead of focusing on fixed targets and outcomes, the focus is on moving targets, and on adjustments as problems emerge. The implementation is problem-solving and knowledge generation activity rather than a set of obstacles which hinder planned implementation. This understanding has its roots in development projects (Hirschmann, 2015) and has evolved in several intellectual contributions which all acknowledge that solutions to growth constraints are not known *ex-ante* (Lin, 2012; Kuznetsov and Sabel, 2011; Hausmann et al., 2005; Foray et al., 2012; Avnimelech and Teubal, 2008; Lee, 2013; Hidalgo et al., 2007). They each sometimes develop quite detailed methodologies on how these constraints can be identified and how to address them[9].

New industrial and innovation policies recognise that the government, as policy principal does not possess the full knowledge necessary for the right design and implementation. Equally, beneficiaries of policy do not have perfect foresight about opportunities and constraints that they are facing in a long-term. All views are partial, and no actor possesses a panoramic view of technological challenges (Dutz et al., 2014). From this perspective, the policy is a process characterised by the establishment of cooperative public and private sector efforts that anticipate technological change and its effects rather than a priori defined targets (Sabel, 2005; Wilson and Furtado, 2006; Kuznetsov and Sabel, 2006).

This indeterminacy of innovation policy makes its design and implementation a search process (Sabel and Kuznetsov, 2011; Crespi et al., 2014, p 322). So, from the outset innovation policy needs to be organized as a 'policy discovery process' (Rodrick, 2007). By this, we mean that the optimal design, process and implementation of the policy may not at the outset be evident to policy stakeholders. Differences among stakeholders about design, process and implementation of the policy may be often irreconcilable unless there is an organised search process for consensus. The search process relies on and engenders context specific policy implementation routines[10]. To overcome this situation would require a new policy approach.

This thinking led to so-called 'smart policies' or polices which try to overcome information asymmetries and organise policy process in a way which can bring a variety of actors into the

[9] For a review and comparative analysis of these approaches see Radosevic (2017)
[10] We are grateful to Rainer Kattel for this point.

process. The most known example of a smart policy is the EU smart specialization. The EU S3 is probably the largest-scale example of 'smart policy' but is just one of several types of new industrial and innovation policies (Radosevic et al., 2017). By acknowledging knowledge gaps in defining and implementing industrial and innovation policy implicitly or explicitly, the policy itself becomes an experimental activity rather than just implementation of 'grand design'. This led to notions of 'Smart state' (Aghion and Akcigit, 2015), experimental innovation policy and the 'experimental state' (Bakhskhi et al., 2015). The aim is to discover what works and use that knowledge in revising the policy in all its stages. In this way, innovation policy is conceptualised as a process, not as a targeted outcome (ibid).

So, innovation policy from the outset requires policy process to be organised as *policy discovery process* (Rodrik, 2007), which involves a degree of experimentation. This idea has been increasingly recognised through formation of so called 'innovation–labs' which are are typically structurally separated from the rest of the public sector and are expected to 'sell' their ideas and solutions to the public sector (for a review see Tõnurist et al, 2017). However, these attempts however valuable do not address the issue how to reconcile the experimentalist governance with the need for accountability. Experimentation is challenging to fit in the context of an accountable Weberian public administration. A developmental state literature suggest that experimentation was encouraged but also government support for large-scale, capital-intensive investments in the 1970s and 1980s, had created relatively inhospitable environments for entrepreneurial experimentation or if it did it was for local entrepreneurs protected from transnational competition (Wade, 1990; Evans, 1995; Amsden, 1989; Johnson, 1982).

So, we have conundrum problem, as it seems that in conditions of conventional public programs, we do not have an organisational solution to experimental governance. In this paper, we compare several experimental approaches in innovation policy, highlighting their distinctive features as well as weaknesses. We focus on their common deficiency: how to reconcile the experimental nature of innovation policy with the need for public accountability? We offer – action learning and learning networks - as a governance solution to this issue, which is especially relevant for liberal democracies.

To our knowledge, except for two rare exceptions (Breznitz and Ornston, 2018; Kuznetsov, 2016), this issue has not been recognised in the literature. Hence, the aim of our paper is, first, to comparatively explore several current approaches to experimentation in innovation and industrial policy, second, to critically summarise how they address the trade-off between experimentation and accountability, and third, to introduce the principles of 'action learning' and 'learning networks' as governance mechanism by which this trade-off can be resolved.

In the next section, we address the issue of experimentation in innovation and industrial policy. Then, we compare different approaches to experimentation and how they treat the trade-off between experimentation and accountability. After that we elaborate on the rationale, approach and pilot implementation of principles of 'action learning' and 'learning networks' as policy governance mechanisms, which can reconcile trade-off between experimentation and accountability. Conclusions summarise our main points.

2.Experimentation in innovation and industrial policy

Experimentation in public policy is conventionally associated with the notion of randomized control trials (RCT). These have been implemented as the most rigorous evaluation method in development assistance to find out 'what does (not) work'. The idea is to try out a policy on a small scale and see what happens. RCTs are undoubtedly desirable new evaluation method. However, their relevance in innovation and industrial policy is quite limited due to the difficulty to control the policy environment and find randomized equivalents.

RCT as evaluation method should be discerned from experimentation in managing complexity and uncertainty, which is typical for industrial and innovation policy. The state can use RCT as an evaluation policy tool in developing industrial and innovation policy. However, once it is recognised 'what works' policy follows in a conventional manner. The implementation is regarded as activity, which does not bring new insights and does not lead to change of policy (Warwick and Nolan, 2015). A conventional view understates the complexity of the task of implementation, which in itself is the primary source of learning and discovery. Results of RCT are usually just one of several sources of information and knowledge that policymakers must consider when making policy decisions (Hirschon and Birckmayer, 2006). Also, as conventional monitoring and evaluation RCT are, by definition, backwards-looking and have to assume minimal changes across time and context. Finally, RCT as a method does not extend into the role of a government as a facilitator to enable closer co-ordination between individual economic agents to allow for experimentation in the economy (Warwick, K. 2013).

So, instead of aiming to find out 'what works the best' and then follow by implementation, new industrial and innovation policies focus on continuous search, experimentation, monitoring, learning and adaptation which are embodied in programmes and policies from the outset (Dutz et al, 2014).

Experimentation in non-conventional sense has developed out of the participatory approaches to policymaking which are much less widespread in innovation policy. These approaches stem from the democratic concept of design which requires the active involvement of the end-users in the design process (Robertson and Simonsen, 2013). When transposed to policy, participatory approach aims to include those affected by a policy as active participants in designing the solution (Lewis et al, 2019). However, these emerging approaches are focused on design while new thinking in innovation policy aims to embody experimentation in all stages of policy cycle. Also, participatory approaches to policy making are still confined on local issues and do not address the issues typical of industrial and innovation policy.

As a response to deficiencies of conventional logic what has emerged recently, is alternative policy thinking, rooted in the complexity and evolutionary paradigm which offers a new way of thinking about these issues. These new innovation and industrial policies are 'smart' in the sense that they recognise that the ultimate limits to growth and the matching solutions are not known ex-ante. From our perspective, all new innovation and industrial policy approaches assume either explicitly or implicitly some elements of experimentalist governance.

Experimentalism is also a key feature of mission-driven innovation policies (Ergas, 1987; Mazzucato, 2018). In order to achieve the mission goals, participants should be given the flexibility to propose a variety of solutions and to manage projects as portfolios 'to stimulate interaction, experimentation

and cross-learning' (Kattel et al, 2018). However, mission-oriented approach by itself does not yet provide a specific solution to experimentation, and thus, we do not consider it in comparative analysis. For example, Kattel and Mazzucato, (2018) rightly highlight as one of the critical challenges of mission-oriented approach how to structure public organisations to embrace 'uncertainty, exploration, and experimentation'.

By definition new industrial – innovation policies are experimentalist as they recognise that they do not have full knowledge of technological challenges as well as of the best policy designs and implementation solutions. It seems unlikely that the experimentalist approach can be grafted onto the conventional innovation policy governance regime where the policymaker operates as an enlightened principal. Instead, such situation requires so-called experimentalist governance that recognizes that in the complex conditions of strategic uncertainty, a traditional principal-agent relationship falls apart. Sabel and Zeitlin, (2012) define it as '*a recursive process of provisional goal-setting and revision based on learning from the comparison of alternative approaches to advancing them in different contexts'*. Specifically, policy goals are envisaged as tentative in cooperation between principal and agents who are given broad discretion to pursue these goals in their way. Agents results are peer-reviewed in a comparative manner and are followed by self-correcting mechanisms. Finally, the goals, metrics, and decision-making procedures themselves are periodically revised in response to the problems and possibilities revealed by the review process (Sabel and Zeitlin, 2010).

When applied to the innovation policy, this form of governance rests on four principles (Sabel and Zeitlin,2012). First, policy goals are established in interaction with the affected stakeholders. Second, stakeholders have a significant degree of autonomy in pursuing different programs or projects, ideally through a portfolio of projects or programs. Third, their performance is monitored through 'diagnostic monitoring' rather than through ex-post evaluations on a project-by-project basis. 'Diagnostic monitoring' is geared to discover unforeseen events in the portfolio of projects and to correct them or use as new opportunities. Fourth, the goals, metrics, and decision-making procedures are reviewed in the light of new problems and possibilities.

Accordingly, there is not principal-agent: '*You can't specify the precise goals or the means for achieving them all at once, ex-ante, and therefore, goals need to be redefined, and the means for achieving them, by detecting bottlenecks or errors, and then searching out and eliminating their causes*'. This view is based on the critical insight that *'the exact nature of the problems faced by the street-level bureaucrats or frontline workers in the public sector is not known in advance'* (Sabel and Zeitlin, 2012).

In the 'experimentalist governance,' there is not a clear separation between policy design and implementation. Learning takes place in the process of the application during which capabilities are upgraded, and policy design adapts.

We identify several distinct approaches to the issue of experimentation in innovation policy, each with its strengths and weaknesses (Table 1). All approaches in table 1 recognise that innovation policy challenges and solutions are not apparent so that sensible policy would require a degree of experimentation in both design and implementation. We briefly explain each of these approaches but for further details would suggest the reader to consult each of approaches.

Table 1: Different approaches to the issue of experimentation in innovation policy: strength and weaknesses

Approach	Strength	Weakness
Smart Specialization Entrepreneurial Discovery Process (Foray, 2015)	Stakeholders engagement through structured consultation process confined on the design stage of the policy process	Broad-based participation does not always lead to effective adaptation. Who of stakeholders defines what the problem is? Who defines the criteria of success for solving the problem? EDP may reflect the existing power and discourse structure. A separation between design and implementation. EDP by and large confined on design. Implementation follows the planned script. Weak feedback loops. Monitoring focused on process compliance and disbursement evaluation. Long feedback on output and possibly on outcomes
Experimental governance (Sabel and Zeitlin, 2010; 2012)	Not separation between design and implementation. The policy is designed as a process	It requires 'Schumpeterian development agency' (Sabel and Kuznetsov, 2017) Incompatible with conventional accountability rules of public policy
Problem-driven iterative adaptation (PDIA)(Andrews et al., 2012)	The focus is on discovering what the real, local problem is. Different solutions and adaptations outlined. Requires stakeholders' engagement by definition Experiential learning effects	Appropriate as a solution to specific tractable problems but challenging to embed as the overall policy solution and especially for ill-defined problems like innovation policy

EFA (Experimentation-feedback – adaptation)(Crespi et al., 2014)	Feedback is an essential mechanism of experimentation which requires adjustments	No limits to experimentation It requires competent agencies with the technical, operation and political capabilities
Directed improvisation (variation- selection – niche creation)(Ang, 2016)	Bounded experimentation. Vague guidelines allow for policy experimentation Selection after experimenting with a variety of approaches	Requires specific institutional setup, which can limit experimentation, select the viable options and facilitate 'niche creation.'

Source: authors

2.1. Smart specialization

The EU Smart specialization (3S) is probably the most written about innovation policy approach where experimentation is confined to the so-called Entrepreneurial Discovery Process (EDP)(Foray, 2015). The EDP is a structured consultation process of stakeholders' engagement in the selection of policy priorities where experimentation is confined to the design stage of the policy process. Once this stage is completed the policy proceeds in conventional public funding manner.

However, EDP says very little about its structuring or the 'how to' of the process. The process may de facto legitimize the vested interests or sector or individual interests. The inclusiveness and interaction within the EDP depend on the organisers of the EDP, which are often public authorities (Cvijanovic et al., 2018). What we find in reality is truncated multi-stakeholder approach where only some stakeholders are involved, with the EDP being reduced to the design stage. The experimental nature of the design stage is followed by implementation according to the planned script with very weak or no feedback loops. These weaknesses stem from critical inconsistencies of 3S. The crucial first inconsistency in 3S approach is that the implementation is executed through programme-based calls rather than through strategic partnerships or 'innovation platforms' of key actors. If 3S is about the creation of a local innovation system or innovation ecosystems, their creation cannot be supported as a series of standalone but as a portfolio of related projects. Significant second inconsistency is that the design stage is separated from the implementation, which is done through Operational Programs (Cvijanovic et al., 2018). Also, administrative processes and the risk that policy-makers may retroactively demand repayment discourage experimentation by civil servants and entrepreneurs (Breznitz and Ornston, 2017)

Thirdly, broad-based engagement of potentially numerous stakeholders often does not lead to effective adaptation as public sector actors dominate the process and reduced to R&D related issues. As a result, EDP reflects the existing power and discourse structure. Similar to conventional Monitoring & Evaluation, dominant stakeholders define what the problem is, and they define criteria of success for solving the problem (Bovens et al., 2016). In a nutshell, political processes determine the nature of the EDP process, success, or lack of it, as well as the scope of involvement of relevant stakeholders and audiences.

A separation between design and implementation makes 3S a case of incomplete new innovation policy. EDP is by and large confined on design while implementation follows strict accountability criteria with not feedbacks between implementation and design. Monitoring is focused on process compliance and disbursement evaluation. As conventional M&E dominates, we may wait for a long time before we see any feedback on output and possibly on outcomes.

2.2. Experimental governance (Sabel and Zeitlin, 2010; 2012)

Experimentalist governance is conceptually the most advanced model of new innovation and industrial policy for several reasons (Sabel and Zeitlin, 2010; 2012). First, the policy is designed as a process rather than as planned outcome (Kuznetsov, 2009). Second, organisational carrier of experimentation is so-called 'Schumpeterian development agency' (Sabel and Kuznetsov, 2017) which operates by rules which are incompatible with conventional accountability rules of public policy. Third, the autonomy given to SDA needs to be reconciled with the need for control to ensure that its long-term objectives are achieved. However, as we discuss in the paper managing, this trade-off is the crux of the issue.

There does not seem to be a single blueprint for an effective organization of such agencies. However, such agencies can develop radically new policy instruments that transform both public- and private-sector routines (Kuznetsov, 2009). A few success stories of such agencies show that they have acquired the freedom to experiment with novel technologies, new private sector partners, heterodox policy instruments, and unconventional business models (Breznitz et al, 2018). These challenges explain why they have usually emerged at the periphery of the public and private sector instead as the flagship initiatives (ibid). The initial peripheral nature is their essential feature as they are less likely to be captured by established constituents.

One of the significant factors for the effectiveness of SDA is their capacity to 'monitor the progress of projects, use signs of difficulty to trigger inquiry into the root cause of the problem, and convoke the actors who can help solve it – or call the attention of higher-up authorities to problems that remain unsolved' (Kuznetsov, 2016). Ex post evaluations are replaced by 'diagnostic monitoring' (Dutz et al, 2014 ; Kuznetsov and Sabel, 2011) which is defined as 'the systematic evaluation of a portfolio of projects or programmes to detect and correct errors as each project evolves (including the weeding out of inefficient ones) in light of experience and new information'.

This requires sharing of information, particularly of bad news: mistakes and problems. 'Diagnostic monitoring' is unacceptable for the conventional public sector due to the potentially very high breaches of accountability. This challenge raises the issue of trade-off between experimentation and the need for accountability, which seem to be inversely related. This explains the partial success of such agencies (for example, the Finnish National Fund for Research and Development- SITRA and the Israeli Office of the Chief Scientist-OCS), once they due to their initial success move into the centre of policymaking (Breznitz and Ornston, 2018). In a rare recognition of this issue Breznitz and Ornston (2018) point to this issue as 'trade-off between implementation and experimentation', which they term the 'politics of partial success'.

The role model of SDA is the US DARPA agency whose success has led to the extension of the ARPA model to other technological areas within the US and internationally. According to Azoulay et al.

(2018) the core of the ARPA model is (1) general organizational flexibility, (2) bottom-up program design, (3) discretion in project selection, and (4) active project management. These features meant that they operate by rules that differ from conventional public agencies where program managers have a high degree of autonomy. However, it is crucial to bear in mind that ARPA type agencies are associated 'with quantifiable goals and sub-goals with trackable progress metrics' which eases measuring their accountability.

2.3. Problem-driven iterative adaptation (PDIA)(Andrews et al., 2012)

Andrews, Pritchett and Woolckock (2012) have developed the problem-driven iterative adaptation (PDIA) approach in development assistance. PDIA is relevant in situations where the exact nature of the problem is not entirely clear, but the issues are tractable though the best way to address them is not known ex-ante. Problem-driven iterative adaptation approach (PDIA) of Andrews, Pritchett and Woolckock (2012) and Pritchet and Woolcock, (2004) focuses on discovering what the real local problem which then requires different solutions and adaptations is. The focus is on finding what the actual local problem is whereby different solutions and adjustments are outlined. PDA requires stakeholders' engagement by definition and the process itself generates experiential learning effects. PDIA is appropriate as a solution to specific tractable problems but it is challenging to embed as the overall policy solution. It is also unsuitable for ill-defined issues that abound in innovation policy[11]. Moreover, PDIA does not set limits to experimentation or alternative solutions, and thus, it is challenging to standardise it within conventional public policy funding systems. It is implicitly assumed that agencies involved have required capacities and that the newly discovered solutions can be easily reconciled with the accountability rules of the public sector.

2.4. Experimentation – feedback – adaptation (EFA) (Crespi et al., 2014)

Crespi et al. (2104) have merged experimental governance with PDIA approach into so-called EFA Cycle (experimentation – feedback loops – adaptation). This approach stems from the codification of several Latin American success stories elaborated in Crespi et al. (2014). EFA begins with experimentation as Sabel and Zeitlin (2012) and end with adaptation as in Pritchet et al. (2010). They define *experimentation* as a space in which different approaches to solving a given problem are allowed, and their results systematically evaluated. *Feedback loops* are necessary for the process to figure out which of approaches are workable and which are not. The final activity is to *adapt* the policy to a particular institutional context. Feedback is an essential mechanism of experimentation which requires adaptations. EFA to be successful requires competent agencies with the technical, operation and political capabilities.

The downside of EFA as well as of other approaches is that there are no limits to experimentation. Experimentation creates variety, but an endless range of different alternative solutions or experiments may not be the most productive strategy. The core of the issue is who defines the problem, which is essentially the issue of experimental governance. EFA approach (also as PDIA) does not set limits to experimentation, and it requires competent agencies with the technical, operation and political capabilities for implementing EFA cycle. The 'experimentalist governance' approach assumes that within every less developed region there are pockets of vitality (some good

[11]. A paradigmatic case analysed within the PDIA approach is about the causes of costly purchase of textbooks, an example where the nature of the problem is unlike in innovation policy quite clearly defined.

firms or public organizations, highly skilled professionals, etc.), which are 'stuck' in low growth traps. However, it is possible to use these pockets of excellence that work to improve those that don't (Kuznetsov and Sabel, 2017).

However, 'betting' on individual pockets of excellence will mean that we may also expect some dramatic losses, which may undermine the overall idea. However justified is this approach it will test to limits the accountability of public policy. The whole concept may be viable only within highly autonomous public institutions. However, as we point our earlier, the higher the autonomy or exceptionalism of public agency, the higher the challenge of accountability or need for control of its activities.

2.5. Directed improvisation (variation- selection – niche creation)(Ang, 2016)

'Directed improvisation' represent the gist of the Chinese approach in innovation and industrial policy. Its most articulate version is Ang (2016) study. Local experiments rather than the Big Bang approach lie beneath China's massive transformations over the past three decades. The centre has actively encouraged localities to experiment with different ways of development. A very widespread decentralization of fiscal and administrative functions has enabled this practice at large scale (Florini et al., 2012). Ang (2016) has shown that beneath the extraordinary Chinese growth lies 'directed improvisation' approach or strategy of vague policy guidelines which enable the generation of various local solutions (experiments) followed by selection and diffusion of successful policy models.

A solution to the challenge of unlimited experimentation in the Chinese context is 'bounded experimentation'. The gist of the Chinese story is that the political centre issues vague guidelines that allow for policy experimentation. This enables provinces to experiment with a variety of approaches of which only the most successful models are then chosen as acceptable policy models to be diffused throughout the country.

An important feature of Chinese 'bounded experimentation' is defined by Breznitz and Murphree (2011) as 'structured uncertainty'. This is a situation where vague policy guidelines allow for a multiplicity of behaviours on a specific subject 'without any of the actors knowing in advance which behaviours are appropriate' which creates ambiguity in implementation. We should remember that the virtue of conventional public policy is precisely the opposite – to avoid multiple interpretations and implementations of the same policy. Allowing for 'multiplicity of actions but without legitimising a specific course or form of behaviour as the proper one' is inimical to accountable public policy. Otherwise, this may lead to 'anything goes' policy with all subsequent problems in evaluating and legitimising it. The examples of this policy are the flexible interpretation of the meaning of 'high technology' when stimulating new product activities or a particular type of companies (Breznitz and Murphree, 2011). However, this constructive ambiguity is key to experimentation, which is the only way to discover what works best. In a nutshell, experimentation does not go without some degree of 'structured uncertainty'.

However, once the workable model becomes clear further experimentation would be costly and counter-productive. At that stage, centre proclaims which are desirable or acceptable modes of action. So, the critical factor is that this approach requires specific institutional setup, which can limit experimentation, select the viable options and facilitate 'niche creation.' This, in turn, involves bureaucratization but not in the Weberian but more in a Hayekian sense, i.e. administration which actively seeks and exploits opportunities. The difference to other approaches is that Chinese

experimentation is much broader as it takes place across the innovation system and is not confined on specific organisations like SDA or specific programs like the EU 3S or PDA or EFA driven programs.

However, paradoxically the lack of regularities and bureaucratisation is emerging as a constraint for the globalisation of major Chinese companies. For example, Breznitz and Murphree (2011) point out that companies like Telecom (ZTE), and Lenovo, now view predictable policy-making and legal enforcement as necessary for their growth. Hence, 'directed improvisation' is not a generic formula but a historically specific solution. Any generic solution would need to reconcile experimentation with the regulatory regime that supports accountability and predictable outcomes.

2.6. A common challenge to all experimentalist approaches: experimentalist governance

A brief overview of the current policy approaches towards experimentation shows that each of them is addressing the issue of innovation governance or in this case, experimental governance in a different way.

'Experimentalist governance' assume that there is a specific organisation – SDA- which operates based on the system of rules different from conventional public policy. Schumpeterian development agency (SDA) is managing a portfolio of projects and thus is ultimately responsible for producing the portfolio with the best outcomes and synergies. 'Directed improvisation' approach assumes governance regimes specific to the Chinese political system, which allows competition among regional administrations but also requires strong central power. Ultimately, it is a central government that makes selection recognising those experimental models, which have shown to be successful.

PDIA and EFA do not explicitly address the underlying governance, but they implicitly assume that there are public agencies with technical, operational and political capabilities and with the required degree of autonomy for experimental policies. Such agencies should be able to engage in experimentation/implementation cycle. However, successful cases of SDA show that they are successful when they emerge on the periphery of public policy. Their real challenges arise once they shift into the core of public policy where their actions need to conform to the rules of accountability and control.

The EU 3S approach is very elaborate about the experimentation in the design stage. However, S3 does not address the issue of experimentation beyond the design stage but assumes that implementation can be run as a conventional public-funded program with full application of criteria of accountability.

As our paper represent an exploration of this issue by taking into account the European policy and institutional background, we see as the central issue of how to reconcile experimentation approach with requirements for accountability of public policy[12]. Opting for SDA approach may be challenging to implement even if we consider it at the periphery of public policy. Directed improvisation is incompatible with general administrative rules of programs like those funded under the 3S label.

[12] Here we ignore the issue of administrative or policy capacities. As pointed out by Rainerr Kattel it is not difficult to imagine a Weberian bureaucracy that is able to experiment because the organisations in question have a wider political support and legitimacy to experiment. However, in this case the outcomes of experimentation will largely depend on their policy capacity. We fully acknowledge this issue but prefer to keep analysis as simple as possible.

Also, it would be quite far-fetched to assume that all the EU regions have competent public agencies that can engage in full experimentation /implementation cycle within the current regulatory framework. Finally, the trade-off between experimentation and accountability is relevant not only for the EU but also for a large number of other developed and emerging economies.

So, we can state our first proposition: *in conditions of conventional public programs, we do not (yet) have an organisational solution to experimental governance*. Organisational solutions are either confined on: a) individual 'pockets of excellence' (autonomous 'Schumpeterian development agencies') which may also result in individual 'pockets of disaster', and/ or on b) specific institutional setup (cf. Chinese policy which can combine experimentation with centralised selection followed by diffusion of newly discovered practices). In all other cases, we could somewhat bluntly state that the problem is assumed as non-existent or is ignored. This conclusion leads us to consider the issue of accountability in industrial and innovation policy, which we address in the next section.

3. Innovation governance, accountability and experimentation

Innovation governance is about managing innovation processes where boundaries between and within public and private sectors are blurred (OECD, 2005). Innovation is not driven by sole inventors but is the outcome of the interaction between individuals and organisations involved in collective action. In that context, the government does not have the power to 'get things done' by command or authority but by steering and guiding. Government is one of the actors involved in an interactive process involving various forms of partnerships, collaboration, competition and negotiation (OECD, 2005). By the same token governance can suffer from the lack of accountability, lack of transparency and a poor representation of stakeholders. Within this perspective, we can add experimentation as a factor that further magnifies the challenge of innovation governance.

According to Ingram and Schneider (2006) accountability is critical to democratic governance, and is quite different from political support. Normanton (as cited by Scott, 2000) defines accountability as '*a liability to reveal, to explain, and to justify what one does; how one discharges responsibilities, financial or other, whose several origins may be political, constitutional, hierarchical or contractua*l'. Innovation and industrial policy are areas where this issue is especially complex for several reasons. First, the engagement of a variety of public and private stakeholders, which operate in different regulatory regimes means, that only one mode of accountability will not suffice. Ministries operate based on political accountability, private firms based on market accountability, while agencies operate based on administrative accountability. The challenge is how to reconcile these different criteria of accountability. Second, in an era of decentralization, devolution and public-private partnerships, accountability issues are challenging to address. The variety of organisations involved in innovation policy, the diffusion of responsibility, different objectives, and competing values among implementers complicates criteria of accountability. Third, the long-policy delivery chain in innovation and industrial policy may lead to significant differences between outcomes and outputs where accountability for different issues can be quite blurred. Procedural accountability may be far from satisfactory to ensure the impact of innovation policy. Fourth, in addition to their criteria of accountability, a proper implementation process requires also mutual accountability among public agencies and private actors involved for which there are no apparent solutions. Fifth, the spread of new public management (NPM) philosophies has further complicated the issue of accountability.

NPM led to 'the structural devolution and withdrawal of political executives' which have 'increased accountability problems and left a power vacuum' (Christensen, 2006). The benefits of NPM are in increased efficiency of individual administrative bodies and agencies that are released of political accountabilities. However, this has led to fragmentation and disintegration, which requires an enhanced focus on coordination and collaboration (ibid). In innovation policy, this further increases the potential gap between outputs and outcomes.

The only way to escape excessive focus on procedural rationality and outputs and to enhance focus on outcomes is to recognize the collective nature of the innovation process as well as the importance of the design and implementation process of the innovation policy. For example, 3S policies require close coordination among ministries, national and regional agencies, EC, RTOs, universities and enterprises. Each of them can pursue their individual or local rationalities, which in overall may result in a very ineffective system fully compliant in terms of procedural accountability but without effective impact. This requires going beyond the exclusive focus on individual accountabilities and to approach the issues through network governance.

Networks have the advantage that they are non-hierarchical and thus can handle complex problems, which cannot be resolved solely through hierarchical accountabilities of individual administrative bodies. However, networks also cannot escape the challenge of accountability. As pointed out by Dryzek (2006) 'networks themselves are not necessarily democratic, and can indeed facilitate escape from accountability to a broader public by hiding power and responsibility'. Networks do not have a sovereign centre, and they involve different actors operating in different regimes. The network members may hold the relevant representatives to account, but the network itself may not be accountable to anybody. On the other hand, as pointed by Rhodes (2006) 'conventional notions of accountability do not fit when authority for service delivery is dispersed among several agencies' which is a typical case in the innovation policy.

This leads us to the second proposition: *collective or multiple stakeholder nature of innovation policy aggravates the issue of accountability for its effectiveness.*

Experimentation in innovation policy further magnifies the challenge of accountability. Multiple accountabilities in innovation policy would now have to fit the 'experimentation bomb', which by definition does not fit traditional accountability mechanisms. Experimentation requires a much higher tolerance for agency discretion and widening the repertoire of accountability mechanisms (Freeman, 1997). Any form of conventional accountability will block bolder experimentation. Experimentation requires alternative mechanisms that can be embedded within relations of interdependence within the policy network. For example, O'Neill (2002) argues for 'intelligent accountability' where *'institutions are allowed some margin for self-governance of a form appropriate to their particular tasks, within a framework of financial and other reporting'.* The gist of the issue is that in the 'new culture of accountability' (O'Neill, 2006) we may expect the opposite to happen, i.e. the issue of different criteria and incoherence of accountability will further increase. This trend has substantial implications for innovation policy.

By confronting our first and second proposition, this leads us to the third proposition: *there is a tradeoff between need for experimentation in innovation policy and demand for public accountability*.

The rest of the paper address the issue ' what is the potential governance solutions which can reconcile the trade-off between experimentation and accountability in innovation and industrial policy'.

3.1. 'Learning networks' as potential governance solutions to experimentation and accountability in innovation and industrial policy.

We argued that so far, we do not have a satisfactory organisational solution to experimental governance, that the multi-stakeholder nature of innovation policy aggravates the problem of accountability, and that there is a trade-off between the need for experimentation in innovation and industrial policy and demand for public accountability. In this section, we elaborate a solution, which is based on the insight that experimental innovation policy will have the most significant effect when connected to 'action (experimental) learning' as this is the best way to ensure immediate feedback of lessons what works and why. The point is that such learning is active and is happening in the process of a real implementation. However, governance mechanisms to facilitate and capture such learning are not in place except in approaches which are not fully compatible with a conventional public policy like SDA agencies or Chinese 'directed improvisation'. Here we introduce the idea of 'learning networks' as a formal mechanism purposefully built to support the practical learning of its members. We also address the issue of accountability of 'learning networks'.

The motivation for learning networks (LN) originates in the idea that significant knowledge benefits can be captured when 'communities of practice' develop across different stakeholders in a sector or between sectors (Tsekouras and Roussos, 2005). The EU 3S is such type of activity which through EDP establish new 'communities of practice' consisting of stakeholders from different organisations and sectors. EDP becomes a specific form of collective learning and entrepreneurship. In continuation, we will refer to these 'communities of practice' as 'learning networks' (LN) where the emphasis is on connectivity and specific forms of governance. By using generic notion of communities of practice the focus is on identities of members (see Wenger, 2010).

The basic argument is that mechanism of 'learning networks' (LN) based on principles of 'action learning' could represent the basis for experimentalist governance structure in both designing the best local solutions in industrial and innovation policy but also ensure that issues which arise during implementation can be corrected in time and feedback to the design process[13].

Before we briefly explain principles of 'action learning and 'learning networks' it would be necessary to clarify how this approach differs from currently in vogue public sector innovation labs (PSI) (Tonurist et al, 2019). PSI labs are usually placed outside the public sector and operate as quasi-public consultancies (Lewis et al, 2019). They are concentrated at the front end of the policy and innovation cycles lacking 'the capabilities and authority' to influence the scaling-up and implementation of solutions (ibid). Being without strong links with the stakeholders PSI labs designers are unable to address the politics of the policy process which is actually the key focus of

[13]PDIA approach implicitly contains some of the ideas of 'learning networks' by pointing to issue-driven nature of policy problem and different roles of network participants.

'learning networks'**.** In continuation, we briefly explain principles of 'action learning and 'learning networks'.

3.2. 'Action learning' and 'learning networks'

Learning by networking with stakeholders - firms, as well as academics and other policymakers - gives the opportunity not only to share resources but also more significantly, to listen to new ideas, challenge one's assumptions and embrace new perspectives. These are all activities, which are indispensable to experimental innovation and industrial policy.

LN methodology rests on principles of 'action learning' that originate from the problem-based learning approach to training. Action learning arises from the business sector and is defined as: "… a continuous process of learning and reflection, supported by colleagues, to get things done. Through action learning, individuals learn with and from each other by working on real problems and reflecting on their own experiences." (McGill and Beaty, 1995: 11)

'Action learning' is a straightforward form of 'learning by doing' based on teams of participants who offer each other advice and encouragement and challenge each other to think and act. Action learning is consistent with the principles of positive psychology (Seligman and Csikszentmihalyi, 2000)and appreciative inquiry (Cooperrider and Whitney, 2001) by encouraging team/set members to build on strengths and learn from challenges. It is focused on problems where there is no single solution as problems are either complex or ill-defined. For such issues, it is difficult to establish uniform behavioural and problem-solving procedures. The lack of fixed form and procedure means that the practice of action learning is 'highly situational' (Gifford, 2005). These are all conditions wholly relevant to the experimental nature of innovation and industrial policy.

Participants learn from others' experiences in dealing with similar issues. By working with other participants, they gain new insights, and this also offers them opportunities to broaden their awareness through hearing others' views. In that respect, the diversity of participants and topics of their projects is *de facto* considered an advantage. Participants can benefit from others' opinions, and experiences and thus complementarities rather than commonalities and 'group think' are valuable features of the method.

Organisational Learning, Communities of practice and LN, have been extensively studied and implemented in business. Lave and Wenger, (1991) have talked of 'situated learning' – learning that is intrinsically linked to the environment where it is located- while Cook and Brown (1999) regard organizational learning governed by *the epistemology of practice* rather than epistemology of possession –i.e. knowledge is fundamentally associated with practice and can not be transferred as a commodity. At the same period, the phenomenal success of *clusters* of different companies was noticed and studied e.g. Becattini (1989, 1990), Sengenberger et al, (1990), Saxenian, (1991). However, it was pointed out that single factors such as proximity did not by themselves, explain the success of clustering. Humphrey et al. (1996), identify the importance of developing trust relations, while Sengenberger and Pyke (1992) point out the readiness amongst firms for co-operation, which help the firms to build shared learning mechanisms. The challenge associated with this was to set-up

an infrastructure to support shared learning and reflection on a regular and sustainable basis the so-called Learning Networks (LN) Bessant and Tsekouras, (2001), Bessant et al. (2012).

The novelty of our argument is that we consider the use of the LN mechanism not only for business but also in innovation and industrial policymaking.

The core mission of LN is to enhance experiential learning of its members whereby active experimentation is an indispensable component of learning (Kolb, 1984). The novelty of action learning is to think also about the government and its constituents as a learning system (Schon, 2010). The rationale for it stems from the acceptance of experimentation in policy and the reality where experimentation usually stops once a new policy had been legitimised (ibid).

New policies or changes to the existing policies, as a rule, originate in the centre of policymaking, i.e. at the 'principal', so the learning is reduced to the training of 'agents' to implement designed policies. As a result, implementing bodies are not the source of new knowledge, adaptations and redesign of policies. 'Communities of practise' and LN as their organisational expression can be established to generate experiential learning within innovation and industrial policies.

LN projects must focus on real-world policy issues like improvements in specific areas of innovation and industrial policy and its implementation rather than on general and conceptual or only operational matters. For example, the focus should be on the design of new policy instruments, improvements in the implementation of the existing tools or joint new projects or programs to be developed among participants. In this way, the project can benefit from a multiplicity of experiences and knowledge of the group members.

By paraphrasing Wenger (1998) crucial advantages but also challenges in forming LN are: a) reaching agreements of what are critical challenges in all stages of innovation and industrial policy process, b) preservation and generation of new knowledge what works and what does not work, c) spreading of information and knowledge by sharing information necessary, relevant, and tailored which can be quickly acquired by members, and d) creating a space for nurturing differentiated and common individual and member identities.

3.3. 'Learning networks' as a governance mechanism

The mechanism of Learning Networks (LN) has been developed to operationalise the potential opportunity which lies among network members given a diversity of their experiences and types of knowledge accumulated. Learning Networks do not refer to networks of organisations where learning happens only by policy process, but rather to inter-organisational networks where structures have been established with the primary purpose of enhancing the knowledge of its members. These networks:

- include representatives of different organisations which ideally should be all stakeholders involved in innovation and industrial policy process as designers, implementers and beneficiaries;
- are formally established with clear and defined boundaries for participation;
- have an explicit structure for operation with regular processes and actions;

- have a primary target – some specific learning/new knowledge that the network is going to enable;

- can assess the "learning" outcomes that feedback on the operation of the network (based on Tsekouras, G., and Kanellou, D. 2018).

The formal or semi-formal character of the LN provides an 'institutionalised organizational platform' which represents a permanent structure for identifying knowledge gaps and satisfying knowledge needs, allows evaluation and accumulates experience regarding the support required by learners. The permanent character of membership in LN facilitates the development of trust relationships among participants. The promise is that a formalised structure of LN that erases the power structure among participants could significantly reduce the power of vested interests.

LN should be composed of middle-level administrators who are in the best position to experiment, learn, and innovate. Administrative learning is a form of active experimentation or learning by doing (Carpenter, 2001). An agency or LN that manages numerous programs and offices is, in a sense, conducting several experiments.

As formalised structure LN should have the following vital actors (Tsekouras and Kanellou, 2018):
• **Network moderator** who manages and coordinates activities, people and time, matches learning needs with knowledge resources, and monitor the relationships between members

• **Peer group facilitators** who assist groups of practitioners in their structured reflection. The facilitators are trained and accumulated experience over time.

• **Network members** are individuals representing an organisation (stakeholders) - with executive power.

• **Invited experts** are non-network members invited to participate in the network for a specific reason (such as the presentation of a topic) and a defined period.

We can think of LN as formally coordinating bodies, which operate, based on principles of 'shared responsibility' and 'joint problem-solving'. For example, within the context of the EU S3 learning networks could be established between policymakers and stakeholders, or between policymakers and implementation agencies, or between implementation agencies and SMEs that participate in the same programs and/or between SMEs that are involved in specific technology priority areas.

Actors involved in conventional policy processes learn about weakness in either policy design or process only ex-post. In that respect, the proposed LN differs significantly from traditional monitoring and evaluation mechanism that focuses on compliance with a linear process of design followed by implementation and allows 'lessons' only at the end project. LN aims to enable people working on the design and implementation of different programs to identify gaps, simplify processes, enable synergies and find new solutions. Hence, LN are very suitable mechanisms for improving and adapting previously agreed processes and procedures as challenges become apparent, and new solutions are needed. In that respect, LN are de facto mechanism of 'diagnostic monitoring' elaborated earlier in section 2.

3.4. Learning network, power, autonomy and accountability

In addition to being a mechanism of the search for solutions that fit the local context, LN could be a governance mechanism to overcome or significantly reduce the power of vested interests that can bias the search process. The LN represents a link between people and bodies with the power to those facing problems of implementation. In that respect, LN are a potential tool of *democratizing* policy process by acknowledging the individual (vested) and shared interests. In this way, LN can be a solution to the situation when individual conventional accountabilities do not suffice. They can be suitable governance form to overcome vested interests by democratizing EDP or any other search for policy solutions and minimizing the impact of active and influential actors and give space to weak and potentially promising actors. In that respect, LN can meet the challenge of different accountabilities in innovation and industrial policy.

The learning, design and implementation potential of LN lies in the diversity of stakeholders and participants involved. Some participants could provide power and other awareness of the problem, some ideas or resources, while others act as connectors or bridgers (Andrews et al., 2012). It is essential that in the policy design and implementation process LN participants recognise a variety of their individual but also public interests. Participants need to have executive power and be directly involved in the design or implementation of innovation policy (if coming from public organisations) or to be managers or owners of a company.

Participation should not be mandatory but only voluntary. However, after the first few meetings when the LN is established, and a code of conduct agreed, participants need to commit to the actions agreed. Participants involved should share a common understanding that change is necessary and/or that the agreed solutions are appropriate and worth a trial. In that respect, LN should be considered as a new stakeholders' body or network which needs to fit into the structure of existing executive bodies and agencies. However, it should also retain its semi-formal character. Obviously, given their semi-formal nature, this raises the critical issue of autonomy of LN as well as the accountability that we address below.

The weakness of experimental approaches is that like in conventional public policy, the existing power structure can be transposed into the policy process. When that happens, an experimental policy like 3S EDP can be 'instrumentalised' as a means to maintain the authority of one or more stakeholders instead to be run as an open and inclusive multi-stakeholder process. So, the whole process may turn into pro forma exercise rather than being transformative practice in the governance of innovation systems (Cvijanovic et al., 2018).

It should be expected that two critical inconsistencies of 3S could be overcome or reduced through LN. LN, which would involve administrators, as well as firms and strategic partnerships, could help in finding solutions to maintain these partnerships even through program based calls. By bringing together into LN civil servants involved in Operational Programs and those engaged in 3S design and implementation could help to overcome often disjointed nature of strategy and operational programs.

For successful implementation of LN, participants must have the support of organisations in participation but even more in the implementation of the proposed solutions and modifications in innovation policy design and implementation. Hence, negotiation of the original brief for the topics

of LN (sets) and individuals involved is essential (McGill and Beaty, 1995). This includes an explicit commitment for a certain number of meetings before the activities and outcomes are reviewed. The topics of LN or 'sets' can be anything that participants' involved have experienced in the process of design and implementation of innovation policy to generate action points. Ideally, topics should not be trivial but should be ones on which participants are working, but the steps to progress are unclear. The aim is for each participant to leave the meeting with specific action points for their issue (project) that they have decided to do before the next meeting (McGill and Beaty, 1995). However, the ultimate goal is changing not only individuals but also organisational cultures and inter-organisational linkages towards problems solving in design and implementation of innovation policy. In that respect, LN are a mechanism that can promote experimentation in innovation policy.

LN should have sufficient authority to make spot changes in the design of programs and their implementation, and to engage in experimental doing as well as learning, and the ability to act on what has been learned. This requires that its members are division chiefs or middle-level administrators who are 'sufficiently elevated to observe differences across offices but low enough to know the necessary details about programs'(Carpenter, 2001). This also gives them a unique position to innovate.

3.5. Autonomy and accountability of Learning Networks as the central precondition for effective experimentation

To be useful rather than window-dressing showcases of experimental innovation and industrial policy, LN would need to secure autonomy but also be accountable. Independence is necessary for experimentation in innovation and industrial policy, but accountability is needed to justify to different constituencies why things are done in specific ways. So, LN will fail unless it is recognised that their autonomy, which is indispensable for the experimental policy, will have to be coupled with accountability. As pointed out, networks are specific in that respect and LN will need to operate under a particular accountability regime (Rhodes, 2006).

LN are not necessarily egalitarian, at least not in any simple way, or harmonious and conflicts can be a central part of the practice. The accountability and identification that form the basis for power in LN is *horizontal*, mutual, negotiated, often tacit and informal. However, as argued by Wenger (2010), this does not mean that they are less effective compared to vertical or hierarchical accountabilities. Horizontal LN accountabilities are associated with 'engagement in joint activities, negotiation of mutual relevance, standards of practice, peer recognition, identity and reputation, and commitment to collective learning' (ibid). Through those, trust relations are established, actions needed to be performed by all the members become easier, and feedback loop routines are created.

Experimentation in innovation and industrial policy requires diverse coalitions and LN are well positioned in that respect. This is best achieved through incremental changes, which reduce the risks of trial and error. The bigger the required changes, the riskier it is to inaugurate reforms. The ultimate sign of successful experimentation in innovation and industrial policy is when entrepreneurs in LN member organisations can initiate and manage programs without statutory authorization. However, this may be impossible in many situations, and the range of changes may be much more of incremental but cumulative nature. The ultimate success of LN is if they can induce

national politicians to consider and pass laws or regulations that otherwise would never have been entertained.

The legitimacy basis for the range of experiments of LN members is a diverse coalition based on the multiple networks in which members are engaged. This is the basis of LN autonomy, which similar to history successful agencies is de facto 'politically forged' (Carpenter, 2001). The key to this is that LN bypasses conventional principal-agent policy model by establishing link directly to all stakeholders involved as providers or benefices in innovation and industrial policy.

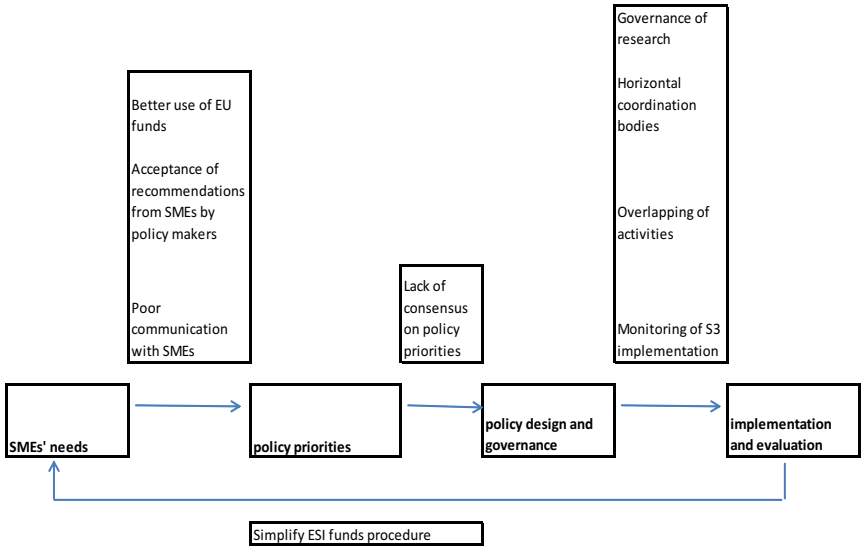
The autonomy of LN will be earned once the network has demonstrated a capacity for experimentation, when it has gained a reputation among stakeholders, and when it has been perceived as different from the dominant interest groups (Carpenter, 2010). Its strength is that it does not depend on any individual group but instead operates as a successful broker among the various agents and interests involved in industrial and innovation policy. In that respect, LN should de facto enhance the participatory energies of its stakeholders and reengage state with the non-state stakeholders through democratic participation. So, LN is the organisational solution to democratic politics which neither autonomous SDA can do nor a centrally coordinated experimentation of Chinese style.

If we take the EU 3S as the test case the critical challenge from accountability perspective is how to ensure that strategy gets converted into implementable programs and projects rather than being a separate range of activities run based on conventional criteria of Structural Funds. This would require a much closer connection between 3S and Operational programs as the close connection between design and implementation and feedbacks are essential to experimental innovation policy.

4. Probing 'Learning Networks' in the S3 context

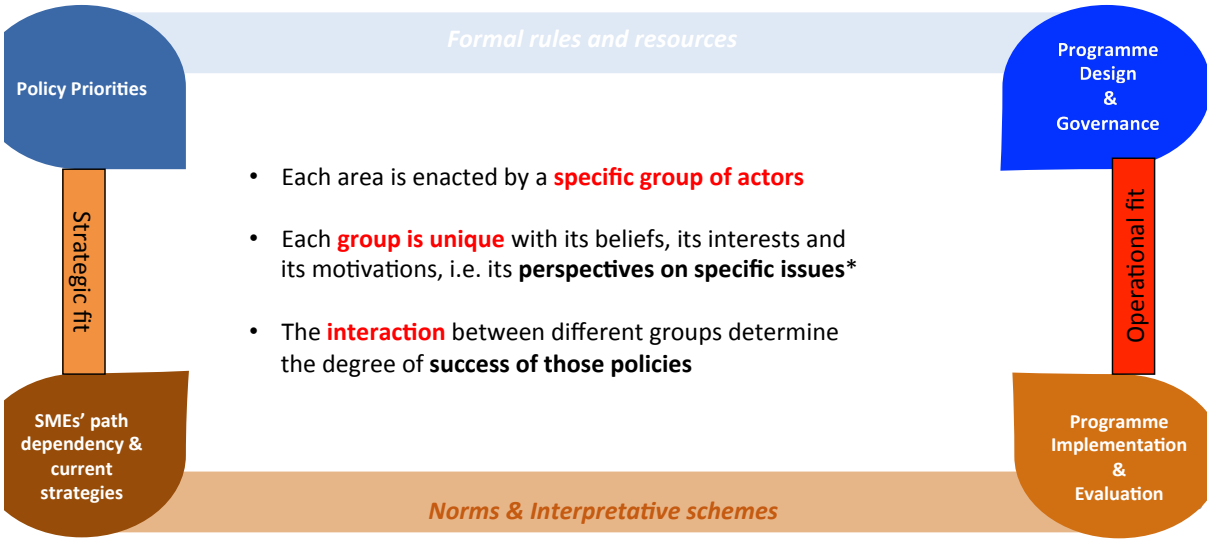
Based on a Training Workshop on LN for Croatian policy stakeholders in 3S, a scheme below indicates specific areas of SS policy processes where LN can be deployed to facilitate improvements in design and implementation. For further details, see Tsekouras and Kanellou (2018).

Figure 1: A**reas of potential implementation of Learning Networks in the Smart Specialization policy process**



Thinking more analytically and going beyond just a collection of implementation and design challenges our training workshop has shown that in the 3S context, LN should address two critical challenges. The first challenge is Strategic Fit, or consistency between policy priorities and SMEs needs, which is about the issue of appropriateness and relevance of strategy. The second challenge is an Operational Fit, or consistency between policy design and governance with the implementation and evaluation processes. (Tsekouras, G., Marshall, N and Kanellou, D 2017).

Figure 2: Strategic and operational challenges of innovation policy



Source: adapted from Tsekouras and Kanellou (2018)

The training workshop has indicated that there are several typical situations where participants could observe the lack of strategic and operational fit (Tsekouras and Kanellou, 2018):

Lack of Strategic Fit emerges when for example beneficiaries apply on the basis of current not future, needs, ignoring the potential of innovation; when call for proposals open later than announced, and SME needs change in the meantime; when models from developed regions influence offered services by, e.g. focus on high-tech and ignore low absorptive capacities of SMEs in less developed regions (LDRs); when application system focuses on the 'tick the box' syndrome where procedures are followed but little value generated for beneficiaries.

A lack of Operational Fit is present when procurement rules are not followed-up properly, when it is difficult for SMEs to find relevant information (the 'spaghetti' problem); when bureaucratic procedures and forms are excessively formal serving no real purpose; when beneficiaries are different from targeted firms; when SMEs are not explaining well why extensions to projects are needed.

In this context, LN would aim to allow the strategic and operational fit to emerge and to receive continuous feedback on implementation challenges. Also, Strategic fit (designing process issues) and Operational fit (implementation process issues) represent the criteria for accountability of LN. Strategic and Operation Fit issues will be the centre of LN focus and will enable LN to reveal, explain, and justify actions and changes initiated by their members concerning administrative, legal, financial or other responsibilities.

5. Conclusions

The motivation for our paper is 'a disconnect between the rhetoric which calls for a more experimental public sector, and the reality of a public sector compliance culture that is intolerant of mistakes and failure' (Morgan, 2016). We argue that this gap is due to the conflict between the need for experimentation and demand for public accountability. The existing approaches do not have a satisfactory organisational solution to this issue.

As a way to overcome the trade-off between accountability and experimentation, we offer 'learning networks' as a governance solution. Principles of 'action learning' and 'learning networks' are being developed as a governance mechanism to embed experimental approach into conventional public programs. Benefits of Learning Networks are that they can represent structured critical reflection from different perspectives as they bring together various stakeholders. By bringing diverse perspectives, solutions to joint problems can be identified, and implementation facilitated.

We posited LN as an organisational solution to experimentation in innovation and industrial policy in the context of several new policy approaches which all have experimentation as their key feature. These are: Smart Specialization Entrepreneurial Discovery Process by Foray; Experimental governance by Sabel and Zeitlin; Problem-driven iterative adaptation by Andrews et al.; Experimentation- feedback – adaptation by Crespi et al.; and Directed improvisation (variation- selection – niche creation) by Ang. We recognise that all these approaches face the challenge of how to reconcile the experimentation with the requirements for accountability of the public policy. Out of these five approaches, only experimental governance and Directed improvisation provide solutions to resolve the trade-off between experimentation and accountability. Other approaches assume that the issue does not exist or that these issues can be subsumed under the carpet by assuming developed technical – operational and political capabilities of implementing agencies.

Experimental governance approach rests firmly on the assumption that the experimentation of SDA can be based on them being exempt from conventional rules of public financing. This is akin to legislative 'free trade zone' which can be wholly incompatible, especially the more the SDA are close to being considered flagship policy initiatives. 'Directed improvisation' enables the diversity of experimental approaches framed within vaguely defined policy guidelines out of which central government can select those initiatives which turned out to be politically desirable. This solution would be quite tricky to implement in conditions of democratic participation as it assumes a high degree of informality in the institutional system combined with substantial centralised control. Hence, we argue that LN is the governance solution appropriate to conditions of democratic participation. They do not require 'legislative enclaves' as SDA, and they do not assume a high of informality combined with centralized control. They are the source of experimentation in innovation and industrial policy, which can be a potential driver of experiential learning and adaptation in participatory democracies.

Shared experimentation within LN can reduce the perceived and actual costs of risks in trying new things. By sharing experiences, LN can provide support and open new lines of inquiry or exploration. Shared learning helps separate 'the wood from the trees', i.e. identifying causes and consequences, primary from derived problems (Tsekouras and Kanellou, 2018).

We are aware that the 3S method and other approaches have implicitly assumed some learning network dimension. However, we believe that the LN as governance and learning mechanism would significantly resolve contradictions between experimental innovation policy and the administrative requirements for conventional public policy.

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