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Risk Definition and Risk Governance in Social Innovation Processes: A Conceptual Framework

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Abstract

This paper explores the relationship between risk and innovation in public services, exploring the state of the literature across different disciplines and the academic as well as grey literature. Based on the current scholarship, it suggests an alternative framework to approach risk, emphasising the importance of differentiating between the different types of risk (risk or uncertainty) and the type of risk management (soft or hard approaches, proactive or reactive). Based on these elements of public sector risk, the paper offers a typology of risk types and management approaches that indicates different effects on the type of innovation in public services.

I. Introduction

Innovation and risk taking are inextricably linked. As Hartley aptly states “[i]nnovation, by definition, is uncertain in both process and outcome” (Hartley, 2013). Tidd and Bessant (2009) estimate that about 45% of innovation projects in the private sector fail while over 50% exceed their initial budget and/or timeline. Numbers in the public sector are likely to be similar. Yet, it remains a common notion that the public sector is inherently risk adverse¹ (Jayasuriya, 2004; Patterson et al., 2009), while governments demand increasingly more (risky) innovation (e.g. DIUS, 2008). In the light of Current economic rigours and media scrutiny of any form of public service (Patterson et al. 2009), an aversion to risk does not seem surprising.

Despite this, even those that claim to acknowledge the connection between risk and innovation have little to say by ways of how to balance risk and innovation. London-based think tank Nesta, for instance, dedicates a single line to the question of risk in public service innovation, acknowledging that it is – indeed – “important” (Nesta, 2013).

This paper focuses on the nexus of risk and innovation and critically reviews the literature as to the current state of knowledge. It also takes into account the ‘grey’ literature and policy advice directed towards practitioners. Identifying a clear lack of engagement with risk and innovation across the research community, the paper sets out to suggest an alternative theoretical framework in part two. This is based on a more differentiated treatment of risk, distinguishing two different types of risk across different loci and stages.

¹ *The UK National Audit Office reports that six in ten public sector managers feared the risk of missing an opportunity to improve service delivery because of a general tendency for risk minimization (UK National Audit Office, 2000: p.5).*

II. Risk and Innovation – State of the Literature

This paper builds on Brown and Osborne's (2013) review article on risk and innovation in public services, which is the most recent comprehensive treatment of the topic. It also adopts their preferred definition of innovation as "the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group organization or wider society" (West and Farr, 1990:3). As such, innovation is not synonymous with any change process. Rather, it is "a distinctive category of discontinuous change that offers special challenges to policymakers and service manager alike" (Brown and Osborne, 2013: 188). Innovation in public services thus takes the form of non-linear developments (Van den Ven et al., 1999). Building on Brown and Osborne (2013), risk is conceptualised here as entering the innovation process not only at the "development and implementation" stage (Brown and Osborne, 2013: 189) but already at the prior invention stage. It is here that uncertainty inevitably becomes part of the process. We argue below that this type of risk can be both a trigger and an obstacle for innovation.

Brown and Osborne (2013) suggest that risk can be conceptualised on three different levels ("locus of risk"): *consequential risk* at the level of the individual public service user, *organisational risk* on the level of the public service organisation and its staff, and *behavioural risk* at the level of the wider community and environment. They hypothesise that a holistic framework for the treatment of risk in public service innovation (evolutionary, expansionary, and total) can be mapped against the three modes of risk governance identified by Brown and Osborne. This map builds on the work of Renn (2008) who differentiates between three approaches to risk: technocratic risk management, decisionistic risk management, and risk negotiation.

Technocratic risk management is based on the minimisation of risk through expert decision-making. Risk, in this view, can be defined objectively and minimised through scientific evidence (Brown and Osborne, 2013: 197). However, Renn points out the

shortcomings of technocratic risk management, which are bounded rationality in all human decision-making and the fact that (acceptable) risk is more often socially constructed than it is objectively defined (ibid).

Decisionistic risk management extends technocratic risk management by including into the process the possibility of discourse on the evaluation of identifiable risks. While risk is now vetted in both positive and negative terms, the decision authority in Renn's decisionistic risk management is still limited to politicians, excluding a vast number of other stakeholders. This leads to a limited point of view from which risk is being analysed (Brown and Osborne, 2013: p.195).

Finally, Renn's third approach, transparent risk governance "is the core of a genuine engagement with the nature, perceptions and contested benefits of risk in complex situations" (Brown and Osborne, 2013: p.198). This approach is inclusive of all key stakeholders and transparent in its decision-making, a process that is aided by new Information and Communication Technologies that help to connect stakeholders in public services. Brown and Osborne suggest that this description fits most closely to the risk environment of modern public services and therefore propose that "risk governance, rather than risk minimisation or management, is the appropriate framework for understanding and negotiating risk in innovation in public services" (Brown and Osborne, 2013: p.198).

Brown and Osborne are early advocates of more in-depth empirical research on the connection between risk and innovation (Brown, 2010; Osborne and Brown, 2011a), finding that the current literature does not adequately deal with risk and its role in public service innovation. They identify four main works: Harman, 1994; Hood, 2002; Lodge, 2009; and Vincent, 1996. Whereas Harman discusses the negative impact of risk management on public sector accountability, Vincent argues that the public eye is fiercely watchful of public sector activities, leading to increased risk management as a means of avoiding the blame of other officials and the wider public. Along similar

lines, Hood introduces the imagery of a “blame game” as risk management. Risk management on his account is about avoiding blame and/or attributing it to other parties. Lodge, finally, agrees with Brown and Osborne that different “variations in instruments” (Lodge, 2009: p. 399) are necessary to offer effective risk management in the public sector. He also identifies the obsession with regulation to ‘insulate’ public services from risk and advocates a more complex system of risk appraisal that moves beyond Hood’s observed “blame game”.

Commencing with Brown and Osborne’s (2013) review, a further literature search was conducted using Web of Science, JSTOR, and Google Scholar. In a first step, the search terms were restricted to “public sector”, “public service”, “innovation”, and “risk”, with all terms treated as necessary and the domain limited to peer-reviewed articles. This search yielded only one further result, in a non-peer-reviewed publication for the New Zealand government (Bhatta, 2003).

Bhatta (2003) also acknowledges the gap in empirical knowledge regarding the relationship between risk and innovation in public services. In particular, he notes that there is a qualitative difference between the public sector and the private sector as far as risk is concerned – namely the existence of ‘wicked problems’ and the fact that decisions, even when made under uncertainty, need to live up to the standards of democratic scrutiny rather than being unilateral ‘executive decisions’² (Bhatta, 2003: p.2). “Wicked problems” (Churchman, 1967) denote problems that are either very difficult or impossible to solve due to a host of factors, such as competing moral values, interdependencies, lack of information, etc. Public services are particularly prone to such wicked problems because allocation choices do not just result in monetary differences, but are attached to public goods, such as health or defence. Moreover, media scrutiny has increased rapidly over the last 50 years, and public

² *While this is a de facto possibility even in democratic systems, there is always a potential loss of reputation and, at worst, votes that looms as a consequence, even if a decision should prove overall beneficial.*

service organisations have had to battle numerous scandals of mismanagement and service failure.

This means that success – unlike in the private sector – cannot be judged “on average”: even if the majority of a public organisation’s service decisions turn out to be beneficial and successful, there is still little tolerance for any sort of even occasional ‘failure’. This leads to “playing safe” behaviour and “incremental pluralistic policy formation that enables the policies to move forward but only marginally at a time” (Bhatta, 2003: p.6). Bhatta concludes that, if innovation in the sense set out in this paper is truly to happen, we must learn more about the factors that influence public service managers’ risk appetite; he suggests different institutional, contextual and political variables that could be explored in this context (Bhatta, 2003: p. 9).

To extend the previous results further, the search was widened to include “uncertainty” as an alternative for risk, and made the word “public” optional. Moreover, the grey literature was included. The resulting search brought up over 350 results that were narrowed down by manual evaluation. This provided several additional groups of literature in support of those in Brown and Osborne (2013).

1) Financial Accountability and Risk

As described by Brown and Osborne (2013), risk management in the public sector is usually associated with a technocratic, quantitative assessment of potential financial risk. One stream of this literature associates this financial due-diligence and technocratic risk management with democratic and public accountability. A special issue of *Financial Accountability and Management* (August 2014) dedicated to public sector risk entails two articles that – while not directly addressing innovation – offer interesting insights for the innovation process in public service organisations (PSOs). Palermo (2014) finds that risk managers themselves are a source of innovation in the public sector by defining best practices for their respective service area (p. 337). He also emphasises that key skills for the successful risk manager include

communication and relational abilities. Far from the technocratic approach, Palermo suggests that soft skills and experiential learning evolve new risk management techniques. This experiential communication approach rooted in technocratic financial accountability could apply to all three different types of innovation described by Brown and Osborne (2013). Empirical testing beyond Palermo's case study will be necessary however to show whether such flexible approaches really can accommodate innovation in a more flexible way.

Similarly, Andreeva et al. (2014) argue that risk management all too often results in regulation. Hard guidelines, however, result in a loss of flexibility that can stifle innovation. Regulations also do not address unforeseeable risks; rather, their rigidity often makes it even harder to address previously unanticipated risks. PSOs are thus not necessarily better insulated from risk just because of regulatory standards. Rather, they suggest, "knowledgeable oversight" should be exercised, offering a more flexible approach to risk management, much akin to Palermo's relational communications model. However, the responsibility for the provision and maintenance of public good provision and the balancing of market failures is no longer solely in the hand of governments. Andreeva et al. (2014) find that such "knowledgeable oversight" is exercised by a wider group of stakeholders, including the private and the non-profit sectors. At the same time, this dilution of responsibility also poses important new challenges to accountability for public services.

What both papers demonstrate is that accountability and risk management are inextricably linked in public service provision. For ease of scrutiny and comparison, financial data seem to remain the preferred unit of measurement. Risk management and democratic accountability are thus two sides of one coin. As Bhatta (2003) suggests, creating more capacity for innovation in public services will require a change in the sector's risk aversion and in the context that produces this phenomenon. Introducing new forms of accountability through novel regulatory approaches that move beyond the numbers seem to be one strategy of doing so, at

least based on Palermo's case study findings. This also resonates with Renn's (2008) third approach of risk governance.

2) Public-Private Partnerships (PPP) and Private Finance Initiative (PFI)

If risk management is a form of public accountability in the democratic process, and accountability requirements, vice versa, are among the main reasons for public sector risk aversion, the question arises who is actually accountable for which risk in public service provision. As Andreeva et al. (2014) demonstrate, accountability is spread across different actors that go beyond the public sector. Public-private partnerships (PPPs) (i.e. the contracting out of services to for profit and non-profit organisations) has not only been hailed as a potentially significant source of innovation, it has also become common practice across advanced welfare states (Freshfields et al. 2005).

Evaluating Labour's encouragement of PPPs, Hood and McGarvey (2002) found that Scottish local authorities tended to make inefficient risk allocation choices when it came to PPPs. In particular, they highlighted that there was too little awareness of risk management in collaborations across different sectors. Most importantly, they noted that the inability to manage risk efficiently and effectively was what led PPPs to lag behind commercial operators in terms of value for money and innovation.

Four years later, Hood et al. (2002) also pointed out that PPPs "have been criticised as representing poor value for money" (p.40) and highlighted that a lack of transparency in risk management – on both sides – was inhibiting democratic accountability. Further research will need to show whether this could also apply to the potential to innovate.

In a non-peer reviewed discussion paper, Lewis (2001) also described PPPs as essentially risk-sharing relationships between the public and the private sector, and links the optimal allocation of risk to efficiency and innovation in outcomes. However, Lewis does not describe what such an optimal risk allocation would look like.

One particular form of PPP that is said to promote innovation is the Private Finance Initiative (PFI), however, the evidence is at best ambivalent. The PFI is a special form of PPP that “relates to the provision of capital assets for the public service” following a “highly prescriptive legal framework” (Ball and King, 2006). Based on their review of the literature, Ball and King (2006) argue that risk transfer is key for a PFI to deliver value for money. Data from various assessments (e.g. HM Treasury Task Force, 2000; Commission on Public Private Partnerships, 2001; National Audit Office, 1997 and 2000) however, suggest that risk is inefficiently allocated and outcomes not superior to those provided by the public sector only. On the contrary, PFI projects tended often tended to lead to negative outcomes, such as higher costs or severe time delays (Ball and King, for instance, posit that “it might require £1 billion to bring the stock of PFI schools up to standard” in Scotland alone; Ball and King, 2006: 39).

More recently, Ball et al. (2010) concluded that that the risk transfer between the public and the private sector is asymmetric in so far as “if things go well [...] the private sector will benefit, but if things turn out badly then the public sector client finds it hard to exact the penalty regime laid down” (Ball et al., 2010: 289). This confirms a similar conclusion previously made by the Commission on Public Private Partnerships (2001). Ball et al. furthermore formulated three policy recommendations. These were that evidence-based risk assessment should be preferred over purely subjective risk assessment (the latter remaining the standard in the public sector), if there were few but crucial risks, then risk transfer should concentrate on these, and that contracts and indicated figures should be seen as *estimates* that require thorough risk assessments in order to fully appreciate their value.

More positively, on the other hand, Corner (2006) used British data to evaluate the PFI and found it ambivalent regarding risk allocation and cost efficiency, but also, as innovation driver. However, this is contingent on efficient risk management. He concluded that the advantage of the PFI had been to shift the risk focus away from a

purely financial perspective to decisions about efficient risk allocation in the delivery of services.

Based on Laughlin's previous work on PFIs, Broadbent, Gill and Laughlin (2008) furthermore analyse PFIs in the context of the British National Health Service (NHS). They find that actuarial risk management prevails in PFIs, i.e. the predominant focus on quantitative risk management crowds out more qualitative concerns, such as reputation or social risks. In subsequent project evaluations, PFIs also followed a strict accounting logic in terms of retrospective risk analysis, which led to a narrow emphasis on certain quantitative risks while all qualitative risks were ignored. Broadbent et al (2008) suggest that efficient risk allocation in PFIs must take into account both quantitative as well as qualitative risks in decision-making processes, which can only be achieved if risk management approaches move beyond a strict accounting basis.

Finally, Wall and Connolly (2009) build on Broadbent and Laughlin (1999) previous analysis of the performance of PFIs in the UK. They acknowledge that previous appraisals of PFIs have been largely negative, but instead point to a slow, but steady learning curve. For instance, they find that a similar level of public service infrastructure investment would not have been possible without the PFI. At the same time, Wall and Connolly caution that the transfer of risk will always entail one stronger and one weaker contracting partner. They welcome further developments in the refinement of PFI structures and contracts.

3) Private Sector Risk and Innovation Analogies

The assumption of risk aversion permeating the public sector has been strongly implied by the previous papers, and generally permeates the public service management literature. Thus, Borins (2014) seems to take it as a given that the public sector (and those that collaborate with it) is intrinsically risk averse (p. 91).

Hood and Rothstein (2000) differentiate this picture by pointing to the various types of risk that the public sector faces. These do not just include financial risks and risks to service users, but also risks to third parties and to the service providers themselves (p.1). Therefore, they criticise the one-size-fits-all approach that has been adopted across government. Like the private sector, Hood and Rothstein argue, the PSOs need to adapt their risk management strategies to the specific type of risk and point in the planning process in order to reach similar levels of innovation and efficiency. In their view, this can be achieved through a systemic approach to risk management, based on open and extensive deliberation and communication *across* and not just within policy domains.

Nonetheless, the comparison with the private sector and its approach to managing risk and innovation can provide useful insights for the public sector. In fact, Bozeman and Kingsley (1998) take a different approach and challenge the assumption of a risk averse public sector. Their study finds “very little evidence of the *incidence* of risk aversion or that the incidence is greater in the public than in the private sector” (p.116). Instead, they identify three factors as indicative of the risk approach taken by *any* organisation: 1) the more trust employees feel they have from their superiors, the more calculated risks they are willing to take; 2) clarity of goals also leads to a more open risk approach; and 3) the more formalism and red tape, the more risk averse an organisation’s culture. Thus, factors such as size and management style seem to be more indicative of an organisation’s risk management approach than the differentiation between public and private sectors. Hartley (2013) confirms this by comparing public and private features of innovation, indicating that organisation size and maturity in particular accounts for differences in behaviour between the two sectors.

4) Political Accountability

One difference that affects the relationship between innovation and risk, however, is highlighted in the literature on public policy and regulation: accountability and transparency. Hartley (2013) points out that PSOs can learn from the private sector as regards decision-making processes. For instance, she suggests that PSOs adapt management tools, such as constructive challenge meetings or competitor analysis (Hartley, 2013: 53). But accountability markedly differs from the private to the public sector. The public sector's values demand a high degree of transparency at all stages of innovation, often, as Hartley points out, in "the full glare of media publicity" (p. 54).

This ties in with Hood's model of the blame game that was part of the original review by Brown and Osborne (2013) and dominates the public policy literature on risk and its possible nexus to innovation. As describes beforehand, the blame game affects risk management at all phases. Because public scrutiny and the potential cost of being responsible for a failure are high, there is an incentive for those in decision-making powers (on an individual and organisational level) to shift risks to other stakeholders within their policy network. This thematic category thus highlights the importance of reputational risk in particular.

Feller (1981) refers to this as "public-sector innovation as 'conspicuous production'", echoing Hartley and Hood by pointing out that in PSOs, the sanctions associated with a failed innovation are often perceived as more severe than the benefits derived from a successful public service innovation. Therefore, individual employees in PSOs have little incentive to innovate unless they are induced by specific reward schemes, for instance innovation prizes (e.g. Borins, 2014 in the context of the USA).

5) Economics Literature on Risk

The economics literature on risk offers further insights on the contextual factors that link uncertainty and risk to innovation (e.g. Varian, 1992; Mack, 1971; Kahneman and Tversky, 1979). Mack juxtaposes how risk and uncertainty can affect innovative alternatives in public services. She suggests that PSOs may use uncertainty as a tool to deselect innovative alternatives, although their "net utility (...) could be expected

to be greater than that of the tried and true” (Mack, 1971: p. 5). The more uncertainty is attached to a particular option, the more likely it is to be discarded, uncertainty weighing as a criterion against its expected benefits. However, uncertainty can also work in favour of innovation. Mack suggests that uncertainty can provide some “leeway for a rearrangement of fact and emphasis” (p.7). In other words, uncertainty may mask potential risks or potentially undesirable outcomes that are associated with a particular innovative option, which enables its proponents to enact it. Uncertainty of results is thus a contextual variable, and may work as a barrier or a driver of innovation at the same time.

On risk, Mack also emphasises the importance of context. As long as a potential risk is known and considered manageable, it is not necessarily a barrier to innovation. However, other contextual factors, such as political accountability, may deter PSOs from choosing innovative service options that are associated with risks deemed unacceptable or inopportune, even if they are manageable. Renn’s (2008) discussion of the social construction of risk provides further evidence for Mack’s point.

6) Practitioner’s Guides

Treating more specific scenarios and/or audiences, think tanks and international organisations have been publishing practitioner’s guides on managing risk and innovation. However, their usefulness for extrapolating wider best practice findings is limited in scope.

Brown and Osborne (2013) refer to guides published by think tanks, such as the National Endowment for Science Technology and the Arts (NESTA) and the Young Foundation (NESTA/Young Foundation, 2008). The UK government has furthermore issued broad guidance (Brown and Osborne (2013) cite HM Treasury, 2004; NAO, 2000; the Audit Commission, 2007; and the UK White Paper “Innovation Nation, DIUS, 2008). None of these publications, however, offers concrete policy recommendations

or a conceptual nexus of innovation and risk beyond the acknowledgment that the two are related.

In a British context, Michael Power (2004) discusses “The Risk Management or Everything” for London-based think tank Demos. Arguing that risk pervades every decision but is particularly relevant for the public sector since it aggregates responsibility for its citizens, Power also points to the “moral economy” of risk (p. 60). He concludes that, while more attention to risk has led to overall better decision-making in government, what needs to be addressed is the sector’s occupation with reputational risk management over quality. This, so he concludes, prevents important innovation in public services (p.60).

There is also a dedicated membership organisation for risk management professionals in the public sector and in public services, ALARM. Its goal is to provide a pool of shared knowledge focused on making “a positive contribution to loss reduction in the Public Sector” (ALARM website). This mission statement highlights the organisation’s understanding of risk management in what Renn (2008) denotes as technocratic risk management with a narrow emphasis on the minimisation of financial risk.

Similarly, the CCAF addresses a North American audience and suggests that innovation and risk management do not necessarily have to cancel each other out as long as formal rules are minimised and regularly reviewed for their continued relevance. This is referred to as “tailored rules” and confirms the importance of flexibility mentioned by previous strands of the theoretical literature.

The World Bank published a discussion paper on “Innovations and Risk Taking” (Campbell 1997) in the context of local government in Latin American and the Caribbean. While the content is very much geared towards the context of Latin America and emerging democracies, the report concludes that decentralising decision-making and the spread of responsibility across different levels of

government – with a preference for bringing the responsibility of services to the lowest possible level of government – can spur innovation on a local level. This insight may be of value for public services, however, further research is required to assess the applicability of Campbell’s (1997) findings for PSOs.

The aforementioned practitioner’s guides provide, in certain cases, some empirical evidence that can help us understand how different approaches to risk management affect innovation in PSOs. Some echo findings from the more theoretical research literature presented beforehand. For instance, Campbell’s (1997) policy recommendation for the spread of responsibility for risk management to all levels of a PSO confirms the gist of Palermo’s (2014) decentralised communication model. ALARM and the CCAF firmly stand in the more traditional fields of the actuarial risk and health and safety literatures and do not engage with the concept of innovative behaviour as a separate goal of risk management. Power’s (2004) “moral economy” and its effects on risk management take up Renn’s (2008) concept of socially constructed risk. It also reinforces Hood’s (2012) “blame game” approach, emphasising that risk management may be a political exercise for PSOs in which reputational risk is a constant factor in the delivery of public services.

Conclusion

Including these additional strands of literature into the review have highlighted some further leads on the relationship between risk management and innovation in public services. The financial risk management literature has considerably widened beyond a technocratic risk management approach, now including soft factors, such as communication structures (Palermo, 2014) or the division of responsibility for risk management (Andreeva et al. (2014)). Empirical evidence on PPPs has been mixed at best, with PFIs in particular being criticised for their inefficient allocation of risk and their effect on obstructing rather than spurring innovation in public services, at least outside of Australia (e.g. McGarvey, 2004, Ball et al. (2010)). Moreover, PSOs do not seem to be intrinsically more risk averse than the private industry (Bozeman and

Kingsley (1998)), although Hood and Rothstein (2008) caution that media scrutiny and political accountability are strongest for PSOs, affecting their approach to risk management. This is also confirmed by Hartley (2013), and further developed by Hood (2012) in his work on “blame game” strategies, evidence for which has been found in the field of medical professionals regulation by Flemig (2014). The economic literature and its differentiated assessment of the sometimes counteracting effects of risk and uncertainty on innovative behaviour in PSOs further emphasises that importance of differentiating between the two concepts. Finally, practitioner’s guides provide some empirical support for the theoretical findings, be it in a Latin American (Campbell, 1997), British (ALARM, Power, 2004) or North American (CCAF) context.

Nonetheless, both the research literature on risk management as well as the grey literature lack a direct focus on the connection between risk management approaches and innovation in public services. Further research is required to test the applicability of the findings presented beforehand in the context of social in PSOs. The following section makes a first attempt at providing a conceptual framework for such research.

III. Conceptualising Innovation and Risk

Brown and Osborne (2013) propose the following holistic framework for risk governance and innovation in public services (see table X below). They connect the three risk management approaches identified by Renn (2008) with three types of innovation as defined by Osborne (1998b). These are evolutionary innovation, in which new skills or capacities are used to address an existing service user need, expansionary innovation, in which new service user needs are being addressed by existing skills or capacities, and, finally, total innovation, which denotes a new service user need being addressed through new skills or capacities (Brown and Osborne, 2013: 199). Brown and Osborne stipulate that technocratic risk management

provides a framework for evolutionary innovation, while decisionistic risk management can accommodate evolutionary and expansionary innovation. Transparent risk governance, on the other hand, provides the most comprehensive framework that also provides a suitable framework for total innovation.

<i>Mode of Risk Governance/ Type of Innovation</i>	<i>Risk Minimisation (technocratic)</i>	<i>Risk Analysis (decisionistic)</i>	<i>Risk Negotiation (transparent governance)</i>
Evolutionary	X	X	X
Expansionary		X	X
Total			X

Source: Brown and Osborne (2013): 199, reproduced with permission of the authors.

Extending Brown and Osborne’s (2013) holistic framework of risk and innovation, this paper includes two further propositions that have been highlighted by the six thematic strands discussed in the previous section.

Proposition 1: Risk management approaches should differentiation between risk and uncertainty in their effects on innovation.

The economic theory literature highlighted the distinction between risk in the classical sense (referred to as “operational risk”) and uncertainty, i.e. unquantifiable risk that cannot be appraised *ex ante* (see for instance Mack, 1971). As mentioned in the previous section, these two types of risk are likely to have different, and probably even conflicting, influences on innovation. Therefore, we propose that they require different risk management approaches when it comes to spurring innovative behaviour. The underlying reasoning is as follows: Known risks can be assumed to drive innovation in so far as they provide the opportunity to find new ways of

harnessing these known risks (e.g. new waste management techniques in environmental sustainability, new medication in mental health treatment, etc.). Thus, known risks most likely spur expansionary innovation.

At the same time, these known risks may also be barriers to innovation, namely through regulatory and contracting specifications they invite. Statutory bodies initially bear responsibility for all service risks that they then selectively transfer to service providers if necessary. Quantifiable risks are often addressed through extensive regulation and other attempts to make control and minimise risk. In service contracts, this is likely to lead to a decreased potential for innovation – innovation may be ‘in breach of contract’ although it may bring a net benefit for all parties involved.

Uncertainty, on the other hand, can spur innovation by ways of sudden shocks. Since uncertainty is unquantifiable and cannot be known *ex ante*, the innovation it can potentially spur is likely to be of spontaneous nature and not planned. At the same time, as findings from the private sector suggest, environments and organisations that are prone to high levels of uncertainty will be perceived as “riskier” overall and there may be a decreased willingness for innovation or in fact any change that deviates from the status quo (Bozeman and Kingsley, 1998; Mack, 1971). In this case, the approaches described by Palermo (2014) and Andreeva et al (2014) on informal and more extensive communication networks across the entire organisation provide strategies for PSOs to manage uncertainty. Uncertainty can thus only be managed through an organisational culture open to constant change. Innovation spurred by uncertainty is therefore likely to be total, encompassing new skills and new needs to be addressed. This follows the reasoning of Peters (1989), who suggested that organisations will need to proactively manage chaos (similarly defined as uncertainty) and channel its driver for constant innovation in order to succeed.

Type of Innovation	Risk	Uncertainty
Evolutionary	Technocratic management	risk
Expansionary	Decisionistic management	risk
Total		Organisational Culture

Proposition 2:

Risk management can be divided into proactive and reactive management techniques

Reflecting on the literature, there seem to be two different, and possibly separate, risk management strategies. *Proactive risk management* focuses on avoiding a risk from materialising in the first place, or, at least, minimising its occurrence or magnitude. It is also a part of the organisational culture necessary to manage uncertainty, i.e. the need for sudden and unanticipated innovation.

Reactive risk management, on the other hand, addresses risks that have already materialised and whose effects need to be mitigated. It applies to risk rather than uncertainty because of risks being known ex ante. It is likely to spur evolutionary and expansionary innovation as a reaction to previously identified risks. Best practices that are shared across PSOs can be an example of reactive risk management approaches.

Recent policies in the UK seem to confirm this differentiation. There has been a policy drive towards anticipating and preventing risks (e.g. the integration of health and social care in UK councils, seeking to prevent physical and mental isolation rather than facing their potential consequences of hospital or care home admission).

Type of Innovation	Proactive Management	Risk	Reactive Management	Risk
Evolutionary				Risk
Expansionary				Risk
Total	Uncertainty			

IV. Conclusion: Toward a New Typology of Risk and Innovation

In the previous section, we presented the risk and innovation typology proposed by Brown and Osborne (2013). We use this as a starting point and incorporate our two additional propositions to provide a framework for further empirical testing.

As discussed in the previous section, we differentiate between risk and uncertainty. These risk types are mapped against two different types of approaches to risk: hard risk management and soft risk management.

Type of Risk Management	Technocratic Risk Management	Risk Analysis	Risk Governance
Hard	Actuarial Risk Minimisation	Regulation/Rules	---
Soft	---	Delegation of Risk Management across PSO	Communication and Deliberation

Hard risk management encompasses technocratic and rule/regulation-driven risk management. These approaches are set at a high level in the PSO (management guidelines) or its political environment (e.g. statutory regulation). They are best suited to manage known risks and provide the possibility for evolutionary innovation.

When applied to uncertainty, however, these hard risk management approaches stifle innovation. Since uncertainty cannot be specified a priori, hard risk management approaches are, as Mack (1971) argued, likely to deter PSOs from adopting innovative alternatives in favour of traditional options that follow the existing rules and regulations.

Soft risk management approaches stand for risk governance approaches based on communication and changes to a PSO's organisational culture. For known risks, this

may mean risk management at lower levels of the organisation, i.e. the frontline staff and their immediate managers. With the power to address risk at this grass-root stage, they can also react more directly to new service user needs. Thus, soft risk management approaches in the case of known risks are likely to result in expansionary innovation. However, as Andreeva et al. (2014) caution, this diffusion of responsibility may also backfire and lead to a “blame game” when it comes to public service accountability (Hood, 2012).

Finally, soft risk management approaches are suggested to manage uncertainty, leading to a PSO culture that “thrives on chaos” (Peters, 1989) and invites total innovation in public services. This is dependent on a successful system of communication and joint decision-making across the PSO (Palermo, 2014).

<i>Type of Risk/ Risk Management Approach</i>	Risk	Uncertainty
Hard risk management	Evolutionary Innovation (top-down management) risk	Stagnation (minimisation approach)
Soft risk management	Expansionary Innovation (people-driven management) risk	Total Innovation (“Thriving on Chaos”)

We suggest that PSOs will never deal with only one type of risk at a time. Rather, PSOs must address risk and uncertainty constantly, and at different levels. For instance, there may be known risks for service users in care homes, such as their frailty and specific patient history. At the same time, there may be uncertainty about future funding for a new initiative or the effects of a new service, such as the cooperation with a primary school. The holistic framework we propose points to the most appropriate risk management approaches given a known risk or an uncertain situation. It also provides an insight on the kind of innovation that is most likely to succeed given the particular combination of risk type and risk management approach.

Of course, these theoretical stipulations will need to be tested empirically. The authors are part of the EU FP7 project “Learning from Innovation in Public Sector Environments”, and will gather empirical data across four European countries (which are Italy, the Netherlands, Slovakia and the UK) on the basis of this conceptual framework. Further empirical results will provide for further illustration and will be used to confirm or reject our new typology of risk and innovation in public services.

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