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Local government strategies in the face of shocks and crises. The role of anticipatory capacities and financial vulnerability

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Abstract:	This paper, building on governmental financial resilience literature, and using data from a survey of over 600 local governments in Germany, Italy, and the UK, looks at the role that external shocks, anticipatory capacities, and associated perceived vulnerabilities, play in determining different organizational response strategies (i.e., "bouncing back" vs. "bouncing forward" strategies) at times of crisis. In the face of shocks, higher perceived vulnerabilities will especially be associated with bouncing back strategies, whereas the presence of anticipatory capacity will be associated with bouncing forward strategies.

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INTRODUCTION

In recent years, governments have faced a combination of multiple environmental shocks that have resulted in direct and/or indirect financial consequences. The relevance of these phenomena is reflected in an emerging body of research that has focused on how governments respond to crises and shocks. Most contributions in this area have described, classified and explored types of governmental responses (e.g., Kickert, 2012; Kickert and Ysa, 2014; Overmans and Noordegraaf, 2014). However, there is a relative paucity of research into the processes taking place at the micro-organizational level, i.e. of the organizational capacities, structures and systems which are (put) in place to face shocks, as well as the role played by organizational actors' perceptions in affecting responses (Weick and Sutcliffe, 2001). Similarly, whereas in the past, general management and organization literature has pointed to the importance of perceptions, sense making and anticipation in coping with shocks (Weick et al., 2005, Somers, 2009), they appear to have attracted less attention in current public sector literature.

This paper contributes to this literature by looking specifically at how governments' responses to shocks are shaped by organizational perceptions of financial vulnerabilities and the presence of anticipatory capacities, i.e., capacities that enable organizations to better recognize potential (financial) shocks before they arise (Boin et al., 2010; Lee et al., 2013; Lengnick-Hall and Beck, 2005; Linnenluecke and Griffiths, 2013; McManus et al. 2007; Weick and Sutcliffe 2001; Whitman et al., 2013).

In exploring the relationships among those variables, resilience may prove a particularly useful conceptual lens, as shown by recent studies analyzing how governments deal with the shocks and disturbances that affect their financial condition (see Barbera et al., 2015, 2017; Davoudi, 2012; Linnenluecke and Griffiths, 2010; Mamouni-Limnios et al., 2014; Shaw, 2012; Steccolini et al., 2017; Sutcliffe and Vogus, 2003). Resilience is a multifaceted concept, yet two main features have been highlighted as defining it. On the one hand, it refers to the capacity to react to crises, *bouncing back* to an original state (Boin et al., 2010: 8; Linnenluecke, 2017: 6; Meyer, 1982); on the other hand, it refers to the capacity to anticipate and cope with the unexpected, *bouncing forward* through the enhancement of, or development of new, capabilities (Meyer, 1982; Somers, 2009).

Our paper draws on the conceptual framework of governmental financial resilience developed by Barbera et al. (2017) and based on multiple case studies [in three country contexts](#), further consolidated through the analysis of about thirty additional cases across 8 countries,

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3 worldwide (Steccolini et al., 2017). This framework explains how different patterns of financial
4 resilience result from the deployment and development of internal anticipatory and coping
5 capacities as well as their combinations and interactions with environmental conditions and
6 perceived financial vulnerabilities.
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10 Building on these previous qualitative findings, which identified the important role that
11 the presence (or absence) of anticipatory capacities and perceptions of financial vulnerabilities
12 have in shaping organisational responses to shocks, the present paper adopts a quantitative
13 approach to explore in more depth the roles of anticipatory capacities, and perceptions about
14 financial vulnerability. More specifically, it explores the roles played by such factors in driving
15 and explaining different governmental responses to shocks as well as how responses are
16 affected by the types of shocks themselves.
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22 The research is based on a survey of German, Italian and UK local governments (LGs),
23 the governmental level nearest to the citizens, which provide an array of ‘tangible’ services and
24 thus directly affect the quality of life of those they serve. LGs have been significantly impacted
25 by recent shocks affecting their finances. The results show that, in the face of shocks, higher
26 perceived vulnerabilities will especially be associated with bouncing back strategies, whereas
27 the presence of anticipatory capacity will be associated with bouncing forward strategies.
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32 The paper is structured as follows. The next section shortly reviews extant literature and
33 presents the conceptual framework and the underlying hypotheses. Section three describes the
34 methods. Section four presents the results. The fifth section discusses them and draws
35 conclusions, also highlighting the implications for practice and research.
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43 **CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT**

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46 Our study draws on the concept of governmental financial resilience, whereby governments’
47 ability to anticipate, absorb and react to shocks affecting their finances is the result of the
48 interaction of environmental conditions as well as organizational dimensions (Barbera et al.,
49 2015, 2017; Davoudi et al. 2013; Lengnick-Hall and Beck, 2005; Linnenluecke, 2017;
50 Linnenluecke and Griffith, 2013; Nelson et al., 2007; Somers, 2009; Steccolini et al., 2017;
51 Sutcliffe and Vogus, 2003). Such conditions and dimensions are discussed further in the sub-
52 sections below, where hypotheses are advanced and the conceptual framework is presented.
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Responses to shocks (dependent variable)

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3 Prior empirical research has shown that organizations pursue a variety of strategies when coping
4 with shocks and crises affecting their finances (see Beerli, 2012; Boyne, 2004, 2006; Hofer,
5 1980; Robbins and Pearce, 1992; Schendel et al., 1976). While such strategies have been
6 described and classified in various ways, they can be traced back to two main approaches.
7 Organizations may embrace *bouncing back* (e.g., retrenchment, buffering, downsizing,
8 cutback) strategies, including increasing taxes and fees, deferring investments, or reducing the
9 costs, scope or size of the organization, and selling assets (Barbera et al., 2017; Steccolini et
10 al., 2017). Other organizations may embrace *bouncing-forward* strategies (e.g., transformation,
11 repositioning, re-orientation). The latter emphasize self-sufficiency, entrepreneurship and
12 innovation by *redefining the modes of service delivery and core activities, as well as improving*
13 *existing services* or supplying new services either to current, or to new clients (Barbera et al.,
14 2017; Steccolini et al., 2017). This paper sets out to explore the respective roles of such factors
15 in explaining the types of responses of LGs to recent shocks and crises (see figure 1).
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28 *Perceived shocks*

29 *External shocks* are events that have significant impact on organizations, sometimes even
30 materializing the threat of organizational failure. The impact can be direct, such as eroding tax
31 bases, or indirect, e.g. due to natural disasters or changes in government policy (see Jones et
32 al., 2017). *Although the question of whether there exist objective criteria that define when an*
33 *event can be perceived as a ‘triggering’ event in terms of a crisis or shock, or whether the*
34 *existence of a crisis or shock is determined by individual perceptions still seems to be open for*
35 *debate (see Drennan et al. 2014, p. 14 ff.), several scholars highlight the key role that*
36 *perceptions play in dealing with crisis and shock. In particular, they argue that individual*
37 *perceptions as well as managerial interpretation of events determine how much attention is*
38 *dedicated to an event or potential shock and which actions the organization takes in responding*
39 *to a shock or crisis (e.g. Billings et al., 1980; Pauchant and Mitroff, 1992; Pearson and Clair,*
40 *1998; see also Daft and Weick, 1984; Dutton and Jackson, 1987; Weick, 1979). Much of the*
41 *literature that has explored governmental responses to the global financial crisis shows that*
42 *governments across the globe have been hit to varying degrees by the financial crisis, and that*
43 *some have responded with only incremental, yet others with more fundamental, measures (see*
44 *Kickert, 2012; Kickert et al., 2013; Peters, 2011). In addition, case studies of LGs in Germany,*
45 *Italy as well as the UK have highlighted that changes in regulations such as taxation limitations*
46 *and devolvement of tasks, or cuts to public expenditure (Barbera et al., 2017; Jones, 2017;*
47 *Papenfuß et al., 2017) can have unexpected and long-lasting effects on the LGs’ finances, and*
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3 impact on public managers' perceptions and elaboration of ensuing response strategies. In line
4 with these findings, it may be expected that when public managers perceive a stronger intensity
5 of external shocks, this will translate in stronger responses, both in terms of incremental
6 adaptation and buffering (bouncing back) and of more radical transformations and
7 repositioning (bouncing forward).
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13 *H1: Higher perceptions of external shocks are associated with higher reliance on both*
14 *bouncing back (H1a) and bouncing forward (H1b) strategies*
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20 *Vulnerability*

21 *Vulnerability* represents the level of exposure to shocks (McManus et al., 2007). Being the
22 result of external as well as internal sources, it lies at the interface between the environment
23 and the organization (figure 1). Qualitative analyses of LGs financial resilience have shown
24 that it is the sense of being able to control the vulnerability and/or influence its sources that
25 affects the way shocks are interpreted and subsequently tackled (Maher and Deller 2007, 2011;
26 Jimenez 2012; Barbera et al., 2017), something which is also evident in other, more general,
27 studies (see also Boin et al., 2010; Lengnick-Hall and Beck, 2005; Linnenluecke and Griffiths,
28 2013; Lu and Xue, 2016; McManus et al., 2007; Somers, 2009). Prior qualitative studies
29 showed that high levels of vulnerability were associated with coping strategies that built mainly
30 on buffering, including efforts on managing internal resources through reducing expenditure
31 and downsizing. LGs where the sources of financial vulnerability were regarded as at arm's
32 length and thus manageable, in contrast, exerted a more proactive behavior to shocks and an
33 increased ability to pro-actively manage or offset the impact of environmental conditions
34 (Barbera et al., 2017; Steccolini et al., 2017). The level of perceived vulnerability will thus be
35 expected to have a different effect on LGs' responses, with higher perceived vulnerability being
36 more likely to encourage defensive and risk averse approaches aimed at bouncing back, and
37 lower perceptions of vulnerability leaving leeway for more transformative, innovative and
38 entrepreneurial approaches. From this follows:
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54 *H2: A higher level of financial vulnerability is positively associated with bouncing back*
55 *strategies (H2a), and negatively associated with bouncing forward strategies (H2b)*
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60 *Anticipatory capacities*

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3 *Anticipatory capacities* are the tools and capabilities that enable LGs to better identify and
4 manage their vulnerabilities and recognize potential shocks before they arise. As such, they are
5 not limited to forms of planning, monitoring or risk assessment, but are also related to the
6 cognitive aspects of situation awareness and sense-making (e.g. Boin et al., 2010; Lengnick-
7 Hall and Beck, 2005; Linnenluecke and Griffiths, 2013; McManus et al., 2007; Somers, 2009).
8 In this context, some scholars have argued that the availability or improvement of anticipatory
9 capacities, i.e. the tools and capabilities that enable LGs to anticipate shocks and crises and
10 better identify and manage their vulnerabilities, also assist them in (pro-actively) coping with
11 shocks and crises (Lengnick-Hall and Beck, 2005; Somers, 2009). Anticipation allows
12 organizations to prepare in advance for coping with shocks, exploring possible routes,
13 including re-positioning and re-thinking of services and activities, and setting in place more
14 comprehensive strategies to respond to them. Thus, a strongest presence of anticipatory
15 capacities is expected to facilitate the adoption of bouncing forward strategies, but not
16 necessarily predict the adoption of bouncing back ones. From this follows:
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29 *H3: A higher level of anticipatory capacities (i.e. monitoring, information exchange,*
30 *information sharing) is positively associated with bouncing forward (H3b) but not*
31 *bouncing back (H3a) strategies.*
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36 The expected effects are summarized in Figure 1.
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39 [Figure 1: Conceptual framework]
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45 METHODS

46 The research builds on a survey of LGs in Germany, Italy, and the UK, complemented by an
47 analysis of archival data covering financial and socio-demographic aspects.
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51 ***The unit of analysis: local governments in Germany, Italy and the UK***

52 All three selected countries are large economies with LGs being responsible for a wide array
53 of similar services including, amongst others, social protection, education, economic affairs,
54 housing and community amenities, public order and safety and health. They represent however
55 different administrative traditions and the number of LGs varies. This is mainly due to the
56 relative size of the populations served by LGs in each country. In order to provide a meaningful
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3 basis for comparison, LGs included in the survey were identified based on a stratified sampling
4 approach. The reference population in Italy and Germany is given by all the LGs with more
5 than 5,000 inhabitants.¹ The reference population in Italy therefore includes 2,411 units while
6 the reference population in Germany includes 2,880 units. Given the different distribution of
7 LGs across dimensional classes, larger LGs are less represented than smaller ones in the whole
8 population. As a consequence, to ensure satisfactory representation of both dimensional classes
9 as well as efficiency, all LGs with a population above 15,000 were included in the sample, i.e.,
10 961 LGs in Germany and 737 in Italy. For LGs with a population between 5,000 and 15,000,
11 we selected 50% of local governments (960 LGs for Germany and 837 for Italy) considering
12 their geographical distribution (differentiated between East and West in Germany, North and
13 South in Italy). Based on lists which include all local governments between 5,000 and 15,000
14 per region, we randomly selected local governments from each region. Information on the
15 regional distribution of the sample as well as the responses can be found in Appendix 1a and
16 1b. In the UK, successive structural change dating back to the 1970s has seen a reduction in
17 the number of local government institutions servicing ever larger populations (current average
18 population around 150,000). Except for two, all LGs exceed population figures of 15,000² and
19 we therefore decided to include all LGs from three of the four regions³ (a total of 406) in the
20 survey. The questionnaire was administered online and respondents were asked to answer for
21 their organization as a whole rather than sub-units within it. The questionnaire was sent to LGs'
22 chief executive officers, chief financial officers and service managers (to ensure coverage of a
23 variety of comparable public services, social services, public works, culture and leisure were
24 taken into consideration). In general terms, the level of seniority of the respondents was chosen
25 as it is more likely to have the required departmental/organizational wide view. The email
26 addresses were collected from the governmental websites as they are publicly available. To
27 ensure the highest possible response rate, at least two reminders were sent in each country.⁴

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¹ The smallest LGs (below 5,000) were excluded on the one hand to ensure to have a manageable number of responses, and on the other hand due to restrictions with regard to the accessibility of financial data for local governments with a population below 5,000 in Germany. In Italy the accessibility of e-mail addresses is a major issue. Moreover, smaller local governments (below 5,000) are generally subject to different law requirements with regard to their financial management systems, and they enjoy a specific funding system as well as support policies.

² One LG has a population lower than 5,000 and one LG falls into the range between 5,000 and 15,000. Source: Office for National Statistics 2011 Census data on population estimates for local authorities in the UK: <https://www.ons.gov.uk>.

³ Northern Ireland was excluded from the study as the 11 local governments here were reorganised in April 2015, and as such the period under consideration was not relevant to these very recently created organisations.

⁴ The time between sending the survey (in May 2017) and the first reminder ranged between eight days (Italy) and fourteen days (Germany). The second reminder was sent after three to four weeks (end of June). For Italy, two additional reminders were sent.

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3 The received usable responses for the analysis come from 295 (15.4%) LGs in Germany,
4 268 (16.80%) in Italy and 64 (15.2%) in the UK.

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6 Non-response bias was assessed by comparing the responses in the questionnaires between
7 the first and last wave (i.e. responses generated by a stimulus, see Armstrong and Overton,
8 1977, p. 397) for each country. We used an extrapolation method where non-respondents are
9 considered to respond similar to late responders (see Lindner et al., 2001). Late respondents
10 are defined as those who respond in the last wave of responses, i.e. in response to the last
11 stimulus. We compare them with early respondents, i.e. those who respond to the first stimulus.
12 Due to the lower number of responses in the UK in total (64), we were not able to identify the
13 recommended minimum of 30 respondents based on the first stimulus (see Lindner et al., 2001).
14 We therefore compared the last wave of responses (32) to the first 50% of responses (32). We
15 additionally applied the same procedure for Italy and Germany, and compared the first 50%
16 and last 50% of responses. All t-tests yielded no significant differences between the included
17 variables.
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31 ***Operationalization of variables***

32 The variables discussed above and presented in figure 1 were operationalized drawing on the
33 literature on resilience, organizational capacities, and governmental financial management, as
34 well as the qualitative groundwork put forward by Steccolini et al. (2017). The questionnaire
35 was developed and translated to ensure fit in the respective country contexts while preserving
36 comparability. Appendix 2 shows how the resilience dimensions were operationalized, and
37 table 1 and table 2 provide detailed information on the items that were used to measure each
38 dimension.
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44 With specific reference to *shocks*, the present study looks at three different shocks, which
45 have been mentioned across LGs in eleven countries (Steccolini et al., 2017): the global
46 financial crisis, migration⁵, and (change of) regulations. With regard to *financial*
47 *vulnerabilities*, four key issues were assessed to analyze if LGs are in control of both external
48 and internal financial vulnerability sources: financial autonomy, abundance of financial
49 resources (fiscal slack), level of indebtedness and volatility of own revenue resources
50 (Hendrick, 2011; McManus et al., 2007; Maher and Deller, 2011). A set of questions regarding
51 the perceived presence of *anticipatory capacities* in LGs were derived from the literature (see
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⁵ In recent years, migration has posed a significant challenge to European countries, but the immigration surge in 2015 has been a shock to German local governments in particular (see Eurostat 2015).

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3 for more details appendix 2 and table 2). Responses load onto the expected three subcategories
4 for anticipatory capacities, consisting of (1) exchange of information with external actors (e.g.
5 upper government levels, service providers); (2) monitoring activities (e.g. national policies
6 and regulations, citizen's needs, economic and socio-demographic developments) as well as
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8 (3) providing staff with sufficient information and fostering an organizational setting that
9 encourages problem analysis and information sharing (table 2). The summative variables for
10 each subcategory reported acceptable alphas, reaching Cronbach alphas higher than .7 in all
11 cases⁶.
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19 In addition to the survey data, archival financial data and published reports were used as sources
20 for the analysis⁷. We included three financial indicators– average debt level, investment ratio
21 and current ratio – covering a ten-year period (2006-2015) as well as size as control variables.
22 The data were analyzed by means of descriptive statistics and factor analysis. In a further step,
23 ordinary least square regression is chosen as the statistical method to test the developed
24 hypotheses.
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31 RESULTS

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34 The results of factor analyses as well as descriptive statistics are presented in tables 1 and 2.
35 The following sub-section discusses the results of the test of hypotheses, based on the
36 regression analysis.
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41 The factor analysis (table 1) reveals that responses load on two different types of strategies (i.e.
42 bouncing back and bouncing forward), which were adopted by LGs during the last five years.
43 A summative variable of each strategy reported acceptable Cronbach alphas (0.7). As shown
44 in table 1, LGs appear to rely more on bouncing forward than on bouncing back strategies.
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54 ⁶ Appendix 2 shows the results of the factor analysis for Germany and Italy. Due to the low number of responses
55 from UK local governments (64), no factor analysis was applied and we only consider them in the descriptive
56 analysis based on identified categories. However, the Cronbach alphas for each subcategory exceed .8, therefore
57 also pointing to a high internal reliability.

58 ⁷ We used Aida Pa database and the website of the Ministry of Interior that publish the main financial data for
59 Italian LGs, based on year-end financial reports, for Italy, and in the UK Statistics Wales, Local Government
60 Finance Statistics (Scotland) and the Department for Communities and Local Government (Statistics at DCLG –
England). For Germany, the database <http://www.wegweiser-kommune.de/> was accessed to obtain financial data
for the years 2006-2015.

[Table 1]

Respondents generally gave different weights to different types of shocks (table 2) with changing regulations being perceived as most important external shocks followed by the global financial crisis. Migration, in contrast, seems to have affected local governments only to a relatively minor extent.

[Table 2]

The subsequent section explores whether and to what extent governmental responses are driven by different types of shocks and crises, financial vulnerabilities and/or by internal capacities that enable organizations to better recognize potential financial shocks before they arise. Table 3 presents the multiple regression models for the antecedents of the two types of strategies described above, i.e., bouncing back and bouncing forward. To determine whether Ordinary Least Square was appropriate, data were examined for heteroscedasticity and multicollinearity, both returning satisfying results. All models achieve good rates for multicollinearity and no Variance Inflation Factor (VIF) higher than 1.75 was reported in the models. The models offered reasonable fit for a cross-sectional design. The explained variance ranges between .20 (bouncing forward model) and .29 (bouncing back model).

[Table 3]

Table 3 shows that bouncing back and bouncing forward strategies were driven by different antecedents. While it turned out that all *types of shocks* show a positive association with both types of strategies, therefore supporting the hypothesis (H1) that higher perceptions of shocks are related with higher reliance on response strategies, their significance varies. Migration shows the strongest effect in the bouncing forward model while regulation shows the strongest effect in the bouncing back model. Although being significant, the effect of the global financial crisis turned out as comparatively low in both models, barely reaching significance in the bouncing back model.

The main enablers of bouncing back responses are the various sources of financial vulnerability, therefore supporting the hypothesis that higher perceived financial vulnerability will bring about bouncing back strategies (*H2a*). The results also show that, as hypothesized

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3 (*H2b*), perceived financial vulnerability has a negative association with bouncing forward
4 strategies, but its effect is much weaker.

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6 Moreover, the different dimensions of anticipatory capacities show a positive association
7 with bouncing forward strategies of LGs (*H3b*). However, the impacts vary, with information
8 exchange showing the highest and information sharing showing the lowest but still significant
9 effect. The association disappears when looking at their relationship with bouncing back
10 strategies (*H3a*).
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15 The controls suggest that both strategies were negatively associated with a positive current
16 ratio covering a ten-year period, while the **three** other controls turned out as being non-
17 significant.
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21 22 **DISCUSSION AND CONCLUSIONS** 23

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25 Looking at LGs across Germany, Italy and the UK, this study explored the roles of perceptions
26 on shocks and financial vulnerability as well as anticipatory capacities in explaining the type
27 of strategies adopted to respond to shocks. The analysis shows that perceptions of the most
28 important recent shocks, as well as capacities for anticipating them, and financial
29 vulnerabilities appear to be relevant in explaining LGs' strategies in the face of shocks.
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34 In exploring the links between external shocks, internal conditions and responses to
35 shocks, the analysis shows that the reliance upon bouncing back and bouncing forward
36 strategies is explained by different factors. Bouncing back strategies (e.g. deferring
37 investments, increasing fees) **are likely to be** found in the presence of high levels of perceived
38 financial vulnerability. Conversely, the adoption of bouncing forward strategies (e.g. changing
39 service delivery, establishing new services) **appears to be positively associated with** the
40 presence of strong anticipatory capacities (especially information exchange) and **to be** hindered
41 by high levels of financial vulnerability. In looking at these results, it is worth noticing that the
42 global financial crisis appears to have less explanatory power than other shocks, probably
43 because, while remaining still relevant, its effect may be now fading away in the face of the
44 emergence of new shocks. The association between migration and bouncing forward **seems** to
45 be in line with views that the former will require an overall reconfiguration of public services,
46 whereas **the association between** changes in regulations with bouncing back appears to suggest
47 that such changes are seen as less wide-ranging and requiring less incisive interventions, or
48 interventions that do not put into question the configuration of public services.
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3 Most importantly, the results highlight that perceptions of high financial vulnerability are
4 central in explaining especially reliance on bouncing back strategies. Hence, LGs perceiving
5 their financial conditions as being difficult will be less likely to embark on bouncing forward
6 actions. Moreover, and conversely, they show the important role played by anticipatory
7 capacities in explaining the adoption of bouncing forward strategies, whereas they do not
8 appear to play a relevant role in explaining bouncing back strategies. The analysis supports
9 previous qualitative findings, as anticipatory capacities appear to co-occur with adaptive, and
10 transformative behavior (i.e. bouncing forward), also reducing perceived financial
11 vulnerability, while heavy exploitation of buffering capacities may crowd out the development
12 of other capacities needed to bounce forward, resulting in higher levels of vulnerability over
13 time (Barbera et al., 2017; Davoudi et al., 2013; Meier and O'Toole, 2009; Wildavsky, 1988).

22 The study has relevant implications for managers and policy makers as the results reveal
23 the relationship between different anticipatory capacities and perceptions of financial
24 vulnerabilities and the strategies adopted by LGs to face shocks. While bouncing back is
25 strongly linked to the associated vulnerabilities, the implementation of bouncing forward
26 strategies when facing difficult times turns out as being mainly dependent on the capacities
27 identified above. This emphasizes that, whenever willing to adopt a bouncing forward
28 approach, it is important to develop wider anticipatory capacities within LGs as a key element
29 to cope effectively under difficult conditions, and to build and nurture a financial resilience
30 culture.

37 The present study contributed to further developing and operationalizing the dimensions
38 of financial resilience, and more specifically anticipatory capacities and perceived financial
39 vulnerability, understanding their relevance for LG response strategies. The results are however
40 based on a cross-sectional research design and thus present associations. The adoption of a
41 longitudinal perspective in future studies may offer additional insights into causal links, as well
42 as how strategies evolve over time and under which conditions. The dimensions identified in
43 the framework also offer LG actors the potential to better reflect on their own sources and
44 levels of vulnerabilities and understand what anticipatory and coping capacities they need to
45 assess, nurture, and develop in order to anticipate, absorb and react to shocks affecting their
46 finances over time. Finally, as smaller local governments were not taken into consideration in
47 this study, further analyses may focus on them to further explore the roles of anticipatory
48 capacities in smaller organizations.

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Figure 1: Analytical Framework

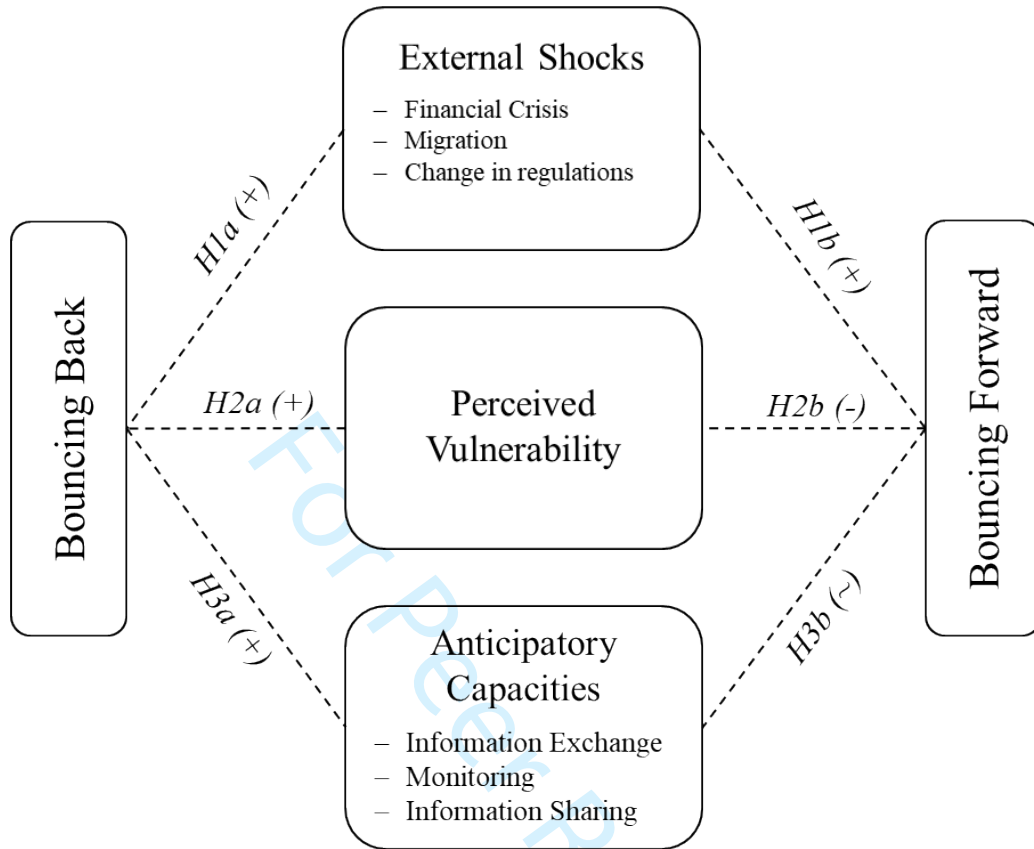


Table 1: Exploratory factor analysis response strategies (dependent variable)

			Rotated Component Matrix	
All items were prefixed with: During the last 5 years, my local government.... (1 = not at all; 5 = to a great extent)			1	2
	Mean	St. Dev.		
Bouncing forward	2.85	0.68		
changed the way it delivers services	3.02	0.887	0.743	
changed the priorities of traditional activities	2.88	0.920	0.709	
changed its internal structure	3.07	1.079	0.544	
extended its existing services	2.66	1.040	0.739	
established new services	2.60	0.955	0.750	
Bouncing back	2.37	0.69		
reduced existing services	2.14	0.997		0.707
deferred/reduced investments	2.95	1.235		0.563
increased fees and charges for its services	2.69	1.005		0.654
liquidated assets in order to raise capital	2.21	1.062		0.542
eliminated some services	1.89	0.888		0.783
<i>Eigenvalue</i>			2.730	2.192
<i>Explained Variance</i>			27.298	21.921

Table 2: Vulnerability and anticipatory capacities, descriptives and factor analysis

	Descriptives		Rotated Component Matrix			
	Mean	Std. Dev	1	2	3	4
S Global Financial Crisis	3.26	1.126				
S Migration	2.58	1.064				
S Regulations (e.g., changes in tax base, task devolvment)	3.51	1.003				
V Debt level	2.43	1.33	0.753			
V Volatility of own-revenue sources	3.00	0.99	0.857			
V Level of reserves	3.04	1.15	0.837			
V Autonomy	3.15	1.11	0.762			
AC Information exchange with other local governments	3.66	0.86		0.649		
AC Information exchange with upper levels of government	3.16	0.91		0.689		
AC Information exchange with external service providers	2.93	0.91		0.847		
AC Regularly approach professional service providers	2.91	1.00		0.843		
AC Monitoring changing national policies and regulations	3.74	0.87			0.623	
AC Monitoring changing citizens' needs	3.46	0.82			0.745	
AC Monitoring economic developments	3.37	0.91			0.683	
AC Monitoring socio-demographic developments	3.43	0.91			0.614	
AC People have the information and knowledge they need	3.56	0.92				0.797
AC Information is shared freely	3.39	0.98				0.548
AC Relevant information is passed on quickly	3.56	0.98				0.805
AC People are encouraged to conduct complete analysis of problems	3.14	1.00				0.680
Explained variance			32.684	12.325	9.580	7.033
Eigenfaktor			5.229	1.972	1.533	1.125

Table 3: Results of regression analysis for response strategies

	Response Strategies	
	Bouncing Back	Bouncing Forward
External Shocks		
<i>Global Financial Crisis</i>	.079*	.102**
<i>Migration</i>	.081**	.160***
<i>Regulations (e.g., changes in tax base)</i>	.146***	.112***
Anticipatory Capacities		
<i>Monitoring</i>	-.025	.117**
<i>Information Exchange</i>	-.004	.173***
<i>Information Sharing</i>	-.017	.080*
Financial vulnerability		
<i>High level of (perceived) financial vulnerability</i>	.372***	-.129***
Controls		
Size	.001	-.014
Debt Ratio	-.007	-.022
Investing Ratio	-.056	-.007
Current Ratio	-.132***	-.077*
Dummy UK	.051	-.076
Dummy Italy	-.106**	-.165***
R ²	.285	.201
Adjusted R ²	.270	0.184
F	18.400	11.557

Note: * p<0.1, ** p<0.05 and *** p<0.01 levels, respectively.

Appendix 1a: Germany, Italy and UK: Main features

	Germany	Italy	UK
Population in 2013	80,523,746	59,685,227	63,905,297
GDP per capita in Euro 2013	34,884.1	26,958.1	31,562.3
Administrative tradition	Continental European federal model	Continental European Napoleonic/Southern model	Anglo-Saxon model
Level of decentralization	Federal	Unitary ("Quasi")	Unitary
Local government expenditure in % of total government expenditure (2013)	16.3%	28.6%	25.1%
No. of local governments (LAU 2 2013)			
Total	11,116	8,092	418
Population 5,001-15,000	1,919	1,674	1
Population > 15,000	961	737	416
Regional distribution of LG > 5,000	Total: 2,880 West: 2,358 East: 522	Total: 2,411 North: 1,592 South: 819	Total: 417 England: 352 Scotland: 32 Wales: 22 Northern Ireland: 11

Appendix 1b: Germany, Italy and UK: Sample and respondents characteristics

	Germany	Italy	UK
Sample			
Total	1,921	1,574	406
Population 5,001-15,000	960	837	1
Population > 15,000	961	737	405
Regional distribution of sample	West: 1,586 East: 335	North: 1,022 South: 552	England: 351 Scotland: 32 Wales: 22
Responding LGs			
Total	295 (15 %)	268 (17 %)	64 (%)
Population 5,001-15,000	157 (16 %)	133 (16 %)	--
Population > 15,000	138 (14 %)	135 (18 %)	64 (%)
Regional Distribution	West: 246 (16%) East: 49 (15%)	North: 200 (20%) South: 68 (12%)	England: 55 (16%) Scotland: 4 (13%) Wales: 5 (23%)
Respondent characteristics			
Age (Median)	51-55 years	51-55 years	51-55 years
< 35 years	5.6 %	1.2 %	--
36-45 years	15.0 %	9.0 %	11.3 %
46-55 years	41.4 %	53.1 %	58.1 %
> 55 years	38.0 %	36.7 %	30.6 %
Gender (Male/Female)	66.7 % / 33.3 %	57 % / 43 %	79 % / 21 %
Education (College/University Degree)	62.8 %	89.8 %	95.2 %
Tenure			
< 10 years	26.3 %	7.0 %	8.1 %
10-20 years	18.4 %	25.4 %	21.0 %
20-30 years	32.7 %	38.7 %	43.5 %
> 30 years	22.6 %	28.9 %	27.4 %
Private sector experience	43.2 %	62.1 %	62.9 %

Appendix 2: Operationalization of variables

Dimension and definition	Operationalization (<i>corresponding Variable in parentheses</i>)	Methods details and references
<p>Shocks/ Environmental Conditions Environmental conditions comprise the institutional, economic, and social environment in which local governments operate. The focus of this study is on external shocks that disrupt the environmental conditions of local governments thereby impacting their financial condition.</p>	<p>Please indicate to what extent the following events negatively affected your local government's financial situation and rate the impact it had. (1=not at all to 5=to a great extent)</p> <p>Global Financial Crisis (Global Financial Crisis)</p> <p>Migration (Migration)</p> <p>Regulations (e.g. changes in tax base, task devolvement) (Regulations(e.g. changes in tax base, task devolvement))</p>	--
<p>Vulnerability The perceived extent of exposure to financial shocks and disturbances that may affect local government finances</p>	<p>How would you rate the financial situation of your local government in terms of the following aspects? (1=strongly disagree to 5=strongly agree)</p> <p>Our local government is heavily indebted (Debt level)</p> <p>The volatility of our own revenues sources (e.g. taxes) is high (Volatility of own revenues sources)</p> <p>We have enough financial reserves (fiscal slack) to absorb a small amount of shock (Level of reserves)</p> <p>Our financial autonomy (considering our own revenue sources) in general is high (Autonomy)</p>	Hendrick 2011, Maher and Deller 2011, McManus et al. 2007
<p>Anticipatory capacities The availability of tools and capabilities that enable local governments to better identify and manage their vulnerabilities and to recognize potential financial shocks before they arise, as well as their nature, likelihood, timing, scale and potential impacts. In this regard, anticipatory capacity is not limited to the presence of systems in place to plan, control, and manage risks, but also related to situation awareness and sense-making.</p>	<p>Please indicate to what extent you agree/disagree to the following statements. In order to increase the understanding about our environment... (1=strongly disagree to 5=strongly agree)</p> <p>we regularly exchange information with other local governments</p> <p>we regularly exchange information with upper levels of government</p> <p>we regularly exchange information with external service providers</p> <p>we regularly approach professional service providers such as consultants, or tax consultants/accountants</p> <p>(External information exchange)</p> <p>we constantly monitor changing national policies and regulations</p> <p>we constantly monitor changing citizen's needs</p> <p>we constantly monitor economic developments</p> <p>we constantly monitor socio-demographic developments</p> <p>(Monitoring)</p> <p>Please indicate to what extent you agree/disagree to the following statements. In our local government...(1=strongly disagree to 5=strongly agree)</p> <p>it is considered important that people have the information and knowledge they need to respond to unexpected problems that arise</p> <p>information is shared freely across functions and hierarchical levels</p> <p>when something unexpected happens, relevant information is passed on quickly across functions and hierarchical levels</p> <p>when something unexpected happens, people in this local government are encouraged to conduct a complete analysis instead of providing routine solutions</p> <p>(Internal information sharing)</p>	Amniattalab and Ansari 2016, Boin et al. 2010, Cohen and Levinthal 1990, Jansen et. al. 2005, Jaworsky and Kohli 1993, Jones 2105, Lee et al. 2013, Lengnick-Hall and Beck 2005, Linnenluecke and Griffiths 2013, McManus et al. 2007, Mott 1972, Paliokaite and Pacesa 2015, Ray et al. 2011, Somers 2009, Stephenson 2011, Weick and Sutcliffe 2001, 2006, Whitman et al. 2013, Wicker et al. 2013, Youndt et. al. 2004

Dimension and definition	Operationalization (<i>corresponding Variable in parentheses</i>)	Methods details and references
<p>Response strategies</p> <p>The ability to deal with the impact of shocks and disturbances, becoming visible in times of disruption (shock) through strategies, reflecting, on the one hand, the capability to bounce back to an original state or, on the other hand, the ability to, bounce forward through the enhancement of, or development of new, capabilities emphasizing the capacity to reorganize as a response to, or in anticipation of, disturbances, alter or reinvent their strategies</p>	<p>During the last 5 years, my local government...(1=not at all to 5=to a great extent)</p> <ul style="list-style-type: none"> reduced existing services deferred/reduced investments increased fees and charges for its services liquidated assets in order to raise capital eliminated some services (Bouncing back) changed the way it delivers services changed the priorities of traditional activities changed its internal structure extended its existing services established new services (Bouncing forward) 	<p>Andrews 2010, 2011, Jimenez 2012, Overmans/Arnold 2014, Steccolini et. al. 2017, Barbera et. al. 2017, Meyer, 1982; Somers 2009, Boin et al. 2010: 8; Linnenluecke 2017: 6, Meyer 1982)</p>

Financial indicators (2006-2015)		
Debt level	Debt/Operating Expenditures	
Investment ratio	Investment/Operating Expenditures	
Current ratio	(Operating Revenues – Operating Expenditures)/Operating Revenues	