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Abstract

The COVID-19 pandemic cut across geographical, sectorial and policy boundaries and imposed difficult health, economic and social challenges. Among many learnings, after the 2007-08 global financial crisis and the austerity period which followed it, the economic and health crises forged by the COVID-19 pandemic in 2020 offers an important experience to make local governments more financially resilient and ready to deal with similar shocks.

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Keywords

Financial vulnerability, local governments, crisis, COVID-19

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Introduction

The COVID-19 pandemic has had a dramatic impact on both society and the economy (OECD, 2020). This impact was particularly felt in local governments (LGs), given their community relationship through service delivery and local development. The financial magnitude of responses to the COVID-19 crisis has varied across jurisdictions, even when adopted measures were similar (de Jong and Ho, 2020; Zhang et al., 2022). This study responds to calls to study the impacts of the pandemic, testing models developed to measure these impacts (Grossi et al., 2020; Trombetta, 2020). Specifically, it addresses the need for a multi-country perspective in public administration research (Kuhlmann and Wollmann, 2019) providing a better understanding of the impact of the crisis at the subnational level (Zhang et al., 2022). Most studies exploring financial vulnerability resulting from shocks focus on a single country (Grossi et al., 2020), on contingent dimensions that may quickly vary and are specific to that crisis (Padovani et al., 2021), or on public policy issues, central government responses, and crisis management (Boin and Lodge, 2016; Peters, 2011; Zhang et al., 2022).

This paper differs in investigating LG financial vulnerability across countries, looking at both contingent and systemic aspects to answer the questions: what pre-existing conditions increase LG financial vulnerability? What measures are effective at containing it when facing a global crisis? How will the central – local government relationship be affected?

The analysis offers an innovative multi-country approach that allows for cross-country comparison. Building on an existing framework (Padovani et al., 2021), it explores financial vulnerability during the first wave of the pandemic looking beyond the dynamic changes, or the contingent aspects (Pollitt, 2008), and incorporating systemic factors, or the backdrop against which these changes are analyzed. In other words, while the primary analysis in Padovani et al. (2021) concentrates on the dynamic, crisis-induced changes, this study positions them within a broader, systemic framework. Specifically, it: (i) compares changes in LG financial vulnerability and their potential drivers in the immediate aftermath of the pandemic in seven countries, representing four distinct LG administrative systems (Kuhlmann and Frankze, 2022), with different levels of financial autonomy (Ladner et al., 2016; Oulasvirta and Turala, 2009), and with intrinsically different cultural aspects (Hofstede, 2024); (ii) identifies trends emerging from the first wave of the pandemic; and (iii) evaluates whether LG responses to the crisis are hampered or facilitated by LG administrative systems, levels of financial autonomy, and prevailing (national) culture (Boin and Lodge, 2016). Hence, the study contributes to the debate on financial vulnerability by expanding previous frameworks and provides insights for policymakers managing the impact of a global crisis on local finances learning from what happened in 2020 during the first wave of the COVID-19 pandemic.

Theoretical background and conceptual framework

Local governments' financial vulnerability

Traditionally, financial vulnerability at local government level has been linked to financial distress and bankruptcy forecasting *vis-à-vis* solvency and financial sustainability (Jones and Walker, 2007; Ferry et al., 2015). Arunachalam et al. (2017, p.52) define a vulnerable local authority as the one which, without some structural reform and major revenue and expense adjustments, "is highly unlikely to be able to manage unforeseen financial shocks and any adverse changes in its business and in general economic conditions". In response to the global financial crisis of 2007-08, some governments implemented austerity measures to minimize public debt levels through reduced public expenditure, while local governments took considerable measures to lower high levels of vulnerability (Hastings et al., 2015; Ferry et al., 2017). Yet, many scholars have argued that not only austerity was a common response measure that tended to increase vulnerability (Posner and Sommerfield, 2012; Barbera et al., 2020), but also that such economic restructuring was a failed

idea, given its consequential downturn or the slower recovery in some countries, which resulted in increased financial vulnerability (Blyth, 2013; Kenneth et al., 2015; Hodges and Lapsley, 2016). On the backdrop of such experiences, it is important to learn also from the measures implemented to face the financial instability caused by the COVID-19 pandemic to appreciate how local governments can be more financially resilient and readier to deal with similar shocks.

Overall, financial vulnerability can be conceptualized as inversely related to the capacity of public administrations "to cope with emerging shocks" (Barbera et al., 2020: 533) or to the level of exposure to shocks (McManus et al., 2007). Hence, perceived financial vulnerability is the degree to which organizations perceive they are exposed to specific shocks or crisis (Saliterer et al. 2017). Prior research focuses on the macroeconomic (e.g., Pollner et al., 2001) and organizational levels (Barbera et al., 2019; Walker et al., 2002), where it has been defined as "the extent to which the organization depends on resources that are beyond its own control or influence" (Cabaleiro et al., 2013: 733). This definition captures situations where decisions on resource inflows are made by other entities, increasing financial risk due to the potential difficulty in balancing the accounts (Martell, 2008; Bastida et al., 2014). This is analogous with LGs because they receive grants from the central government and are subject to moral hazard despite guarantees of financial support (Lobo and Ramos, 2011; Persson and Tabellini, 1996).

Research finds that fiscal rules applied by central, state, or regional governments can limit LG capacity to react to shocks (Steccolini et al., 2017). These can also change in reaction to shocks, and limit the autonomy of LGs, shaping the decisions they can make and impacting their financial vulnerability (Barbera et al., 2017; Geissler et al., 2019). During the pandemic, fiscal rules such as limits to current and capital expenditures, "golden rule" debt ceilings, and so on, determined different impacts on LGs' financial vulnerability in different countries (OECD, 2020).

Yet, broader definitions of financial vulnerability also consider what Barbera et al. (2017) called "internal sources" of financial vulnerability. For example, the level of diversification of revenues (Berne and Schramm, 1986) and the availability of cash and financial reserves (Downing, 1991; Jacob and Hendrick, 2012), can reduce financial vulnerability (Mikesell, 2013), while the rigidity of expenditure (e.g., that required for basic services) can increase financial vulnerability (Cohen et al., 2017).

While internal and external elements can be considered for an objective measure of vulnerability, an organization's perception of the type and magnitude of shock changes over time impacts how the organization reacts and responds (Steccolini et al., 2017; Anessi-Pessina et al., 2020). In fact, perceptions play an important role in the anticipatory capacity to both react to and recover from shocks (Barbera et al., 2019). In some cases, such as after the global financial crisis, local governments deployed their capacities and capabilities to forecast possible events and manage their vulnerabilities in coping with shocks during times of crises (Jones, 2017). At the same time, there is evidence of the influence of politicians' preferences and partisan biases in support for local governments during the pandemic (Clemens and Veuger, 2021; van der Voet, 2022). But it would be rather difficult to include such parochial considerations in a multi-country comparative study.

Financial vulnerability in the aftermath of COVID-19: contingent versus systemic factors

Over time many scholars have strived to develop a theoretical framework to understand and explain local fiscal condition (Berne and Schramm 1986; Honadle et al., 2004; Nollenberger et al., 2003; Hendrick, 2011; Maher et al., 2023). Padovani et al. (2021) recently developed an analytical framework to examine LG financial vulnerability before and in the immediate aftermath of the pandemic, herein referred to as "the first wave", by mapping and systematizing its contingent dimensions and sources at country level. It considers four fields of financial vulnerability: (1)

Administrative structure and fiscal rules, (2) Revenue structure, (3) Expenditure structure, and (4) Vulnerability outlook.

Dimension (a) considers each municipality as part of a broader environment, where fiscal rules and decisions are set by higher levels of government. After the pandemic, central, state, and regional governments might have changed this environment, for example, by reducing debt ceilings or increasing expenditure caps. Furthermore, higher levels of government may have intervened with extraordinary intergovernmental transfers or other bailout measures to lessen financial vulnerability.

Dimensions (b) and (c) conceptualize each municipality as a single organizational entity, with specific and unique structures of revenues and expenditures constituting a separate "field of vulnerability". LG revenues were affected differently after the pandemic. Tourism related revenues, for example, decreased dramatically due to lockdowns, also affecting business and personal income taxes (Vidovic, 2022). Other industries experienced increased demand, for example, for energy equipment and services, tobacco, metals and mining, food products, and diversified financial services. Expenditure was also affected. For example, the decision to close schools positively impacted (i.e., reduced) heating expenditures, and fewer public transport users meant reduced cost of fuel and personnel. However, expenditure increased, for example, where personnel were hired on a fixed term contract, and had to be paid regardless of services affected by the pandemic. Healthcare and social service costs increased significantly.

Dimension (d) relates to the risk perception and awareness of the capacity to cope with a crisis. Such perceptions are based both on an underlying cultural element (Tallaki and Bracci, 2021) and available information, which affects the way shocks are interpreted and subsequently tackled (Steccolini et al., 2017). In this case, knowledge of vulnerabilities plays a central role in the anticipatory and coping capacities of LGs (Barbera et al. 2019). For example, different countries benefitted from different financial forecasting systems in the aftermath of the pandemic. The role of available accounting information was pivotal in perceiving the level of financial vulnerability (Padovani and Iacuzzi, 2021) and in implementing responses (Ahrens and Ferry, 2020).

In their seminal work on the models of public management reforms, Pollitt and Bouckaert (2004) make a distinction between elements that are "structural", herein referred to as systemic, i.e., that do not change in the short-medium run, and those that are more "ephemeral", herein referred to as contingent, such as "short-term economic cycles of upturn and downturn" (Pollitt and Bouckaert, 2004: 27). They argue that all elements of a policy can be subject to change, but at different speeds. In fact, as other authors suggest (e.g., Lijphart, 1999), some systemic features like the administrative and political system may vary only gradually or infrequently, and therefore are more stable in nature. Under this perspective, Padovani et al.'s (2021) model is contingent in nature, considering only those dimensions that may vary rapidly, such as crisis-induced changes. In other words, as the temporal dimension is crucial in many public policy and management problems (Pollitt, 2008), we argue that a systemic framework considering more stable backdrop factors can influence the immediate reaction to a crisis. These, which we refer to as systemic factors, provide further insight into the above-described contingent dimensions. Below we present and discuss three systemic factors that expand the concept of financial vulnerability: (A) LG administrative systems; (B) financial autonomy, consisting of income (B1) and expenditure (B2); and (C) prevailing culture.

Systemic factor (A): LG administrative system

The first dimension looks at fiscal rules and only refers to LG administrative structure. It focuses on limits to current and capital expenditure financing, debt ceilings and balanced budget requirements, which are decided by higher levels of government, potentially creating budget constraints, and fostering fiscal adaptation and consolidation pressures (Barbera et al., 2017). But other institutional

factors influence how systems of government respond to crises (Lodge and Hood, 2012), including administrative traditions and country-level administrative structure (Kuhlmann and Wollmann, 2019; Peters, 2021). The degree of decentralization and level of supervision and regulation by higher levels of government should also be considered (e.g., Geissler et al., 2019). While crises may cause rapid changes in policy, these institutional factors take longer to evolve (Pollitt, 2008).

Recent taxonomies can help identify the potential role of administrative structure in local financial vulnerability. Kuhlmann and Wollmann (2019) identify administrative systems according to their traditions and structures (see Table 1).

Table 1. Types of LG administrative systems

Administrative Profile	Administrative Tradition	Administrative Structure
Continental European Napoleonic (FR, IT, PT, GR, ES, BE)	Rule of law, legalism Southern Europe subgroup: clientelism, party patronage, politicization	Unitary-centralized; weak LG (decentralization in F, I, E since 1980s/1990s)
Continental European Federal (DE, AT, CH)	Rule of law, legalism CH: weaker separation of state and society; weaker public service	Federal-decentralized; strong LG
Nordic (SE, NO, DK, FI, NL)	Rule of law culture, transparency/contact culture; accessibility of administration for citizenship	Unitary-decentralized; strong LG/civic self-organization
Anglo-Saxon (UK)	Public interest culture, pragmatism	Unitary-centralized; strong LG (weakened since 1980s)
Central Eastern European (HU, PL, CZ)	Socialist cadre administration ("Stalinist" legacy); since the system change, re-establishment of pre-communist (rule-of-law) traditions	Unitary-decentralized; strong LG (recentralization in H since 2011)
South-Eastern European (BG, RO)		Unitary-centralized; weak LG

Source: Kuhlmann and Wollmann (2019: 24).

Systemic factor (B): Financial autonomy for income (B1) and expenditure (B2)

The second dimension focuses on financial vulnerability associated with internal issues, namely revenues and expenditures. Facing a crisis, LG revenues are uncertain because its tax bases shrink while unemployment and social inequality increase, thereby increasing expenditure on social services (Pollitt and Bouckaert, 2017). The model thus considers various coping and anticipatory capacities for both revenues and expenditures, particularly in terms of LG autonomy (Padovani et al., 2021).

In terms of income and expenditure, financial autonomy represents local autonomy or decentralization (Ladner et al., 2016). It is determined by whether fiscal powers have been devolved from central governments to LGs to increase efficiency and effectiveness in public services (Oates, 1972). While the impact of autonomy on financial performance and conditions is intensely debated (Navarro-Galera et al., 2017), there is some consensus about financial vulnerability decreasing as financial autonomy increases (Ahrens and Ferry, 2020; Mikesell, 2013).

Padovani et al.'s (2021) framework does not consider a spectrum of autonomy, but this became more important as LGs reacted to the pandemic. The lockdown reduced some non-fixed costs, mainly revenues from taxes and fees, while expenditures on social services increased. Therefore, consequences for LGs' finances depended on their individual exposure in terms of both revenues

and expenditures (Ahrens and Ferry, 2020; Nemec and Spacek, 2020). While financial autonomy is traditionally assessed by looking exclusively at income sources (OECD, 2001; Ebel and Yilmaz, 2002), expenditure autonomy also matters (Oulasvirta and Turala, 2009) and both revenues and expenditures vary greatly between LGs (UCLG, 2019). Income autonomy decreases when LGs are more dependent on funding from higher tiers of government than on their own revenue. Expenditure autonomy decreases as LGs have more obligatory expenditures due to regulation. The dynamics of these aspects are usually related to structural reforms (Pollit and Bouckaert, 2017) and can be considered systemic factors influencing revenues and expenditures during a crisis and, consequently, financial vulnerability.

Systemic factor (C): Coping culture

Padovani et al.'s (2021) model focuses on four sources of vulnerability: (1) availability of information; (2) financial planning and monitoring capacities; (3) self-awareness; and (4) LG perception of its financial position. The framework does not isolate cultural aspects of coping perception, despite public management strategies being underpinned by cultural characteristics (Pillay, 2008) and national culture that influence, for example, public administration reforms (Khan, 1991). Other scholars have emphasized that perceived resilience depends not only on contingent factors such as the availability and use of relevant information, but also on a more general risk perception which is an underlying cultural element (Tallaki and Bracci, 2021).

To observe the underlying cultural factors affecting coping perception, we used two dimensions from the Hofstede's (2024) model, which can provide a useful framework for understanding how cultural differences can affect decision making and perceptions in accounting as well as management and other fields (Joannidès at al., 2020). Although the model consists of six dimensions, we chose only two dimensions (Table 2), uncertainty avoidance (UA) and long-term orientation (LTO). According to Hofstede (2024), UA "has to do with the way that a society deals with the fact that the future can never be known" and "whether we should try to control the future or just let it happen". The UA index indicates how much individuals within a culture perceive uncertainty, ambiguities, or unfamiliar scenarios as threatening, prompting the development of codified attitudes and predefined systems to evade such situations. LTO delineates society's inclination "to maintain some links with its own past while dealing with the challenges of the present and future" (Hofstede, 2024). Societies scoring low on this dimension, for instance, lean towards preserving time-honored traditions and norms while regarding societal change with suspicion. Conversely, cultures with high scores on this dimension adopt a more pragmatic approach, promoting thrift and investment in modern education to prepare for the future. The other Hofstede's dimensions are not directly related to the behavior of society and decision making in coping with future or uncertainty, so there are not connected with this research.

Table 2. Uncertainty avoidance and long-term orientation scores

	Uncertainty avoidance (UA)		Long-term orientation (LTO)	
Countries	**Index**	**Classification**	**Index**	**Classification**
Australia (AUS)	51	Medium	21	Low
Bosnia and Herzegovina (B&H)	87	Low-Medium	70	Medium
Germany (DE)	65	Medium	83	Medium-High
Italy (IT)	75	Low-Medium	61	Medium
Portugal (PT)	99	Low	28	Low
Spain (ES)	86	Low-Medium	48	Low-Medium
United States (US)	46	Medium-High	26	Low

Source: adapted from Hofstede (2024); a low UA indicates greater uncertainty avoidance; a high LTO indicates greater long-term orientation. The classification considers the quintiles between the minimum and maximum values for each dimension by Hofstede (2024), so that a low LTO falls in the first quintile a Low-Medium LTO in the second quintile, and so on. For UA the values are reversed as a high UA value corresponds to a low UA level.

Even though the Hofstede model has well known limitations (e.g. Baskerville 2003; Blodgett et al., 2008; McSweeney, 2002), prior studies establish that UA has an impact on public management practices and traditions (Islam, 2004) and on public service motivation (Kim, 2017), and particularly on disaster risk management (David, 2016). Hence, it is expected that LGs in countries with similar UA and LTO levels were similarly influenced in their responses to the pandemic. Countries exhibiting high UA with their intolerance for ambiguities and rigid codes of belief and behavior, are expected to present a lower coping ability. Similarly, societies that score low on the LTO dimension prefer to maintain time-honored traditions and norms while viewing societal change with suspicion, and hence are expected to be less comfortable with the flexibility and change required to cope with financial vulnerability. Conversely, those with a culture where LTO scores high could take a more pragmatic approach. While it may be difficult to establish correlation or causality, the analysis can reveal similarities in the responses to the pandemic across countries with analogous systemic features.

Methods

This paper extends the cross-country comparability of Padovani et al.'s (2021) model in two ways. Firstly, it incorporates relevant systemic factors, such as the type of LG administrative system (Kuhlmann and Wollmann, 2019), the level of financial autonomy (Ladner et al., 2016; Oulasvirta and Turala, 2009), and two cultural aspects (Hofstede, 2024), to investigate the impact of the first wave of the pandemic on LG financial vulnerability (Table 3). In addition, it extends the analysis from two countries, Italy and Portugal, belonging to the same Continental European Napoleonic administrative tradition (Kuhlmann and Franzke, 2022), to seven countries with different administrative and cultural backgrounds.

With the aim to illustrate this revised model, information was collected from members of the international network Local Government Financial Standards Across Countries – Australia, Bosnia and Herzegovina, Germany, Italy, Portugal, Spain, and United States. The countries were selected because they provided a range of different contexts of administrative traditions and roles of LGs, which allowed for comparison between up to four distinct LG administrative systems (Kuhlmann and Franzke, 2022), representing diverse and instrumental case studies (Seawright and Gerring, 2008;

Stake, 1995). In particular, we focused on the Continental European Napoleonic administrative system, characterized by a legalistic approach and weak LGs despite some level of decentralization; the Continental European Federal model, again with a legalistic approach but with a stronger decentralization; Anglo-Saxon countries, with a public interest, pragmatic culture and with strong LGs; South-Eastern European countries, transitioning from a socialist cadre administration to rule-of-law pre-communist traditions and weak LGs. Such comparison allows to verify whether different traditions explain the different impacts of the pandemic on financial vulnerability or simply ensure representativeness of countries. However, Australia, Germany and the US are large, federated countries comprised of different states, each with its own level of autonomy for LGs. It is accordingly unfeasible to generalize LG administrative structures and fiscal rules. The examination of each country in its entirety offers a comprehensive perspective on LG dynamics and their responses, while not explicitly delving into the potential variations and distinctions present among the individual federal states. Additionally, it is important to note that collecting directly comparable data across all the federal states can be challenging due to objective limitations such as the availability of information (OECD/UCLG, 2019). Bosnia and Herzegovina, on the other hand, is also a federal state, but presents a more homogeneous behavior across its different entities as far as LGs are concerned.

The analysis of the financial vulnerability of each country's LGs was carried out by recognized experts in each country, who collected information from official documents, legislation, and regulations in the initial aftermath of the pandemic spanning from March to December 2020, creating a "country portrait" according to Padovani et al.'s (2021) framework (see Appendix). Their expertise was cultivated from firsthand engagement in diverse projects and organizations pertinent to the subject matter, yielding a pool of novel insights. This strategic approach was conceived as a response to the unique challenge posed by the pandemic, which introduced a reduced degree of control over the research process and simultaneously demanded heightened flexibility, increased sensitivity, and enhanced research skills (Uleanya and Yu, 2023). Anchored in this experiential foundation, we established a dynamic real-time data collection mechanism, a move that proved indispensable given the rapid pace of events during the pandemic. The application of an iterative approach further fortified the reliability of our methodology, enabling continuous refinement as new information emerged. It is worth noting that a subsequent retrospective analysis, involving the compilation of subsequent reports and scientific literature, holds the potential to enhance the robustness of our research findings. However, it also underlines that without this proactive approach, we might not have fully comprehended the intricacies of the immediate aftermath of the COVID-19 pandemic.

A total of seven experts, including the authors, were first required to carry out a qualitative analysis based on the systematic framework by Padovani et al.'s (2021) and classify countries 'low', 'intermediate' and 'high' levels of pre- and post-pandemic vulnerability in the first wave of the crisis applying a criteria defined by the framework, which identified patterns, ranges, or thresholds that distinguished between low, intermediate, and high values. Their answers were then circulated among all experts to evaluate whether the coding scheme was applied consistently to guarantee objectivity, uniformity, and final consensus. After this, the authors evaluated the impact of the pandemic on LG financial vulnerability relative to each country's specific systemic and contingent factors, based on evidence contained in the literature (Table 3).

Table 3. LG financial vulnerability enhanced framework

Contingent	**Systemic**
Fields of financial vulnerability	**Influencing factors**
1. Administrative structure and fiscal rules	(A) LG administrative system
2. Revenue structure	(B1) Income financial autonomy
3. Expenditure structure	(B2) Expenditure financial autonomy
4. Vulnerability outlook	(C) Coping culture (Uncertainty avoidance, Long-term orientation)

Source: Columns 1 defined by Padovani et al. (2021); Column 2 current additional analysis.

Results

The analysis resulted in findings for each systemic factor which are summarized below. More details about the materials analyzed and the results for each country are contained in the Appendix.

Systemic factor (A): LG administrative system

The seven countries represent four different types of LG systems. Italy, Portugal, and Spain belong to the Continental European Napoleonic tradition, which are characterized by strong centralized bureaucracies, strong legalistic orientation, and politicization. The Continental European Federal model, as seen in Germany, is also centered on the principle of legality but regions and LGs have greater autonomy (Kuhlmann and Franzke, 2022). Bosnia and Herzegovina represents a typical South-Eastern European administrative system, where pre-communist administrative traditions may negatively impact public administration (Cierco, 2013). Anglo-Saxon common law countries, represented by the US and Australia, are characterized as pragmatic and this may make them less financially vulnerable.

Prior to COVID-19, the policies of all seven countries mandated budgeting, and in some cases specific budgeting formats and rules that shaped, for example, governmental and managerial structure, debt limits and rules, revenue sources and opportunities, as well as the minimum services LGs must provide. Budget and accounting laws were generally in place to reduce financial vulnerability by requiring structured processes to balance LG budgets and guarantee transparency.

Planned resources and expenditures for the coming financial year were also subject to higher government approval. In some countries (Australia, Bosnia and Herzegovina, Germany), borrowing is approved by external agencies or central government to control LG debt levels. In Italy, Portugal, Spain and the US, specific debt ceilings were fixed by state, regional or national rules.

The most important difference in structures and rules were mechanisms holding LGs responsible for their overall financial performance. Bankruptcy rules were present in Italy, the US, and some states and territories of Australia to prevent financial vulnerability. Greater financial vulnerability was observed in Germany which could have been induced by expenditure freezes in response to potential deficits. Similarly, a financial plan was required from LGs that did not comply with fiscal consolidation rules in Spain and Portugal. These LGs were more vulnerable before the pandemic, albeit not as much as LGs in Bosnia and Herzegovina, where no specific procedures were in place.

First wave of COVID-19

These seven countries can be divided into two groups according to the measures taken to support LGs in the first wave of the pandemic, which represent the contingent factors of financial

vulnerability. In Australia, Bosnia and Herzegovina, Italy, and the US changes were minimal, if at all, and temporary. For example, delays in audit filings or flexible borrowing ceilings, and no extraordinary powers were granted to LGs with small changes in financial vulnerability.

In the second group (Germany, Portugal, and Spain) more comprehensive measures were applied. A centralized approach emerged after infection risks were adjusted from 'low/medium' to 'high' (Kuhlmann and Franzke 2022). German states allowed LGs to have unbalanced budgets and the spending freeze rule was suspended. In Portugal, LGs benefitted from the suspension of the balance rule principle and financial re-equilibrium plan requirements, and an increase in debt limits. In Spain, the central government suspended fiscal rules for two years. For these countries, financial vulnerability decreased in the immediate aftermath of the pandemic but may increase in the future if such measures remain structural. For example, German LGs experienced significant decline in local tax revenues (-9.8%) while coping with crisis-related additional expenditures and an expected increase of municipal spending on welfare (Freier and Geißer, 2020; Kuhlmann and Franzke, 2022). The return to pre-pandemic fiscal rules in all three countries is likely to increase future financial vulnerability. In addition, as in disaster recovery situations (de Souza et al., 2015), LGs will likely face an increased financial burden for supporting the recovery of local economies under the pressure of increasing costs and restricted access to resources.

Systemic factor (B): Income and expenditure financial autonomy

Income (B1)

LGs across the observed countries differ in their level of income financial autonomy. Before the pandemic, the budgets of LGs in Australia, the US and Italy relied heavily on revenue earned. In Germany, transfers from higher levels of government were equal to revenue earned. In Bosnia and Herzegovina, Spain and Portugal, transfers dominated. A common feature of all countries was that richer LGs earned more revenue and therefore had more financial autonomy. The main sources of revenue were property tax (US, Italy, Australia, Germany, and Spain), personal income (Italy and Australia), business tax (Germany), fees and charges (Australia, and Bosnia and Herzegovina).

Countries in which intergovernmental transfers dominated and LGs could not determine tax rates according to local expenditure requirements, such as Bosnia and Herzegovina, Portugal, and Spain, were more vulnerable. German LGs can decide the rate of property and business taxes, decreasing their financial vulnerability even during normal times. In Italy, the central government prescribes the maximum or minimum amount of certain tax rates, curbing LGs' revenues and increasing financial vulnerability. LGs in Australia and in the US were less financially vulnerable prior to the pandemic as they depended less on state transfers and could independently determine tax rates.

First wave of COVID-19

Overall, the main contingent measure related to LG revenue was the adoption of waivers or reductions of local taxes and fees, which led to reductions in revenue. Some LGs benefitted from cash advances from central governments (Italy, Portugal, and Spain), others received additional financing for capital projects (Australia and Germany), low-cost loans from state treasury (Australia), and refunds for certain tax revenue losses (Germany and Italy) or saw the development of economic and social recovery funds for all (Spain) or selected local entities (Bosnia and Herzegovina). No additional aid from central government was recorded in the US during the pandemic's first wave.

These contingent measures led to a reduction in income autonomy as well as in financial vulnerability, at least in the short run, in all countries except the US, where such measures were not enacted. In the long run, however, LGs are likely to require additional support through

intergovernmental transfers to meet local recovery expenditure needs, further limiting their income autonomy, as became evident with further waves of the pandemic.

Expenditure (B2)

Across different jurisdictions, the level of expenditure is rigid depending not only on fixed costs, but also if LG services are legislated or considered fundamental, such as in Bosnia, Germany, and Portugal. Before the pandemic, basic services represented the whole of LG expenditure in Bosnia where significant investments and expenditures for upgrading public utility infrastructures increased the level of debt. In Germany, LGs were required to provide a wide range of welfare services, despite economic differences between cities. In Portugal, 57% of current expenditures could not be deferred. Fixed expenditure was around 50% in Spain and in the US. In the latter case, pension and personnel expenses were rigid. LGs in Italy and Australia enjoyed on average less rigidity, allowing them to determine their own expenditure policies (Anessi-Pessina et al., 2012). For example, rigid expenditures accounted for 25% and 38%, respectively, even though it could vary from as low as 10% to as high as 50% in Italian LGs, with 90% of them falling between 14% and 38%, due to their distinct levels of financial autonomy.

First wave of COVID-19

While in all countries LG expenditure increased due to the pandemic, only a few cases adopted specific contingent stimulus packages for local communities. Overall, there were two different approaches: a "reactionary" approach (Germany, Portugal, and US) and a "proactive" approach (Italy, Australia, Bosnia and Herzegovina, and Spain) where in most cases LGs enjoyed more expenditure autonomy and used it to intervene with stimulus packages for local communities that created more financial vulnerability.

In Italy and Portugal, LGs also experienced a reduction in expenditure, depending on the severity and length of lockdowns during the first wave. In Australia, there was an explicit avoidance of expenditure reduction to support local communities, in line with a "proactive" approach. In other countries, state or federal governments helped LGs by postponing expenditures (Italy, Germany, and Portugal), using, for example, cutbacks, spending freezes or moratoriums on loan repayments.

Overall, financial vulnerability increased most in Australia, and Spain, due to the combination of an increase in expenditure directly linked to the pandemic and a "proactive" approach. In Bosnia and Herzegovina financial vulnerability remained high with such a proactive approach, while in Italy such proactive approach was coupled with a provision for LGs to reduce expenditure, restricting the increase in financial vulnerability. Finally, financial vulnerability decreased in Germany and Portugal and remained stable in the US, all countries where LGs experienced a "reactionary" approach with no stimulus packages and enjoyed (partially in Germany) provisions to temporarily reduce expenditure, modifying their traditionally limited expenditure autonomy.

Systemic factor (C): Coping culture

Traditionally, financial forecasts for LG financial vulnerability were approached differently across countries by their central governments or LG associations. In Italy and Bosnia and Herzegovina a historical perspective was used. Similarly, Portugal produced financial and statistical data reports. In Australia, periodic reviews of LG finances were undertaken to anticipate critical issues with financial vulnerability and sustainability, while in the US financial management practices implemented after the global financial crisis of 2007/8 made financial forecasts less critical. In Germany and Spain, financial forecasts were not deemed necessary.

None of the seven countries used stress-test techniques to measure vulnerability, but some (Australia, Bosnia and Herzegovina, Italy, and the US) used financial indicators to measure performance, assess risks and run audits. Without regular assessments of LG financial conditions, Germany and Spain were the most vulnerable, while Portugal's vulnerability was intermediate as they could rely on some financial and statistical data. Because of their assessment of financial conditions, Australia, Bosnia and Herzegovina, Italy, and the US looked least vulnerable from this perspective. In general, it can be observed that the financial forecast techniques and routines do not clearly follow the systemic factors (C) of cultural aspects of UA and LTO (coping culture). In fact, high financial vulnerability due to the lack of regular measurements of LG financial vulnerability is associated with both a country with intermediate UA and high LTO, such as Germany, and a country with low UA and low-to-intermediate LTO, such as Spain. Nor did other systemic factors seem to be influential.

First wave of COVID-19

A few countries promptly assessed the impact of COVID-19 on local finances. Only Germany and Italy undertook specific risks assessments, therefore reducing their contingent dimension of financial vulnerability. No formal assessment was undertaken in the first wave in Australia, Bosnia and Herzegovina, Portugal, Spain, and the US, thus increasing the risk of contingent financial vulnerability due to uncertainty about the impact of the pandemic and related measures. Hence, the two countries with a medium or high UA and LTO (Germany and Italy) assessed their local revenues and expenditures to improve their perceptions, while countries with either low UA or LTO or both (the other five countries) did not.

Discussion

The analysis above provides evidence that most countries have adopted similar measures in the immediate aftermath of the pandemic (de Jong and Ho, 2020). LGs received funding to support specific COVID-19-related expenditures and, in some instances, were allowed to run deficits, while many central governments intervened directly to support citizens and businesses (Anessi-Pessina et al., 2020). Yet, the effects of such measures differed according to the pre-pandemic level of financial vulnerability and considering the role played by systemic factors (see Table 4).

Table 4. Systemic factors and the dynamics in the contingent dimensions of LGs financial vulnerability (FV)

		Changes with the pandemic	Australia	US	Bosnia and Herzegovina	Germany	Italy	Portugal	Spain
Systemic factor	**(A) LG Administrative system**	-	ANGLO-SAXON		SOUTH-EASTERN EUROPEAN	CONT. EUROPEAN FEDERAL	CONTINENTAL EUROPEAN NAPOLEONIC		
Contingent dimension of FV	**1. Administrative structure and fiscal rules**	**2019** **2020**	low =	low =	high =	high -*	low =	medium -*	medium -*
Systemic factor	**(B1) Income financial autonomy**	-	HIGH	HIGH	LOW	MEDIUM	MEDIUM	LOW	LOW
Contingent dimension of FV	**2. Revenue structure**	**2019** **2020**	low -*	low =	high -*	medium -*	medium -*	high -*	high -*
Systemic factor	**(B2) Expenditure financial autonomy**	-	HIGH	HIGH	LOW	LOW	HIGH	LOW	MEDIUM
Contingent dimension of FV	**3. Expenditure structure**	**2019** **2020**	low +	medium =	high =	high -	low +	high -	medium +
Systemic factor	**(C) Coping culture** **i) UA**	-	MEDIUM	MEDIUM-HIGH	LOW-MEDIUM	MEDIUM	LOW-MEDIUM	LOW	LOW-MEDIUM
	ii) LTO	-	LOW	LOW	MEDIUM	MEDIUM-HIGH	MEDIUM	LOW	LOW-MEDIUM
Contingent dimension of FV	**4. Vulnerability outlook**	**2019** **2020**	low +	low +	low +	high -	low =	medium +	high =
FV overall index		**2019** **2020**	low +	low-medium =	high =	medium-high -	low-medium =	medium-high -	medium-high -

Keys: For each country the findings presented in capital letters describe systemic factors; small letters indicate the impact on FV of contingent factors considering systemic factors
+ increase; = unchanged; - decrease, referring to the level of FV (per each dimension or overall index) in the immediate aftermath of Covid-19 in 2020; for the FV index, the sign refers to the dominant direction within the four dimensions under analysis
* = FV level is likely to increase should changes remain structural

This cross-country comparison not only expands Padovani et al. (2021) framework, but also discusses how LG financial vulnerability changed in response to the pandemic, applying a lens of both contingent and systemic factors. In the Anglo-Saxon group (Australia and the US), the vulnerability outlook component of financial vulnerability appears to have increased after the pandemic, primarily attributed to the absence of systematic forecast analyses concerning the crisis's impact on local finances. Their LGs are predominantly autonomous, therefore benefiting from low

financial vulnerability in ordinary times. This latter systemic factor, coupled with a medium-high UA and low LTO, seems to depict a situation where more independent LGs experienced an increase in financial vulnerability. The US and Australia have displayed contrasting patterns in their expenditure structures, which have implications for the contingent dimension of financial vulnerability. In the US, this resulted in a "reactionary" approach, where the support to local communities by state governments was minimal so as not to compromise LG structural financial autonomy. In Australia, LGs were exposed to an increase in financial vulnerability where LGs implemented a "proactive" approach in which LGs intervened by issuing stimulus packages for local communities.

Apart from extraordinary revenues from the central government, Bosnia and Herzegovina, which belongs to the South-Eastern European group, did not react to reduce LG financial vulnerability. The unwillingness or difficulty to temporarily change fiscal rules and a more relaxed attitude to an uncertain future may have caused this reaction.

In contrast, Germany, with its Continental European Federal system, enacted different policies to reduce LG financial vulnerability in all fields. LGs were allowed to hold unbalanced budgets but subject to a spending freeze and received refund of certain LG tax revenue losses from central governments. In enacting "reactionary" policies at the local level coupled with a moratorium on expenditure as well as systematic and specific risks assessments of local revenues and expenditures, Germany was apparently influenced by higher levels of government and a higher UA coupled with a high-level concern for financial vulnerability already in place before the pandemic.

The Continental European Napoleonic group differs across countries. All countries temporarily decreased the level of LG financial vulnerability related to income autonomy, thanks to relevant support from the central government. In Spain and Italy, LGs developed higher financial vulnerability than Portugal because they adopted a series of stimulus measures. LG financial vulnerability remained low in Italy as several systemic forecast analyses on the local financial impact of the pandemic were produced.

Overall, no clear pattern emerged with respect to administrative tradition and structures. Most countries with a strong "rule of law" in their administrative tradition (Germany, Portugal, and Spain) took a more flexible approach to their strict rules, thereby reducing financial pressure on LGs and decreasing financial vulnerability. Strict rules ensured monitoring of the financial situation in the period before COVID-19, which strengthened the position of LGs during the crisis, confirming that regulation by higher levels of governments have important implications for LGs' financial vulnerability (Steccolini et al., 2017; Geissler et al., 2019; OECD, 2020). Yet, this was only relevant in the Anglo-Saxon group.

Contrary to some studies (Bastida et al., 2014; Martell, 2008), even in countries with less LG income autonomy, financial vulnerability did not necessarily increase. Where income financial autonomy was medium or low, extraordinary funding from higher tiers of government was restricted to a few municipalities (Bosnia and Herzegovina). This also happened in Australia, where LGs have a high-income financial autonomy, but the aim was mainly to help LGs to compensate for pandemic-related higher expenditures, rather than to replace lost revenue. In the US, where LGs also benefit from a high-income financial autonomy, no specific financial aid occurred during the pandemic. Overall, while dependence on other levels of governments in normal times suggests financial vulnerability during a crisis due to a lack of autonomy, this may become a strategic tool central governments can use against local vulnerability (OECD, 2020) as long as this help does not become systemic and reduces the level of autonomy LGs enjoy.

Expenditure financial autonomy is a systemic characteristic, which appeared to sometimes influence the expenditure contingent dimension of financial vulnerability, albeit not as a rule. The US and

Spain, which present a similar medium level of expenditure financial autonomy, are in direct contrast. In the former, financial vulnerability has not increased as LGs adopted a “reactionary” approach, where expenses ideally remained almost at pre-pandemic levels. Spanish LGs were more “proactive”, helping local communities by increasing their expenditure and, therefore, increasing LG financial vulnerability. A high expenditure financial autonomy is usually associated with a tendency to use the lever of expenditure reduction to diminish LG financial vulnerability, as appears to be the case in Germany and Portugal (countries where LGs were more "reactionary”), but not in Bosnia and Herzegovina. Overall, the expenditure structure has changed in the aftermath of the pandemic in different unpredictable directions due to the mix of stimulus measures taken by LGs themselves and the response of central governments.

UA and LTO seem not to play a role. Only in Germany and Italy have several assessments of local finances during a crisis been provided to contain the vulnerability outlook, revealing an intriguing aspect of their financial strategies. Despite this focus, neither country reaches the top UA index, potentially showing a mismatch between assessment practices and anticipated UA levels. Beyond UA, differences persist. Germany, with its medium-high LTO index, contrasts Italy's medium LTO index. To fathom these nations' inclination towards crisis-oriented evaluations for vulnerability outlooks, exploring factors beyond UA and LTO becomes crucial.

In considering both contingent dimensions and systemic factors, LG financial vulnerability at the beginning of the crisis seems to have influenced the reaction to the pandemic and consequent effects on financial vulnerability. Indeed, the comparison index of overall financial vulnerability before and in the immediate aftermath of the pandemic leads to some key considerations. On the one hand, there seems to be a “path dependency” influence (Pollitt, 2008, pp. 40–51) where central governments reacted considering LGs’ financial vulnerability before the rise of the pandemic. Where LG financial vulnerability was already relatively high, the national and local levels of government acted together in a way to decrease it. In these countries, LGs have usually applied more “reactionary” measures to help communities, as they needed to be careful to maintain future financial sustainability. This is for example the case of Germany and Portugal. Nevertheless, Spanish LGs were more “proactive” thanks to a central government that robustly supported them by lessening fiscal rules for two years and providing extraordinary grants. Conversely, where LG financial vulnerability was low, central and local levels of government tended to react with fewer emphasis on the financials and more on LGs “proactive” measures to support local communities. Here the reaction differs from the global financial crisis and natural disasters, where costs tend to be borne by the central government only (Miao et al., 2020).

On the other hand, central governments influenced LG financial vulnerability with three types of measures in the immediate aftermath of the pandemic: changes in fiscal rules to enable additional borrowing by LGs (Germany, Portugal, and Spain); financial assistance to increase LG revenues (all countries except the USA); and measures that led to LG cost reductions (Germany, Italy, and Portugal). Only in the two countries where central governments enacted all three measures, namely Germany and Portugal, did the contingent financial vulnerability index decrease. This seems to imply that central governments need to enact a variety of measures to support LGs in order to have a positive impact on their financial vulnerability in the immediate aftermath of such a shock. Partial measures or halfhearted solutions do not have the same positive effect. However, such a proposition would need to be further investigated in other settings and other stages of a global crisis before turning it into a policy suggestion. This is necessary to ascertain its efficacy in all, or at least most, settings and that its long-term effects do not turn out to be undesirable, such as an unwanted re-centralization of power or an unbalanced central – local government relationship.

Conclusion

This paper builds on the growing literature that conceptualizes and assesses LG financial vulnerability. Extending Padovani et al.'s (2021) model, this study considers the influence of some systemic factors on the model's contingent dimensions. The results identify changes in the financial vulnerability regime for a variety of countries in response to the pandemic following a pattern where, in all but one case, measures aimed to contain LG financial vulnerability. The variation in the overall level of financial vulnerability suggests that the level and nature of local financial vulnerability at the beginning of the crisis influenced the reaction of various national and regional governments to the pandemic, strengthening the predominance of "path dependency" in policy choices which has been typical also of other crises (Barbera et al., 2016). That financial vulnerability actually diminished only in those countries where central governments enacted multiple and diverse measures to support LGs. Prior to the pandemic, there was evidence that despite one of the longest periods of economic growth, recovery from the 2007/8 global financial crisis was not uniform across municipalities with some coping better and recovering faster than others (Maher et al., 2023). Our study may suggest that LG financial vulnerability before a crisis helps explain how central and local governments react and how LG financial vulnerability will likely be affected.

Moreover, the analysis introduces a new concept for assessing financial vulnerability based on UA and LTO combined with administrative systems and financial autonomy to construct a qualitative index of financial vulnerability. This measure is then applied to compare before and immediately after the 'first wave' of COVID-19 in different contexts. A shock event such as this allows us to see how vulnerability regimes shift and what factors may cause these shifts. This paper has revealed that, at least in the seven countries under investigation, LG income financial autonomy is the most important systemic factor when looking at financial vulnerability, while LG administrative system seem to matter only for Anglo-Saxon countries and coping culture is particularly relevant where UA and LTO are important. As the analysis was carried out with a qualitative approach, its findings are exploratory, and any correlation or causality would have to be tested with quantitative methods which are beyond the scope of this contribution.

This study's has implications for policy in finding that the higher the LG financial vulnerability at a specific point in time, the higher the need for help from central governments to reduce expenditures. If there is still room for maneuver, the crisis is left on the shoulder of LGs, while if the condition is already critical, central governments tend to take such decisions to alleviate (at least temporarily) the pressure on LG finances. At the same time, when central government intervene, they should implement multiple and diverse measures if their aim is to reduce LG financial vulnerability. Therefore, since a crisis like the pandemic may provoke a wave of re-centralization, increasing the level of financial vulnerability in ordinary times, policymaking may need to help LGs restore their income financial autonomy after the shock, if not strengthen it.

This paper has three main limitations. First, the country selection: future research could apply the same methodology described here at LGs from other countries and administrative traditions to provide a broader picture. Second, another methodological limitation is the reduced degree of control over the research process due to the unique challenge posed by the pandemic; this may have affected the depth and comprehensiveness of the data collected, potentially limiting the insights gleaned from the analysis. Third, the study considers only the period up to the first wave of the pandemic. Policies adopted at this early stage might have a different impact on financial vulnerability at a later stage and the findings may not fully capture the longer-term impacts or evolving circumstances beyond this period. It will be also useful to examine potential financial resilience in the long run, considering, for example, new support measures, such as the Next Generation EU Recovery Fund as well as the likely reformulation of the EU Stability Growth Pact

suspended until 2024 (The Economist, 2022; van der Veer, 2022), to appreciate which factors influence LG financial vulnerability across countries at turbulent times.

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Appendix - Analyzing financial vulnerability

AUSTRALIA

1. ADMINISTRATIVE STRUCTURE AND FISCAL RULES

Before COVID-19

- Territory legislation defines the activities LGs perform and restricts revenues through rates and fee charges.
- Bankruptcy provisions differ between the different states and territory LG systems.
- Proposed borrowings for the coming financial year must include specific projects to which they relate.
- LG is required to report debt servicing and liquidity ratios at recommended levels, 20% and 1.5 respectively.

Immediate Aftermath

- No extraordinary powers have been accorded to local authorities.

2. REVENUE STRUCTURE

Before COVID-19

- High degree of self-sufficiency, funded through a combination of property taxes, fees and charges for services, intergovernmental grants, developer charges and various other minor sources.
- On average, local authorities raise around 61% of their own revenue, with rate income constituting 36% of local revenue, and grants and subsidies comprising about 9%.
- In NSW, local councils are subject to annual property tax limitations that impose ceilings on increases.

Immediate Aftermath

- Revenue was adversely affected with reduced user charges, loan repayment relief for existing loans to community groups, rent relieve, waivers and suspension of hiring fees for council-owned venues.
- The state government (NSW) financially supported councils to pass-on some benefits to businesses and individuals in their local areas, such as delayed fees and the relaxation of municipal business regulations.
- State government committed to support local government childcare centers, regional infrastructure development, increased low-cost loans from state treasury, increased emergency services levy, funding for council-run animal shelters.
- The federal government contributed with financing 'shovel ready' roads and infrastructure projects.

3. EXPENDITURE STRUCTURE

Before COVID-19

- 27% to 50% of current expenditure is rigid (38% on average), i.e. personnel and materials.
- Services are prescribed by law to properties.

Immediate Aftermath

- Expenditures increase to support to local businesses through stimulus packages and community groups, and new services.
- Explicit avoidance of expenditure reduction or slowdown: expediting payments to local suppliers and contractors, retirement of staff without federal assistance, continuance of capital work programs.

4. ASSESSMENT OF VULNERABILITY

Before COVID-19

- Periodic reviews of local government assessed vulnerability and ongoing financial sustainability.
- Assessment of financial sustainability using various financial ratios which are used to classify their performance.
- In 2016 the LG Act was updated as part of the 'Fit for the Future' process, and it stipulated that councils had to have an audit, risk and improvement committee.

Immediate Aftermath

- No formal assessment of the financial impact of COVID-19 on individual LG - The outlook is however positive beside allowed defer property tax and other fees/charges.
- In the longer run, with property prices rising rapidly in the second half of 2020 and the first half of 2021, property tax revenues are likely to rise substantially.

BOSNIA AND HERZEGOVINA

1. ADMINISTRATIVE STRUCTURE AND FISCAL RULES

Before COVID-19

- Debt limitation: the total repayment in any subsequent year must not exceed 18% of its operating revenues; short-term debt cannot be higher than 5% of operating revenues; the total exposure of the LGs under the guarantees issued may not exceed 30% of the amount of operating revenues.
- All debt is subject to the approval of the Ministry of Finance.
- No bankruptcy regulation for LG.

Immediate Aftermath

- The central government did not change the regulations related to debt and borrowing, or other regulations governing local finances.

2. REVENUE STRUCTURE

Before COVID-19

- At LG level, over 50% of revenues in Republic of Srpska and about 30% of revenues in FB&H are from indirect taxes.
- Shares of transfers from central government amount to 8% in the Republic of Srpska and 20% in the FB&H.
- Non-tax revenues like fees, charges, and revenues from the provision of public services are under the direct control of the municipality reach 45% of the total budget, depending on the size of municipalities.

Immediate Aftermath

- The LGs made a decision not to collect rent, utility, fees and other taxes.
- Financial subsidy came through IMF.
- There was no systematic assistance from the federal government.

3. EXPENDITURE STRUCTURE

Before COVID-19

- 31% to 50% of current expenditures is rigid (personnel, social benefits, loan repayments, and ongoing investment expenditures).
- Basic services represent about the whole budget and cannot be disrupted by law.
- LGs have significant investments and expenditures in upgrading public utility infrastructure which cannot be postponed.

Immediate Aftermath

- Expenditures increased for disinfection, street washing, distribution of hygiene materials to vulnerable groups, free delivery of food and medicine to elderly citizens, payment of utilities to socially disadvantaged families.
- Stimulus packages: distribution of free agricultural packages as support of spring sowing, subsidizing interest and creating conditions for more favorable lending, grant funds for artisans who are extremely affected by the crisis, grant funds for industrial protection.

4. ASSESSMENT OF VULNERABILITY

Before COVID-19

- Historical data is used to forecast budget requirements.
- Financial situation is little monitored due to the lack of publicly available financial reports.
- Only the level of indebtedness and repayment capacity are used to monitor vulnerability.

Immediate Aftermath

- Local governments are expecting own revenues to decrease between 10% and 20%, intergovernmental transfers to fall by 65% and VAT around 7%.
- Central government has not taken any action to assess and monitor the situation in LGs or change the provisions of the law concerning these issues.

GERMANY

1. ADMINISTRATIVE STRUCTURE AND FISCAL RULES

Before COVID-19

- Fiscal rules are strict to prevent budget crisis and discipline local budgeting.
- LGs had to freeze spending in the case of imminent revenue shortfalls and deficits.
- State law defines budget balance rules, under which debt is restricted to fund capital spending and supervisory agencies had to approve before fiscal year starts.
- Short-term credits are restricted to ensure liquidity needs.
- No bankruptcy regulation for LG but an implicit bailout expectation by the states.

Immediate Aftermath

- States suspended balanced budget requirements for the upcoming year and allowed to decide on unbalanced budgets.
- Fiscal rule of spending freeze rule in face of revenue shortfalls or imminent deficit was suspended.

2. REVENUE STRUCTURE

Before COVID-19

- Higher-level grants and local taxes make up for equal shares of local government revenues but differ in structure and amount between counties.
- Municipalities and independent cities receive shares of the income tax as well as the VAT, for which federal level sets tax rates. Additionally, municipalities levy property tax and business tax by their own rates.

- Business taxes are equivalent to 20% of local own revenue; the second most relevant is the property tax.

Immediate Aftermath

- Some states refunded business tax losses to municipalities and simplification for companies to cut business tax interim payments.
- Federal government reimbursed half of business tax decline of 2020, cut in businesses taxes payment, and raised reimburses welfare-housing costs permanently.

3. EXPENDITURE STRUCTURE

Before COVID-19

- LGs oversaw a wide range of services that must be developed under state law, therefore the vast majority of expenditure can be considered rigid.
- Economically weak cities showed higher spending shares in welfare (more rigid) and lower ones in capital spending (less rigid).

Immediate Aftermath

- Expenditures increase for health services and rises in welfare spending due to growing unemployment; some local health services and digitalization expenditures were funded by the federal government to shield local budgets from pandemic.
- LGs did not send employees in short-term but there was no reduction in wages.
- Some states adopted minor and temporary regulation to maintain governments liquid, such as spending freeze and cutback measures.

4. ASSESSMENT OF VULNERABILITY

Before COVID-19

- There was no systematic risk assessment or toolbox for vulnerability outlooks at local level.

Immediate Aftermath

- Major decline expected in tax revenues, which will hit rich cities harder than poorer ones, with no expectation of a fast recovery.
- Business tax revenue expected to drop by 30%.
- Service charges also expected to fall.
- Poor LGs have not built sufficient reserves and are burdened by short-term debts, which will rise.
- Loosen fiscal rules and generous state and federal support have bridged financial shortfalls with no need for local cutback measures, but the situation is expected to worsen when such support runs out.
- No formal measurement of LG vulnerability.

ITALY

1. ADMINISTRATIVE STRUCTURE AND FISCAL RULES

Before COVID-19

- Revenue and expenditure autonomy recognized by constitution
- Bankruptcy (bail-in) procedures.
- Several municipalities (especially in the South) have had a history of bailouts Golden rule (deficit for investment purposes only).
- Debt ceilings.

Immediate Aftermath

- No extraordinary powers have been rewarded to local governments.
- Postponement of budget approval deadlines.

2. REVENUE STRUCTURE

Before COVID-19

- Independency rate from other government levels is 29% (independency rate: 71%).
- Main own revenues: property tax (min-max set by central government); surcharge on personal income tax (rate: max set by central government); waste tax; building licenses; touristic tax; others decided at local level.

Immediate Aftermath

- Postponement of several revenue collection deadlines for citizens.
- Benefits in forms of local tax and fees waivers to business and individuals most affected by pandemic, on local level basis (decided by single councils).
- Cash advances from central government.
- Relief grants in view of local taxes and fees reductions.

3. EXPENDITURE STRUCTURE

Before COVID-19

- On average 25% of current expenditure is rigid, i.e., personnel and debt installments; despite some variations across LGs exist ranging from 10 to 50%, 90% of LGs report rigid expenditure between 14% and 39% of current expenditures.
- Discretionary expenditures, i.e. non-fundamental services, represent ca. 22% of municipal current expenditures.
- Expenditure structure varies across municipalities as it depends on which services are provided within fundamental and non-fundamental functions.

Immediate Aftermath

- Expenditures increase for sanitization, local police patrol and social services to support local communities; all expenditures related to pandemic are eligible for state aid.
- Stimulus packages in certain LGs.
- Expenditure decreased for schools, museums, and touristic services shutdowns.
- Postponement of capital installment of mortgages.

4. ASSESSMENT OF VULNERABILITY

Before COVID-19

- Financial forecasts used mainly a historic perspective.
- No stress-test like analysis.
- Financial vulnerability assessed using several indicators, the most important being doubtful accounts receivable, off-balance debt, arrears (overdue commercial debts).

Immediate Aftermath

- Expected own revenues reduction in FY 2020 was estimated between 9 and 22%.
- 28% of municipalities did not have financial buffers to face short run difficulties.
- Paradox: touristic and larger municipalities of wealthy areas were most affected by the pandemic because their revenue was hit most and central government relief measures considered also pre-pandemic conditions, favoring poorer municipalities.
- No discussion about measuring LG vulnerability.

PORTUGAL

1. ADMINISTRATIVE STRUCTURE AND FISCAL RULES

Before COVID-19

- Municipalities are autonomous from the central government, managing their own property, finances, and budget.
- Municipalities vulnerability was reduced by austerity and fiscal consolidation measures from 2012.
- There were effective rules regarding budgetary balance, debt limits, the creation of early warning and municipal financial recovery mechanisms, and accounts auditing.
- Budgetary execution and public expenditure are controlled.

Immediate Aftermath

- Postponed deadlines for submitting annual municipal accounts.
- The application of the budgetary balance rule principle of sustainability was suspended.
- Flexibility in the procedures related to public procurement and contracting new loans.
- Changing in the debt limits.

2. REVENUE STRUCTURE

Before COVID-19

- Own revenue is on average 36% of the total revenue.
- In large urban municipalities the average amount of own revenues has been 64%; in small municipalities it has been 27%.

Immediate Aftermath

- Postponement of the deadlines for collecting municipal taxes.
- Reduction of prices and fees.
- Anticipation of the introduction of the budget balance (surplus) of the previous year, in the accounts for the year 2020.
- Cash advances on transfers from the central government, subsidies, European funding and financing related to investments already approved.
- Possibility of contracting new short-term loans, duly substantiated and directly related to urgent expenses associated with fighting the pandemic.
- The limitation in the estimation of effective revenue was suspended in some LGs.

3. EXPENDITURE STRUCTURE

Before COVID-19

- Approximately 50% of current expenditure is rigid, i.e. personnel expenditure.
- The other half of expenditure is mostly current consumables for the provision of fundamental services – none can be deferred or unaccomplished.

Immediate Aftermath

- Expenditures increased for cleaning public spaces and offices and by local police checks during the blockades and due to the granting of financial support, social assistance, and foodstuffs to people in serious social, economic and financial vulnerability.
- Expenditures decreased for fundamental and non-fundamental services during lockdown
- 12-month moratorium on debt installments.
- Debts were subject of settlement agreements (for water and sewerage sector) do not pay interest on arrears or financial interest.

- Possibility of budgeting new expenditures associated with fighting the pandemic using the Municipal Social Fund.

4. ASSESSMENT OF VULNERABILITY

Before COVID-19

- Some financial and statistical data were available in publications about LG financial condition.
- A medium-term financial planning scheme guided municipalities through the crisis with the use of monitoring and risk control tools.
- Financial planning included monthly questionnaires on pandemic-related expenditure throughout the crisis.

Immediate Aftermath

- Debt levels are expected to increase overall and some capital expenditure to be postponed.
- A monitoring activity is undergoing as specific data are now being collected.
- It will be difficult to balance financial sustainability with the COVID-19 emergency.
- Decentralization is likely to accentuate local vulnerability if LGs are not provided with appropriate resources.

SPAIN

1. ADMINISTRATIVE STRUCTURE AND FISCAL RULES

Before COVID-19

- Budgets had to meet a position of financial equilibrium according to the ESA (European System of Accounts).
- Expenditure cannot exceed medium-term GDP growth rate.
- Debt limits were at 3% of the GDP.
- Commercial debt limits were to not to exceed 30 days from acceptance and verification of goods and services.
- Debt cannot exceed 110% of current revenue.
- If the LG break the rules it had to elaborate an economic-financial plan.

Immediate Aftermath

- No regulation has been stablished for the continuing use of cash surpluses to cover pandemic-related increased expenditures.
- Suspension of fiscal rules was proposed for 2020 and 2021.

2. REVENUE STRUCTURE

Before COVID-19

- Total revenues from local taxes represents 43,6% of the total revenues; being 26,81% of the total revenues from municipal property taxes.
- Current transfers from are 31,64% of the total revenues; from central and regional governments taxes raised.
- The remaining revenue comes from revenues generated by its assets and other private resources, fines and sanctions and other benefits.

Immediate Aftermath

- Governments with accumulated cash surplus were given flexibility to use these surpluses.
- The central government created a special fund destined for all local entities, especially those considered in a situation of financial risk.
- LGs without accumulated cash surplus resourced to financial debt, under the limit of 110% of current revenues as prescribed by law.
- Some regional governments have approved grants for LGs.

3. EXPENDITURE STRUCTURE

Before COVID-19

- The largest share (>50%) of expenditure is rigid.
- 54% of total expenditures can be considered fundamental, therefore 46% is discretionary expense.

Immediate Aftermath

- Expenditures increase for disinfection programs and the installation of technical means for the adaptation of local buildings to the pandemic necessities, acquisition of means of protection for public workers, compensation for total or partial suspension of contracts, teleworking facilities, aid to local community to guarantee access to all essential supplies.
- Stimulus packages related to reactivation of commerce, small and medium-sized companies, and cultural groups, leading to expenses of diverse nature, not foreseen in the Budgets of the LGs.

4. ASSESSMENT OF VULNERABILITY

Before COVID-19

- LG presented overall healthy financial situations, with surpluses in some cases.
- Vulnerability assessments were not deemed necessary.

Immediate Aftermath

- Most LGs have cash surpluses that can finance lower revenues and higher expenditures caused by the health emergency, but it is expected that some municipalities will face deficit in the aftermath of the pandemic.

US

1. ADMINISTRATIVE STRUCTURE AND FISCAL RULES

Before COVID-19

- US LG are not recognized in the federal constitution but are subject to state laws and rules.
- Most US states have many rules regarding administrative structure that is allowed amongst local governments.
- Budgets have to be balanced.
- Limited amount of debt that can be taken on by a LG.
- Bankruptcy procedures apply.

Immediate Aftermath

- Minimal structure changes were introduced after the pandemic.
- Some changes were allowed for delays in audit filings.
- No other major administrative changes occurred.

2. REVENUE STRUCTURE

Before COVID-19

- LG revenues are heavily tilted towards property tax revenues with some specific local governments receiving income and sales tax revenues.
- Intergovernmental aid remains important to local governments in some states.
- Direct aid from the federal government is small compared to other sources of revenue.
- Some cash flow borrowing measures at the state and federal level were introduced if needed but seem sparsely used at this time.

Immediate Aftermath

- Decline of income and sales tax revenues.
- State aid has generally not been cut.
- Property tax revenues have been going up not down during the pandemic but potentially remain vulnerable especially with regards to commercial property values in the future.
- No major problem has been seen yet in households failing to pay taxes due.

3. EXPENDITURE STRUCTURE

Before COVID-19

- There is a moderate degree of rigidity in expenditures as much of it is wage and other benefit costs which represent over 50% of most municipal budgets.
- Also, debt installment and pensions represent a rigid expenditure.
- Only a minimal percentage of expenditure is related to services to be provided by law.

Immediate Aftermath

- Expenditures increase to maintain and clean facilities due to COVID-19, hazard and other increases in employee wages (to keep services available), public health services; some of these higher costs were offset by new federal aid packages.

4. ASSESSMENT OF VULNERABILITY

Before COVID-19

- No need for forecasts as vulnerability of LGs was moderate to low.
- LGs had built up financial reserves over the past decade since the financial crisis.
- LG larger units have implemented financial management practices that take into account risk management and resilience.

Immediate Aftermath

- Stable or increased state and federal aids have mitigated the impact on LGs.
- Federal aid for LGs has been crucial and much larger than at any time since the financial crisis.
- Local revenues have taken a hit in some locations but generally property tax revenues have been growing or stable.
- LG remain vulnerable depending on long term changes.

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A multi-country analysis of local government financial vulnerability during the 2020 pandemic considering systemic factors

Abstract

The COVID-19 pandemic cut across geographical, sectorial and policy boundaries and imposed difficult health, economic and social challenges. Among many learnings, after the 2007-08 global financial crisis and the austerity period which followed it, the economic and health crises forged by the COVID-19 pandemic in 2020 offers an important experience to make local governments more financially resilient and ready to deal with similar shocks.

This paper builds on a recent framework to investigate the impact of the first wave of the COVID-19 pandemic on LG financial vulnerability looking at both contingent and systemic aspects. It addresses the need for a multi-country perspective on the effects of the pandemic and responds to calls to test existing models. Seven countries were chosen to represent different administrative contexts and traditions to understand what factors impact the local level in a time of crisis. Results demonstrate that not only contingent aspects, but also systemic factors and the initial level of financial vulnerability influenced the responses to the pandemic, confirming findings about the importance of initial conditions and "path dependency" by previous studies.

Keywords

Financial vulnerability, local governments, crisis, COVID-19

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Introduction

The COVID-19 pandemic has had a dramatic impact on both society and the economy (OECD, 2020). This impact was particularly felt in local governments (LGs), given their community relationship through service delivery and local development. The financial magnitude of responses to the COVID-19 crisis has varied across jurisdictions, even when adopted measures were similar (de Jong and Ho, 2020; Zhang et al., 2022). This study responds to calls to study the impacts of the pandemic, testing models developed to measure these impacts (Grossi et al., 2020; Trombetta, 2020). Specifically, it addresses the need for a multi-country perspective in public administration research (Kuhlmann and Wollmann, 2019) and providing a better understanding of the impact of the crisis at the subnational level (Zhang et al., 2022). Most studies exploring financial vulnerability resulting from shocks focus on a single country (Grossi et al., 2020), on contingent dimensions that may quickly vary and are specific to that crisis (Padovani et al., 2021), or on public policy issues, central government responses, and crisis management (Boin and Lodge, 2016; Peters, 2011; Zhang et al., 2022).

This paper differs in investigating LG financial vulnerability across countries, looking at both contingent and systemic aspects to answer the questions: what pre-existing conditions increase LG financial vulnerability? What measures are effective at containing it when facing a global crisis? How will the central – local government relationship be affected?

The analysis offers an innovative multi-country approach that allows for cross-country comparison. Building on an existing framework (Padovani et al., 2021), it explores financial vulnerability during the first wave of the pandemic looking beyond the dynamic changes, or the contingent aspects (Pollitt, 2008), and incorporating systemic factors, or the backdrop against which these changes are analyzed. In other words, while the primary analysis in Padovani et al. (2021) concentrates on the dynamic, crisis-induced changes, this study positions them within a broader, systemic framework. Specifically, it: (i) compares changes in LG financial vulnerability and their potential drivers in the immediate aftermath of the pandemic in seven countries, representing four distinct LG administrative systems (Kuhlmann and Frankze, 2022), with different levels of financial autonomy (Ladner et al., 2016; Oulasvirta and Turala, 2009), and with intrinsically different cultural aspects (Hofstede, 2024); (ii) identifies trends emerging from the first wave of the pandemic; and (iii) evaluates whether LG responses to the crisis are hampered or facilitated by LG administrative systems, levels of financial autonomy, and prevailing (national) culture (Boin and Lodge, 2016). Hence, the study contributes to the debate on financial vulnerability by expanding previous frameworks and provides insights for policymakers managing the impact of a global crisis on local finances learning from what happened in 2020 during the first wave of the COVID-19 pandemic.

Theoretical background and conceptual framework

Local governments' financial vulnerability

Traditionally, financial vulnerability at local government level has been linked to financial distress and bankruptcy forecasting *vis-à-vis* solvency and financial sustainability (Jones and Walker, 2007; Ferry et al., 2015). Arunachalam et al. (2017, p.52) define as vulnerable a vulnerable local authority as thatthe one, which, without some structural reform and major revenue and expense adjustments, "is highly unlikely to be able to manage unforeseen financial shocks and any adverse changes in its business and in general economic conditions". In response to the global financial crisis of 2007-08, some governments implemented austerity measures to minimize public debt levels through reduced public expenditure, while local governments took considerable measures to lower high levels of vulnerability (Hastings et al., 2015; Ferry et al., 2017). Yet, many scholars have argued that not only austerity was a common response measure compelling difficult decisions that tended to increase

vulnerability (Posner and Sommerfield, 2012; Barbera et al., 2020), but also that such economic restructuring was a failed idea, ~~because it complicated the impacts of the crisis, caused~~given its consequential ~~a~~ downturn or the~~a~~ slower recovery in some countries, ~~and~~ which resulted in increased financial vulnerability (Blyth, 2013; Kenneth et al., 2015; Hodges and Lapsley, 2016). On the backdrop of such experiences, it is important to learn also from the measures implemented to face the financial instability caused by the COVID-19 pandemic to appreciate how local governments can be more financially resilient and readier to deal with similar shocks.

Overall, financial vulnerability can be conceptualized as inversely related to the capacity of public administrations "to cope with emerging shocks" (Barbera et al., 2020: 533) or to the level of exposure to shocks (McManus et al., 2007). Hence, perceived financial vulnerability is the degree to which organizations perceive they are exposed to specific shocks or crisis (Saliterer et al. 2017). Prior research focuses on the macroeconomic (e.g., Pollner et al., 2001) and organizational levels (Barbera et al., 2019; Walker et al., 2002), where it has been defined as "the extent to which the organization depends on resources that are beyond its own control or influence" (Cabaleiro et al., 2013: 733). This definition captures situations where decisions on resource inflows are made by other entities, increasing financial risk ~~because~~ due to~~of~~ the potential difficulty ~~of~~ in balancing the accounts (Martell, 2008; Bastida et al., 2014). This is analogous with LGs because they receive grants from the central government and are subject to moral hazard despite guarantees of financial support (Lobo and Ramos, 2011; Persson and Tabellini, 1996).

Research finds that fiscal rules applied by central, state, or regional governments can limit LG capacity to react to shocks (Steccolini et al., 2017). These can also change in reaction to shocks, and limit the autonomy of LGs, shaping the decisions they can make and impacting their financial vulnerability (Barbera et al., 2017; Geissler et al., 2019). During the pandemic, fiscal rules such as limits to current and capital expenditures, "golden rule" debt ceilings, and so on, determined different impacts on LGs' financial vulnerability in different countries (OECD, 2020).

Yet, broader definitions of financial vulnerability also consider what Barbera et al. (2017) called "internal sources" of financial vulnerability. For example, the level of diversification of revenues (Berne and Schramm, 1986) and the availability of cash and financial reserves (Downing, 1991; Jacob and Hendrick, 2012), can reduce financial vulnerability (Mikesell, 2013), ~~as much as~~while the rigidity of expenditure (e.g., that required for basic services) ~~tends to~~can increase financial vulnerability (Cohen et al., 2017).

While internal and external elements can be considered for an objective measure of vulnerability, an organization's perception of the type and magnitude of ~~a~~ shock changes over time ~~and~~ impacts how the organization reacts and responds (Steccolini et al., 2017; Anessi-Pessina et al., 2020). In fact, perceptions play an important role in the anticipatory capacity to both react to ~~shocks~~ and recover from shocks ~~them~~ (Barbera et al., 2019). In some cases, such as after the global financial crisis, local governments deployed their capacities and capabilities to forecast possible events and manage their vulnerabilities in coping with shocks during times of crises (Jones, 2017). At the same time, there is evidence of the influence of politicians' preferences and partisan biases in support for local governments during the pandemic (Clemens and Veuger, 2021; van der Voet, 2022). But it would be rather difficult to include such parochial considerations in a multi-country comparative study.

Financial vulnerability in the aftermath of COVID-19: contingent versus systemic factors

Over time many scholars have strived to develop a theoretical framework to understand and explain local fiscal condition (Berne and Schramm 1986; Honadle et al., 2004; Nollenberger et al., 2003; Hendrick, 2011; Maher et al., 2023). Padovani et al. (2021) recently developed an analytical framework to examine LG financial vulnerability before and in the immediate aftermath of the pandemic, herein referred to ~~herein~~ as "the first wave", by mapping and systematizing its contingent

dimensions and sources at country level. It considers four fields of financial vulnerability: (1) Administrative structure and fiscal rules, (2) Revenue structure, (3) Expenditure structure, and (4) Vulnerability outlook.

Dimension (a) considers each municipality as part of a broader environment, where fiscal rules and decisions are set by higher levels of government. After the pandemic, central, state, and regional governments might have changed this environment, for example, by reducing debt ceilings or increasing expenditure caps. Furthermore, higher levels of government may have intervened with extraordinary intergovernmental transfers or other bailout measures to lessen financial vulnerability.

Dimensions (b) and (c) conceptualize each municipality as a single organizational entity, with specific and unique structures of revenues and expenditures, constituting a separate "field of vulnerability". LG revenues were affected differently after the pandemic. Tourism related revenues, for example, decreased dramatically due to lockdowns, also affecting business and personal income taxes (Vidovic, 2022). Other industries experienced increased demand, for example, for energy equipment and services, tobacco, metals and mining, food products, and diversified financial services. Expenditures wereExpenditure was also affected. For example, the decision to close schools positively impacted (i.e., reduced) heating expenditures, and fewer public transport users meant reduced cost of fuel and personnel. However, expenditure increased, for example, where personnel were hired on a fixed term contract, and had to be paid regardless of services affected by the pandemic. Healthcare and social service costs increased significantly.

Dimension (d) relates to the risk perception and awareness of the capacity to cope with a crisis. Such perceptions are based both on an underlying cultural element (Tallaki and Bracci, 2021) and available information, which affects the way shocks are interpreted and subsequently tackled (Steccolini et al., 2017). In this case, knowledge of vulnerabilities plays a central role in the anticipatory and coping capacities of LGs (Barbera et al. 2019). For example, different countries benefitted from different financial forecasting systems in the aftermath of the pandemic. The role of available accounting information was pivotal in perceiving the level of financial vulnerability (Padovani and Iacuzzi, 2021) and in implementing responses (Ahrens and Ferry, 2020).

In their seminal work on the models of public management reforms, Pollitt and Bouckaert (2004) make a distinction between elements that are "structural", herein referred to as systemic, i.e., that do not change in the short-medium run, and those that are more "ephemeral", herein referred to as contingent, such as "short-term economic cycles of upturn and downturn" (Pollitt and Bouckaert, 2004: 27). They argue that all elements of a policy can be subject to change, but at different speeds. In fact, as other authors suggest (e.g., Lijphart, 1999), some systemic features like the administrative and political system may vary only gradually or infrequently, and therefore are more stable in nature. Under this perspective, Padovani et al.'s (2021) model is contingent in nature, considering only those dimensions that may vary rapidly, that issuch as crisis-induced changes. In other words, as the temporal dimension is crucial in many public policy and management problems (Pollitt, 2008), we argue that a systemic framework considering more stable backdrop factors can influence the immediate reaction to a crisis. These, which we refer to as systemic factors, provide further insight into the above-described contingent dimensions. Below we present and discuss three systemic factors that expand the concept of financial vulnerability: (A) LG administrative systems; (B) financial autonomy, consisting of income (B1) and expenditure (B2); and (C) prevailing culture.

Systemic factor (A): LG administrative system

The first dimension looks at fiscal rules and only refers to LG administrative structure. It focuses on limits to current and capital expenditure financing, debt ceilings and balanced budget requirements, which are decided by higher levels of government, potentially creating budget constraints, and

fostering fiscal adaptation and consolidation pressures (Barbera et al., 2017). But other institutional factors influence how systems of government respond to crises (Lodge and Hood, 2012), including administrative traditions and country-level administrative structure (Kuhlmann and Wollmann, 2019; Peters, 2021). The degree of decentralization and level of supervision and regulation by higher levels of government should also be considered (e.g., Geissler et al., 2019). While crises may cause rapid changes in policy, these institutional factors take longer to evolve (Pollitt, 2008).

Recent taxonomies can help identify the potential role of administrative structure in local financial vulnerability. Kuhlmann and Wollmann (2019) identify administrative systems according to their traditions and structures (see Table 1).

Table 1. Types of LG administrative systems

Administrative Profile	Administrative Tradition	Administrative Structure
Continental European Napoleonic (FR, IT, PT, GR, ES, BE)	Rule of law, legalism Southern Europe subgroup: clientelism, party patronage, politicization	Unitary-centralized; weak LG (decentralization in F, I, E since 1980s/1990s)
Continental European Federal (DE, AT, CH)	Rule of law, legalism CH: weaker separation of state and society; weaker public service	Federal-decentralized; strong LG
Nordic (SE, NO, DK, FI, NL)	Rule of law culture, transparency/contact culture; accessibility of administration for citizenship	Unitary-decentralized; strong LG/civic self-organization
Anglo-Saxon (UK)	Public interest culture, pragmatism	Unitary-centralized; strong LG (weakened since 1980s)
Central Eastern European (HU, PL, CZ)	Socialist cadre administration ("Stalinist" legacy); since the system change, re-establishment of pre-communist (rule-of-law) traditions	Unitary-decentralized; strong LG (recentralization in H since 2011)
South-Eastern European (BG, RO)		Unitary-centralized; weak LG

Source: Kuhlmann and Wollmann (2019: 24).

Systemic factor (B): Financial autonomy for income (B1) and expenditure (B2)

The second dimension focuses on financial vulnerability associated with internal issues, namely revenues and expenditures. Facing a crisis, LG revenues are uncertain because its tax bases shrink while unemployment and social inequality increase, thereby increasing expenditure on social services (Pollitt and Bouckaert, 2017). The model thus considers various coping and anticipatory capacities for both revenues and expenditures, particularly in terms of LG autonomy (Padovani et al., 2021).

In terms of income and expenditure, financial autonomy represents local autonomy or decentralization (Ladner et al., 2016). It is, determined by whether fiscal powers have been devolved from central governments to LGs in an attempt toto increase efficiency and effectiveness in public services (Oates, 1972). While the impact of autonomy on financial performance and conditions is intensely debated (Navarro-Galera et al., 2017), there is some consensus about financial vulnerability decreasing as financial autonomy increases (Ahrens and Ferry, 2020; Mikesell, 2013).

Padovani et al.'s (2021) framework does not consider a spectrum of autonomy, but this became more important as LGs reacted to the pandemic. The lockdown reduced some non-fixed costs, mainly revenues from taxes and fees, while expenditures on social services increased. Therefore,

consequences for LGs' finances depended on their individual exposure in terms of both revenues and expenditures (Ahrens and Ferry, 2020; Nemec and Spacek, 2020). While financial autonomy is traditionally assessed by looking exclusively at income sources (OECD, 2001; Ebel and Yilmaz, 2002), expenditure autonomy also matters (Oulasvirta and Turala, 2009) and both revenues and expenditures vary greatly between LGs (UCLG, 2019). Income autonomy decreases when LGs are more dependent on funding from higher tiers of government than on their own revenue. Expenditure autonomy decreases as LGs have more obligatory expenditures due to regulation. The dynamics of these aspects are usually related to structural reforms (Pollit and Bouckaert, 2017) and can be considered systemic factors influencing revenues and expenditures during a crisis and, consequently, financial vulnerability.

Systemic factor (C): Coping culture

Padovani et al.'s (2021) model focuses on four sources of vulnerability: (1) availability of information; (2) financial planning and monitoring capacities; (3) self-awareness; and (4) LG perception of its financial position. The framework does not isolate cultural aspects of coping perception, despite public management strategies being underpinned by cultural characteristics (Pillay, 2008) and national culture that influence, for example, public administration reforms (Khan, 1991). Other scholars have emphasized that perceived resilience depends not only on contingent factors such as the availability and use of relevant information, but also on a more general risk perception which is an underlying cultural element (Tallaki and Bracci, 2021).

To observe the underlying cultural factors affecting coping perception, we used two dimensions from the Hofstede's (2024)~~'s~~ model, which can provide a useful framework for understanding how cultural differences can affect decision making and perceptions in accounting as well as management and other fields (Joannidès at al., 2020). Although the model consists of six dimensions, we chose only two dimensions (Table 2), uncertainty avoidance (UA) and long-term orientation (LTO). According to Hofstede (2024), UA "has to do with the way that a society deals with the fact that the future can never be known" and "whether we should try to control the future or just let it happen". The UA index indicates how much individuals within a culture perceive uncertainty, ambiguities, or unfamiliar scenarios as threatening, prompting the development of codified attitudes and predefined systems to evade such situations. LTO delineates society's inclination "to maintain some links with its own past while dealing with the challenges of the present and future" (Hofstede, 2024). Societies scoring low on this dimension, for instance, lean towards preserving time-honored traditions and norms while regarding societal change with suspicion. Conversely, cultures with high scores on this dimension adopt a more pragmatic approach, promoting thrift and investment in modern education ~~as a means to~~to prepare for the future. The other Hofstede's dimensions are not directly related to the behavior of society and decision making in coping with future or uncertainty, so there are not connected with this research.

Table 2. Uncertainty avoidance and long-term orientation scores

	Uncertainty avoidance (UA)		Long-term orientation (LTO)	
Countries	**Index**	**Classification**	**Index**	**Classification**
Australia (AUS)	51	Medium	21	Low
Bosnia and Herzegovina (B&H)	87	Low-Medium	70	Medium
Germany (DE)	65	Medium	83	Medium-High
Italy (IT)	75	Low-Medium	61	Medium
Portugal (PT)	99	Low	28	Low
Spain (ES)	86	Low-Medium	48	Low-Medium
United States (US)	46	Medium-High	26	Low

Source: adapted from Hofstede (2024); a low UA indicates greater uncertainty avoidance; a high LTO indicates greater long-term orientation. The classification considers the quintiles between the minimum and maximum values for each dimension by Hofstede (2024), so that a low LTO falls in the first quintile a Low-Medium LTO in the second quintile, and so on. For UA the values are reversed as a high UA value corresponds to a low UA level.

Even though the Hofstede model has well known limitations (e.g. Baskerville 2003; Blodgett et al., 2008; McSweeney, 2002), prior studies establish that UA has an impact on public management practices and traditions (Islam, 2004) and on public service motivation (Kim, 2017), and particularly on disaster risk management (David, 2016). Hence, it is expected that LGs in countries with similar UA and LTO levels were similarly influenced in their responses to the pandemic. Countries exhibiting high UA with their intolerance for ambiguities and rigid codes of belief and behavior, are expected to present a lower coping ability. Similarly, societies that score low on the LTO dimension prefer to maintain time-honored traditions and norms while viewing societal change with suspicion, and hence are expected to be less comfortable with the flexibility and change required to cope with financial vulnerability. Conversely, those with a culture where LTO scores high could take a more pragmatic approach. While it may be difficult to establish correlation or causality, the analysis can reveal similarities in the responses to the pandemic across countries with analogous systemic features.

Methods

This paper extends the cross-country comparability of Padovani et al.'s (2021) model in two ways. ~~On the one hand~~Firstly, it incorporates relevant systemic factors, such as the type of LG administrative system (Kuhlmann and Wollmann, 2019), the level of financial autonomy (Ladner et al., 2016; Oulasvirta and Turala, 2009), and two cultural aspects (Hofstede, 2024), to investigate the impact of the first wave of the pandemic on LG financial vulnerability (Table 3). ~~On the other hand~~In addition, it extends the analysis from two countries, Italy and Portugal, belonging to the same Continental European Napoleonic administrative tradition (Kuhlmann and Franzke, 2022), to seven countries with different administrative and cultural backgrounds.

With the aim to illustrate this revised model, information was collected from members of the international network Local Government Financial Standards Across Countries – Australia, Bosnia and Herzegovina, Germany, Italy, Portugal, Spain, and United States. The countries were selected because they provided a range of different contexts of administrative traditions and roles of LGs, which ~~and~~ allowed for comparison between up to four distinct LG administrative systems (Kuhlmann and Franzke, 2022), representing diverse and instrumental case studies (Seawright and Gerring,

2008; Stake, 1995). In particular, we focused on the Continental European Napoleonic administrative system, characterized by a legalistic approach and weak LGs despite some level of decentralization; the Continental European Federal model, again with a legalistic approach but with a stronger decentralization; Anglo-Saxon countries, with a public interest, pragmatic culture and with strong LGs; South-Eastern European countries, ~~with~~ transitioning from a socialist cadre administration to rule-of-law pre-communist traditions and weak LGs. Such comparison allows to verify whether different traditions explain the different impacts of the pandemic on financial vulnerability or simply ensure representativeness of countries. However, Australia, Germany and the US are large, federated countries comprised of different states, each with its own level of autonomy for LGs. It is accordingly ~~difficult~~ unfeasible to generalize LG administrative structures and fiscal rules. The examination of each country in its entirety offers a comprehensive perspective on LG dynamics and their responses, while not explicitly delving into the potential variations and distinctions present among the individual federal states. Additionally, it is important to note that collecting directly comparable data across all the federal states can be challenging due to objective limitations such as the availability of information (OECD/UCLG, 2019). Bosnia and Herzegovina, on the other hand, is also a federal state, but ~~it~~ presents a more homogeneous behavior across its different entities as far as LGs are concerned.

The analysis of the financial vulnerability of each country's LGs was carried out by recognized experts in each country, who collected information from official documents, legislation, and regulations in the initial aftermath of the pandemic spanning from March to December 2020, creating a "country portrait" according to Padovani et al.'s (2021) framework (see Appendix). Their expertise was cultivated from firsthand engagement in diverse projects and organizations pertinent to the subject matter, yielding a ~~reservoir~~pool of novel insights. This strategic approach was conceived as a response to the unique challenge posed by the pandemic, which introduced a reduced degree of control over the research process and simultaneously demanded heightened flexibility, increased sensitivity, and enhanced research skills (Uleanya and Yu, 2023). Anchored in this experiential foundation, we established a dynamic real-time data collection mechanism, a move that proved indispensable given the rapid pace of events during the pandemic. The application of an iterative approach further fortified the reliability of our methodology, enabling continuous refinement as new information emerged. It is worth noting that a subsequent retrospective analysis, involving the compilation of subsequent reports and scientific literature, holds the potential to enhance the robustness of our research findings. However, it also underlines that without this proactive approach, we might not have fully comprehended the intricacies of the immediate aftermath of the COVID-19 pandemic.

A total of seven experts, including the authors, were first required to carry out a qualitative analysis based on the systematic framework by Padovani et al.'s (2021) and classify countries 'low', 'intermediate' and 'high' levels of pre- and post-pandemic vulnerability in the first wave of the crisis applying ~~qualitative~~ a criteria defined by the framework, which identifie~~s~~d patterns, ranges, or thresholds that distinguished between low, intermediate, and high values. Their answers were then circulated among all experts to evaluate whether the coding scheme was applied consistently to guarantee objectivity, uniformity, and final consensus. After this, the authors evaluated the impact of the pandemic on LG financial vulnerability relative to each country's specific systemic and contingent factors, based on evidence contained in the literature (Table 3).

Table 3. LG financial vulnerability enhanced framework

Contingent	Systemic
Fields of financial vulnerability	**Influencing factors**
1. Administrative structure and fiscal rules	(A) LG administrative system
2. Revenue structure	(B1) Income financial autonomy
3. Expenditure structure	(B2) Expenditure financial autonomy
4. Vulnerability outlook	(C) Coping culture (Uncertainty avoidance, Long-term orientation)

Source: Columns 1 defined by Padovani et al. (2021); Column 2 current additional analysis.

Results

The analysis resulted in findings for each systemic factor which are summarized below. More details about the materials analyzed and the results for each country are contained in the Appendix.

Systemic factor (A): LG administrative system

The seven countries represent four different types of LG systems. Italy, Portugal, and Spain belong to the Continental European Napoleonic tradition, which are characterized by strong centralized bureaucracies, strong legalistic orientation, and politicization. The Continental European Federal model, as seen in Germany, is also centered on the principle of legality but regions and LGs have greater autonomy (Kuhlmann and Franzke, 2022). Bosnia and Herzegovina represents a typical South-Eastern European administrative system, where pre-communist administrative traditions may negatively impact public administration (Cierco, 2013). Anglo-Saxon common law countries, represented by the US and Australia, are characterized as pragmatic and this may make them less financially vulnerable.

Prior to COVID-19, the policies of all seven countries mandated budgeting, and in some cases specific budgeting formats and rules that shaped, for example, governmental and managerial structure, debt limits and rules, revenue sources and opportunities, as well as the minimum services LGs must provide. Budget and accounting laws were generally in place to reduce financial vulnerability by requiring structured processes to balance LG budgets and guarantee transparency.

Planned resources and expenditures for the coming financial year were also subject to higher government approval. ~~To control LG debt levels, I~~in some countries (Australia, Bosnia and Herzegovina, Germany), borrowing is approved by external agencies or central government to control LG debt levels. In Italy, Portugal, Spain and the US, specific debt ceilings were fixed by state, regional or national rules.

The most important difference in structures and rules were mechanisms holding LGs responsible for their overall financial performance. Bankruptcy rules were present in Italy, the US, and some states and territories of Australia to prevent financial vulnerability. Greater financial vulnerability was observed in Germany ~~where it~~which could have been induced by expenditure freezes in response to potential deficits. Similarly, a financial plan was required from LGs that did not comply with fiscal consolidation rules in Spain and Portugal. These LGs were more vulnerable before the pandemic, albeit not as much as LGs in Bosnia and Herzegovina, where no specific procedures were in place.

First wave of COVID-19

These seven countries can be divided into two groups according to the measures taken to support LGs in the first wave of the pandemic, which represent the contingent factors of financial vulnerability. In Australia, Bosnia and Herzegovina, Italy, and the US changes were minimal, if at all, and temporary. ~~as~~ ~~f~~For example, delays in audit filings or flexible borrowing ceilings, and no extraordinary powers were granted to LGs with small changes in financial vulnerability.

In the second group (Germany, Portugal, and Spain) more comprehensive measures were applied. A centralized approach emerged after infection risks were adjusted from 'low/medium' to 'high' (Kuhlmann and Franzke 2022). German states allowed LGs to have unbalanced budgets and the spending freeze rule was suspended. In Portugal, LGs benefitted from the suspension of the balance rule principle and financial re-equilibrium plan requirements, and an increase in debt limits. In Spain, the central government suspended fiscal rules for two years. For these countries, financial vulnerability decreased in the immediate aftermath of the pandemic but may increase in the future if such measures remain structural. For example, German LGs experienced significant decline in local tax revenues (-9.8%) while coping with crisis-related additional expenditures and an expected increase of municipal spending on welfare (Freier and Geißer, 2020; Kuhlmann and Franzke, 2022). The return to pre-pandemic fiscal rules in all three countries is likely to increase future financial vulnerability. In addition, as in disaster recovery situations (de Souza et al., 2015), LGs will likely face an increased financial burden for supporting the recovery of local economies under the pressure of increasing costs and restricted access to resources.

Systemic factor (B): Income and expenditure financial autonomy

Income (B1)

LGs across the observed countries differ in their level of income financial autonomy. Before the pandemic, the budgets of LGs in Australia, the US and Italy relied heavily on revenue earned. In Germany, transfers from higher levels of government were equal to revenue earned. In Bosnia and Herzegovina, Spain and Portugal, transfers dominated. A common feature of all countries was that richer LGs earned more revenue and therefore had more financial autonomy. The main sources of revenue were property tax (US, Italy, Australia, Germany, and Spain), personal income (Italy and Australia), business tax (Germany), fees and charges (Australia, and Bosnia and Herzegovina).

Countries in which intergovernmental transfers dominated and LGs could not determine tax rates according to local expenditure requirements, such as Bosnia and Herzegovina, Portugal, and Spain, were more vulnerable. German LGs can decide the rate of property and business taxes, decreasing their financial vulnerability even during normal times. In Italy, the central government prescribes the maximum or minimum amount of certain tax rates, curbing LGs' revenues and increasing financial vulnerability. LGs in Australia and in the US were less financially vulnerable prior to the pandemic as they depended less on state transfers and could independently determine tax rates.

First wave of COVID-19

Overall, the main contingent measure related to LG revenue was the adoption of waivers or reductions of local taxes and fees, which led to ~~a~~ reductions in revenue. Some LGs benefitted from cash advances from central governments (Italy, Portugal, and Spain), others received additional financing for capital projects (Australia and Germany), low-cost loans from state treasury (Australia), and refunds for certain tax revenue losses (Germany and Italy~~), or~~) or saw the development of economic and social recovery funds for all (Spain) or selected local entities (Bosnia and

Herzegovina). No additional aid from central government was recorded in the US during the pandemic's first wave.

These contingent measures led to a reduction in income autonomy as well as in financial vulnerability, at least in the short run, in all countries except the US, where such measures were not enacted. In the long run, however, LGs are likely to require additional support through intergovernmental transfers to meet local recovery expenditure needs, further limiting their income autonomy, as became evident with further waves of the pandemic.

Expenditure (B2)

Across different jurisdictions, the level of expenditure is rigid depending not only on fixed costs, but also if LG services are legislated or considered fundamental, such as in Bosnia, Germany, and Portugal. Before the pandemic, basic services represented the whole of LG expenditure in Bosnia where significant investments and expenditures for upgrading public utility infrastructures increased the level of debt. In Germany, LGs were required to provide a wide range of welfare services, despite economic differences between cities. In Portugal, 57% of current expenditures could not be deferred. Fixed expenditure was around 50% in Spain and in the US. In the latter case, pension and personnel expenses were rigid. LGs in Italy and Australia enjoyed on average less rigidity, allowing them to determine their own expenditure policies (Anessi-Pessina et al., 2012). For example, ~~i.e.~~ rigid expenditures accounted for 25% and 38%, respectively, even though it could vary from as low as 10% to as high as 50% in Italian LGs, with 90% of them falling between 14% and 38%, due to their distinct levels of financial autonomy~~, allowing them to determine their own expenditure policies (Anessi-Pessina et al., 2012)~~.

First wave of COVID-19

While in all countries LG expenditure increased due to the pandemic, only a few cases adopted specific contingent stimulus packages for local communities. Overall, there were two different approaches: a "reactionary" approach (Germany, Portugal, and US) and a "proactive" approach (Italy, Australia, Bosnia and Herzegovina, and Spain) where in most cases LGs enjoyed more expenditure autonomy and used it to intervene with stimulus packages for local communities that created more financial vulnerability.

In Italy and Portugal, LGs also experienced a reduction in expenditure, depending on the severity and length of lockdowns during the first wave. In Australia, there was an explicit avoidance of expenditure reduction to support local communities, in line with a "proactive" approach. In other countries, state or federal governments helped LGs by postponing expenditures (Italy, Germany, and Portugal), using, for example, cutbacks, spending freezes or moratoriums on loan repayments.

Overall, financial vulnerability increased most in Australia, and Spain, due to the combination of an increase in expenditure directly linked to the pandemic and a "proactive" approach. In Bosnia and Herzegovina financial vulnerability remained high with such a proactive approach, while in Italy such proactive approach was coupled with a provision for LGs to reduce expenditure, ~~so~~ restricting the increase in financial vulnerability ~~was little~~. Finally, financial vulnerability decreased in Germany and Portugal and remained stable in the US, all countries where LGs experienced a "reactionary" approach with no stimulus packages and enjoyed (partially in Germany) provisions to temporarily reduce expenditure, modifying their traditionally limited expenditure autonomy.

Systemic factor (C): Coping culture

Traditionally, financial forecasts for LG financial vulnerability were approached differently across countries by their central governments or LG associations. In Italy and Bosnia and Herzegovina a ~~historic~~historical perspective was used. Similarly, Portugal ~~made~~ produced ~~some~~ financial and statistical data ~~available~~reports. In Australia, periodic reviews of LG finances were undertaken to anticipate critical issues with financial vulnerability and sustainability, while in the US financial management practices implemented after the global financial crisis of 2007/8 made financial forecasts less critical. In Germany and Spain, financial forecasts were not deemed necessary.

None of the seven countries used stress-test techniques to measure vulnerability, but some (Australia, Bosnia and Herzegovina, Italy, and the US) used financial indicators to measure performance, assess risks and run audits. Without regular assessments of LG financial conditions, Germany and Spain were the most vulnerable, while Portugal's vulnerability was intermediate as they could rely on some financial and statistical data. Because of their assessment of financial conditions, Australia, Bosnia and Herzegovina, Italy, and the US looked least vulnerable from this perspective. In general, it can be observed that the financial forecast techniques and routines do not clearly follow the systemic factors (C) of cultural aspects of UA and LTO (coping culture). In fact, high financial vulnerability due to the lack of regular measurements of LG financial vulnerability is associated with both a country with intermediate UA and high LTO, such as Germany, and a country with low UA and low-to-intermediate LTO, such as Spain. Nor did other systemic factors seem to be influential.

First wave of COVID-19

~~Few~~A few countries promptly assessed the impact of COVID-19 on local finances. Only Germany and Italy undertook specific risks assessments, therefore reducing their contingent dimension of financial vulnerability. No formal assessment was undertaken in the first wave in Australia, Bosnia and Herzegovina, Portugal, Spain, and the US, thus increasing the risk of contingent financial vulnerability due to uncertainty about the impact of the pandemic and related measures. Hence, the two countries with a medium or high UA and LTO (Germany and Italy) assessed their local revenues and expenditures to improve their perceptions, while countries with either low UA or LTO or both (the other five countries) did not.

Discussion

The analysis above provides evidence that most countries have adopted similar measures in the immediate aftermath of the pandemic (de Jong and Ho, 2020). LGs received funding to support specific COVID-19-related expenditures and, in some instances, were allowed to run deficits, while many central governments intervened directly to support citizens and businesses (Anessi-Pessina et al., 2020). Yet, the effects of such measures differed according to the pre-pandemic level of financial vulnerability and considering the role played by systemic factors (see Table 4).

Table 4. Systemic factors and the dynamics in the contingent dimensions of LGs financial vulnerability (FV)

		Changes with the pandemic	Australia	US	Bosnia and Herzegovina	Germany	Italy	Portugal	Spain
Systemic factor	**(A) LG Administrative system**	-	ANGLO-SAXON		SOUTH-EASTERN EUROPEAN	CONT. EUROPEAN FEDERAL	CONTINENTAL EUROPEAN NAPOLEONIC		
Contingent dimension of FV	**1. Administrative structure and fiscal rules**	**2019** **2020**	low =	low =	high =	high -*	low =	medium -*	medium -*
Systemic factor	**(B1) Income financial autonomy**	-	HIGH	HIGH	LOW	MEDIUM	MEDIUM	LOW	LOW
Contingent dimension of FV	**2. Revenue structure**	**2019** **2020**	low -*	low =	high -*	medium -*	medium -*	high -*	high -*
Systemic factor	**(B2) Expenditure financial autonomy**	-	HIGH	HIGH	LOW	LOW	HIGH	LOW	MEDIUM
Contingent dimension of FV	**3. Expenditure structure**	**2019** **2020**	low +	medium =	high =	high -	low +	high -	medium +
Systemic factor	**(C) Coping culture** **i) UA**	-	MEDIUM	MEDIUM-HIGH	LOW-MEDIUM	MEDIUM	LOW-MEDIUM	LOW	LOW-MEDIUM
	ii) LTO	-	LOW	LOW	MEDIUM	MEDIUM-HIGH	MEDIUM	LOW	LOW-MEDIUM
Contingent dimension of FV	**4. Vulnerability outlook**	**2019** **2020**	low +	low +	low +	high -	low =	medium +	high =
FV overall index		**2019** **2020**	low +	low-medium =	high =	medium-high -	low-medium =	medium-high -	medium-high -

Keys: For each country the findings presented in capital letters describe systemic factors; small letters indicate the impact on FV of contingent factors ~~taking into account~~considering systemic factors
+ increase; = unchanged; - decrease, referring to the level of FV (per each dimension or overall index) in the immediate aftermath of Covid-19 in 2020; for the FV index, the sign refers to the dominant direction within the four dimensions under analysis
* = FV level is likely to increase should changes remain structural

This cross-country comparison not only expands Padovani et al. (2021) framework, but also discusses how LG financial vulnerability changed in response to the pandemic, applying a lens of both contingent and systemic factors. In the Anglo-Saxon group (Australia and the US), the vulnerability outlook component of financial vulnerability appears to have increased after the pandemic, primarily attributed to the absence of systematic forecast analyses concerning the crisis's impact on local finances. Their LGs are~~, to a large extent,~~ predominantly autonomous, therefore

benefiting from low financial vulnerability in ordinary times. This latter systemic factor, coupled with a medium-high UA and low LTO, seems to depict a situation where more independent LGs experienced an increase in financial vulnerability. The US and Australia have displayed contrasting patterns in their expenditure structures, which have implications for the contingent dimension of financial vulnerability. In the US, this resulted in a "reactionary" approach, where the support to local communities by state governments was minimal so as not to compromise LG structural financial autonomy. In Australia, LGs were exposed to an increase in financial vulnerability where LGs implemented a "proactive" approach in which LGs intervened by issuing stimulus packages for local communities.

Apart from extraordinary revenues from the central government, Bosnia and Herzegovina, which belongs to the South-Eastern European group, did not react to reduce LG financial vulnerability. The unwillingness or difficulty to temporarily change fiscal rules and a more relaxed attitude to an uncertain future may have caused this reaction.

In contrast, Germany, with its Continental European Federal system, enacted different policies to reduce LG financial vulnerability in all fields. LGs were allowed to hold unbalanced budgets but subject to a spending freeze and received refund of certain LG tax revenue losses from central governments. In enacting "reactionary" policies at the local level coupled with a moratorium on expenditure as well as systematic and specific risks assessments of local revenues and expenditures, Germany was apparently influenced by higher levels of government and a higher UA coupled with a high-level concern for financial vulnerability already in place before the pandemic.

The Continental European Napoleonic group differs across countries. All countries temporarily decreased the level of LG financial vulnerability related to income autonomy, thanks to relevant support from the central government. In Spain and Italy, LGs developed higher financial vulnerability than Portugal because they adopted a series of stimulus measures. LG financial vulnerability remained low in Italy as several systemic forecast analyses on the local financial impact of the pandemic were produced.

Overall, no clear pattern emergeds with respect to administrative tradition and structures. Most countries with a strong "rule of law" in their administrative tradition (Germany, Portugal, and Spain) took a more flexible approach to their strict rules, thereby reducing financial pressure on LGs and decreasing financial vulnerability. Strict rules ensured monitoring of the financial situation in the period before COVID-19, which strengthened the position of LGs during the crisis, confirming that regulation by higher levels of governments have important implications for LGs' financial vulnerability (Steccolini et al., 2017; Geissler et al., 2019; OECD, 2020). Yet, this was only relevant in the Anglo-Saxon group.

Contrary to some studies (Bastida et al., 2014; Martell, 2008), even in countries with less LG income autonomy, financial vulnerability did not necessarily increase. Where income financial autonomy was medium or low, extraordinary funding from higher tiers of government was restricted to a few municipalities (Bosnia and Herzegovina). This also happened in Australia, where LGs have a high-income financial autonomy, but the aim was mainly to help LGs to compensate for pandemic-related higher expenditures, rather than to replace lost revenue. In the US, where LGs also benefit from a high-income financial autonomy, no specific financial aid occurred during the pandemic. Overall, while dependence on other levels of governments in normal times suggests financial vulnerability during a crisis due to a lack of autonomy, during a crisis this may become a strategic tool central governments can use against local vulnerability (OECD, 2020), as long as this help does not become systemic and reduces the level of autonomy LGs enjoy.

Expenditure financial autonomy is a systemic characteristic, which appeared to sometimes~~not always to~~ influence the expenditure contingent dimension of financial vulnerability, albeit not as a rule. The US and Spain, which present a similar medium level of expenditure financial autonomy, are in direct contrast. In the former, financial vulnerability has not increased as LGs adopted a "reactionary" approach, where expenses ideally remained almost at pre-pandemic levels. Spanish LGs were more "proactive", helping local communities by increasing their expenditure and, therefore, increasing LG financial vulnerability. A high expenditure financial autonomy is usually associated with a tendency to use the lever of expenditure reduction to diminish LG financial vulnerability, as appears to be the case in Germany and Portugal (countries where LGs were more "reactionary"), but not in Bosnia and Herzegovina. Overall, the expenditure structure has changed in the aftermath of the pandemic in different unpredictable directions due to the mix of stimulus measures taken by LGs themselves and the response of central governments.

UA and LTO seem not to play a role. Only in Germany and Italy have several assessments of local finances during a crisis been provided to contain the vulnerability outlook, ~~have been provided and~~ revealing an intriguing aspect of their financial strategies. Despite this focus, ~~both~~neither ~~countries~~country ~~don't~~ reaches the top ~~the~~ UA index, potentially showing a mismatch between assessment practices and anticipated UA levels. Beyond UA, differences persist. Germany, with its medium-high LTO index, contrasts Italy's medium LTO index. To fathom these nations' inclination towards crisis-oriented evaluations for vulnerability outlooks, exploring factors beyond UA and LTO becomes crucial.

In considering both contingent dimensions and systemic factors, LG financial vulnerability at the beginning of the crisis seems to have influenced the reaction to the pandemic and consequent effects on financial vulnerability. Indeed, the comparison index of overall financial vulnerability before and in the immediate aftermath of the pandemic leads to some key considerations. On the one hand, there seems to be a "path dependency" influence (Pollitt, 2008, pp. 40–51) where central governments reacted considering LGs' financial vulnerability before the rise of the pandemic. Where LG financial vulnerability was already relatively high, the national and local levels of government acted together in a way to decrease it. In these countries, LGs have usually applied more "reactionary" measures to help communities, as they needed to be careful to maintain future financial sustainability. This is for example the case of Germany and Portugal. Nevertheless, Spanish LGs were more "proactive" thanks to a central government that robustly supported them by lessening fiscal rules for two years and providing extraordinary grants. Conversely, where LG financial vulnerability was low, central and local levels of government tended to react with fewer emphasis on the financials and more on LGs "proactive" measures to support local communities. Here the reaction differs from the global financial crisis and natural disasters, where costs tend to be borne by the central government only (Miao et al., 2020).

On the other hand, central governments influenced LG financial vulnerability with three types of measures in the immediate aftermath of the pandemic: changes in fiscal rules to enable additional borrowing by LGs (Germany, Portugal, and Spain); financial assistance to increase LG revenues (all countries except the USA); and measures that led to LG cost reductions (Germany, Italy, and Portugal). Only in the two countries where central governments enacted all three measures, namely Germany and Portugal, did the contingent financial vulnerability index decrease. This seems to imply that central governments need to enact a variety of measures to support LGs in order to have a positive impact on their financial vulnerability in the immediate aftermath of such a shock. Partial measures or halfhearted solutions do not have the same positive effect. However, such a proposition would need to be further investigated in other settings and ~~in the further~~other stages of

a global crisis before turning it into a policy suggestion. This is necessary ~~, in order~~ to ~~verify that is works~~ascertain its efficacy in all, or at least most, settings and that its long-term effects do not turn out to be undesirable, such as an unwanted re-centralization of power or an unbalanced central – local government relationship.

Conclusion

This paper builds on the growing literature that conceptualizes and assesses LG financial vulnerability. Extending Padovani et al.'s (2021) model, this study considers the influence of some systemic factors on the model's contingent dimensions. The results identify changes in the financial vulnerability regime for a variety of countries in response to the pandemic following a pattern where, in all but one case, measures aimed to contain LG financial vulnerability. The variation in the overall level of financial vulnerability suggests that the level and nature of local financial vulnerability at the beginning of the crisis influenced the reaction of various national and regional governments to the pandemic, strengthening the predominance of "path dependency" in policy choices which has been typical also of other crises (Barbera et al., 2016). ~~, and t~~That financial vulnerability actually diminished only in those countries where central governments enacted multiple and diverse measures to support LGs. Prior to the pandemic, there was evidence that despite one of the longest periods of economic growth, recovery from the 2007/8 global financial crisis was not uniform across municipalities with some coping better and recovering ~~much more quickly~~faster than others (Maher et al., 2023). Our study may suggest that LG financial vulnerability before a crisis helps explain how central and local governments react and how LG financial vulnerability will likely be affected.

Moreover, the analysis introduces a new concept for assessing financial vulnerability based on UA and LTO combined with administrative systems and financial autonomy to construct a qualitative index of financial vulnerability. This measure is then applied to compare before and immediately after the 'first wave' of COVID-19 in different contexts. A shock event such as this allows us to see how vulnerability regimes shift and what factors may cause these shifts. This paper has revealed that, at least in the seven countries under investigation, LG income financial autonomy is the most important systemic factor when looking at financial vulnerability, while LG administrative system seem to matter only for Anglo-Saxon countries and coping culture is particularly relevant where UA and LTO are important. As the analysis was carried out with a qualitative approach, its findings are exploratory, and any correlation or causality would have to be tested with quantitative methods which are beyond the scope of this contribution.

This study's has implications for policy in finding that the higher ~~is~~ the LG financial vulnerability at a specific point in time, the higher ~~is~~ the need for help from central governments to reduce expenditures. If there is still room for maneuver, the crisis is left on the shoulder of LGs, while if the condition is already critical, central governments tend to take such decisions ~~so as to~~to alleviate (at least temporarily) the pressure on LG finances. At the same time, when central government intervene, they should implement multiple and diverse measures if their aim is to reduce LG financial vulnerability. Therefore, since a crisis like the pandemic may provoke a wave of re-centralization, increasing the level of financial vulnerability in ordinary times, ~~after the shock~~ policymaking may need to help LGs restore their income financial autonomy after the shock, if not strengthen it.

This paper has three main limitations. First, the country selection: future research could apply the same methodology described here at LGs from other countries and administrative traditions to provide a broader picture. Second, another methodological limitation is the reduced degree of control over the research process due to the unique challenge posed by the pandemic; this may have affected the depth and comprehensiveness of the data collected, potentially limiting the

insights gleaned from the analysis. Third, the study considers only the period up to the first wave of the pandemic. Policies adopted at this early stage might have a different impact on financial vulnerability at a later stage and the findings may not fully capture the longer-term impacts or evolving circumstances beyond this period. It will be also useful ~~T~~to examine potential financial resilience in the long run, considering, for example, new support measures, such as the Next Generation EU Recovery Fund as well as the likely reformulation of the EU Stability Growth Pact suspended until 2024 (The Economist, 2022; van der Veer, 2022), ~~will be also useful~~ to appreciate which factors influence LG financial vulnerability across countries at turbulent times.

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