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COVID-19 impact on the hospitality industry: Exploratory study of financial-slack-driven risk preparedness

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ABSTRACT

The hospitality industry is regarded as one of the most affected by the consequences of COVID-19 pandemic, and the undefined persistence of the pandemic duration raises anxiety about the ability to recover from this dramatic situation. In this regard, the purpose of this exploratory study is to shed light on the COVID-19 risk preparedness of hospitality businesses, as driven by the financial slack holdings and persistence. The empirical findings confirm that their financial-slack-driven risk preparedness should be judged as relatively low. A majority of the examined hospitality businesses demonstrated low or insufficient financial slack holdings and recently have consumed their financial slack resources. Thus, the abilities of hospitality businesses to sustain the liquidity tensions that emerged after the COVID-19 outbreak are questionable. Facing this evidence, we draw conclusions about the necessary design of system interventions that could prevent bankruptcy in the hospitality industry.

1. Introduction

In the 21st century, the world has been threatened by the risk of pandemic several times. Previous incidents, including outbreaks of the SARS and MERS coronaviruses, the avian and swine flues and very recently the Zika virus, have been perceived as severe threats to the continuity of numerous businesses, including those operating in the hospitality industry (and the whole travel and leisure-related sector). However, the current COVID-19 pandemic is unprecedented in the scale of its global impact and ‘is affecting the DNA of hospitality at its core’ (Rivera, 2020).

At governmental levels, the COVID-19 pandemic has created an urgent need to ensure the sufficiency of healthcare systems and has led to the implementation of various intervention mechanisms directed at slowing the spread of the virus. These mechanisms imposed social distancing, bans on mass events, and numerous travel restrictions, for example, border closures. Thus, it is not surprising that travel and leisure-related industries, especially the hospitality industry, are at the top of the list of most affected branches of economies. However, slowing the virus spread prolongs the period of businesses discontinuities. In fact, it is difficult to predict the duration of the pandemic, which shifts this risk to undefined persistence and increases businesses’ anxiety.

The situation raises an important question on whether the hospitality businesses are prepared to sustain and successfully recover from the period of operating discontinuity caused by the waves of pandemic outbreak. The problem is obviously a relevant industry priority and is addressed in this study by exploring the extent of hospitality businesses’ risk preparedness from financial perspective. Facing the sudden outflow of customers and inability to generate cash inflows from sales, the hospitality businesses are exposed to high liquidity tensions, which imposes greater risk for their successful recovery. However, liquidity tensions are less problematic for firms that hold a buffer of available funds. Thus, the empirical investigation of risk preparedness performed in this study utilizes the concept of financial slack as a resource. In general, financial slack refers to uncommitted and high-discretionary liquid assets held by the company, in particular, the holdings of cash and marketable securities (Daniel et al., 2004; Mishina et al., 2004; Bourgeois, 1981). In the context of risk preparedness, the buffering function of financial slack is critical; financial slack resources provide a cushion against the liquidity tensions caused by the disruptions of operating performance. In other words, the businesses distinguished by higher levels of financial slack holdings are regarded as those with better risk preparedness.

This study contributes to the existing literature on available slack holdings by exploring solely the situation of hospitality businesses. This is relevant, as prior works have confirmed financial slack holdings being related to firm and industry-specific characteristics (for an overview, see, e.g., Daniel et al. (2004) and McMahon (2006)). Moreover, this study goes beyond the common methodical approaches that employ regression to find the determinants of liquid assets holdings. For
hospitality industry such an approach was adopted by Kim et al. (2011) on a sample of US restaurants or recently by Demir et al. (2019) on hospitality industries located in emerging countries. To better address the risk-preparedness context, this study expands the existing approaches, by developing a model to evaluate financial-slack-driven risk preparedness, which offers another relevant contribution. The model clusters the companies with regard to both the size of their financial slack holdings (sufficient or insufficient) and their slack behavior over time (slack consumption or slack accumulation). In this respect, this study supplements the identification of the determinants of liquid assets holdings.

This exploratory work contributes also to the existing body of literature on risk and crisis management in the hospitality industry. As pointed out by Paraskevas and Quek (2019), the literature on risk and crisis management in travel and leisure-related industries (including the hospitality industry) has remained focused on understanding the crisis situations and on analyzing the recovery paths, often following a ‘crisis-by-case’ approach. Works that revise the recent epidemics (SARS or avian and bird flues) from the perspective of the hospitality industry confirm this statement (for instance, Chen et al. (2007); Chien and Law (2003); Wu et al. (2010); Chuo (2014), and Tse et al. (2006)). In this respect, a relevant contribution of this work is the emphasis on the relevance of liquid assets holdings in the effective recovery from disruptions, followed by the exploration of the factual recovery starting point from an industry oriented perspective. In this aspect, this paper also responds to the call for studies that help to better understand the resilience capabilities of businesses related to the travel and leisure sector and the factors that drive these capabilities. The call for this kind of research was addressed by Ritchie and Jiang (2019) and Mansfeld and Pizam (2006), grounded in a summary of prior studies related to risk management in the travel and leisure-related industries.

In the empirical layer, the paper explores the situation of hospitality businesses that operate in four central European countries: the Czech Republic, Hungary, Poland and Slovakia. These countries are regarded as comparable in terms of their economic performance, driven by the similar routes of the process of transformation from a command to market economy and European Union accession. These countries are also regarded as comparable in terms of the contribution of the travel and leisure sector to their GDPs and are judged as equally popular tourist destinations (Krzesliwo et al., 2018). Moreover, facing the threat of the COVID-19 pandemic, the Czech Republic, Hungary, Poland and Slovakia implemented similar interventions, almost perfectly coordinated in time. Thus, the impact of the pandemic risk hit the hospitality businesses operating in these countries on a relatively comparable scale.

The remainder of this paper is structured as follows. Section 2 explains the conceptual framework of the study. In particular, it explains the assumptions of the proposed model of the analysis of financial risk preparedness, as driven by financial slack holdings and persistence. Section 3 develops research questions, whereas section 4 explains the research design and method. Section 5 presents the results and discussion. Section 6 concludes the study.

2. Conceptual framework

2.1. Financial consequences of COVID-19 disruptions from a hospitality business perspective

In the 21st century the world has been threatened several times by the risk of a global spread of an infectious disease. In 2009, the ‘swine flu’ (H1N1 virus) outbreak was first officially announced to be a pandemic by the WHO (WHO, 2009). However, the hospitality industry was notably affected by the consequences of the epidemics of SARS (2002–2003), MERS (2012) in Asia, Ebola in 2013–2014 in West Africa and Zika in 2015 in Brazil and the Caribbean region (MARSH, 2020). The literature related to risk management in the tourism and leisure sector has reviewed the consequences of a pandemic risk from a variety of perspectives (see, e.g., Yang et al. (2017); Ritchie and Jiang (2019) or Rossello et al. (2020) for an overview). For instance, the impact of prior epidemics (SARS in particular) on travelers’ behavior and the related decline of demand in the travel and leisure sector was addressed by Kuo et al. (2008); Mao et al. (2010); McAleer et al. (2010); Rossello et al. (2017) and Yang et al. (2017). Chen et al. (2007) studied the impact of SARS on Taiwanese hotels’ stock performance, while Chien and Law (2003) examined hotel performance in Hong Kong. The problem of the impact of infectious disease spread on hotel occupancy rates was also studied by Wu et al. (2010), following the spread of ‘swine flu’ (H1N1 virus). The impact of epidemics on various aspects of restaurant performance was addressed, for instance, by Chuo (2014) (self-protective behavior) and by Tse et al. (2006) (risk response to SARS).

The current COVID-19 outbreak, however, hit the global community on an unprecedented scale. On 31 December 2019, the first cases of the novel coronavirus disease were reported in Wuhan (China). Only two weeks later (13 January 2020), the first cases were reported outside China (in Thailand). To prevent the global spread of the virus, the Wuhan lockdown was announced 10 days later (23 January 2020), which was accompanied by travel restrictions to and from China imposed by numerous countries worldwide. However, these measures proved ineffective, and by the end of February 2020, COVID-19 has quickly spread in north Italy. Consequently, on 12 March 2020, the WHO announced the COVID-19 pandemic (WHO, 2020). To limit the speed of the virus spread, numerous countries have implemented very severe measures, such as border closures and social distancing, which have in turn severely affected the whole travel and leisure industry. As of 20 April 2020, travel restrictions were introduced in 100% of worldwide destinations (UNWTO, 2020).

The global lockdown and related travel restrictions have resulted in the discontinuity of operating activity of travel and leisure-related businesses worldwide. Following the recently published United Nations World Tourism Organization (UNWTO) scenarios, depending on the gradual opening of borders and limiting of travel restrictions, it is expected that in 2020, we will face a drop of 58–78% in international tourist arrivals, while international tourism receipts could plunge by 1 trillion US dollars. In the economic dimension, the overall impact in 2020 is expected to bring tremendous loss in export revenues from tourism and to place 100–120 million direct tourism jobs at risk (UNWTO, 2020). These figures refer to the tourism and travel sector in general. However, as a majority of hospitality industries are tightly related to tourism arrivals, these figures also provide insight into the potential scale of the COVID-19 outbreak consequences in businesses operating in the hospitality industry. Moreover, these consequences are amplified by the social distancing measures implemented internally by the particular countries.

If we consider the impact of the COVID-19 outbreak from a risk management point of view, unique features of the pandemic risk need to be addressed. In the process of risk analysis, a common approach is to evaluate the impact of risk with reference to its probability (chance) and severity (outcomes) (Aven, 2016; Groian and Gheres, 2012). In the case of pandemic risk, we are able to model the severity of risk outcomes by addressing the consequences of the pandemic in terms of, e.g., number of fatalities. However, pandemic risk distinguishes with indecisive probability. Following the concept of Renn (2008), the COVID-19 pandemic has also shown the relevance of other, less common features of risk, such as ubiquity (geographic dispersion), persistence (temporal...
extension of consequences), and reversibility (ability to recover after the damage). COVID-19 has spread relatively quickly around the whole globe, and it is currently impossible to reliably define its persistence. In fact, intervention strategies implemented by countries worldwide are directed at slowing the virus spread (which is relevant to the healthcare system sufficiency) and restricting human mobility, which is particularly harmful for the travel and leisure-related industries (Linkov and Trump 2019). These intervention strategies, however, expand the duration of the pandemic to an undefined time interval. Finally, the COVID-19 pandemic distinguishes with questionable reversibility. The economic consequences of the virus spread and the related interventions have an impact on numerous dimensions of human activity, in particular the severe disruptions of the performance of numerous businesses, inevitably followed by bankruptcy waves, increased unemployment, and ultimately growing social concerns and anxiety. Not surprisingly, the strongest economies worldwide expect a deep economic crisis in the aftermath of the coronavirus pandemic.

Driven by the consequences of COVID-19 from a risk management perspective, in Fig. 1, we present an illustration of the main directions of the COVID-19 outbreak impact on the performance of hospitality businesses. The presented model is framed within a breakeven-point analysis, which is essential for evaluating the rationale behind the operating activity of any business (Brigham and Ehrhardt, 2011). The breakeven-point analysis remains focused on the relationship between sales revenues and total operating costs to clarify whether the business is able to produce a satisfactory operating profit margin. In this respect, the impact of COVID-19 on hospitality businesses is twofold. First, it significantly reduced the level of sales revenues due to the sudden decrease of demand and sales since the moment of businesses’ lockdown. If the businesses are allowed to return to operating activity during the pandemic, the expected sales revenues will be lower than previously expected, due to both the lower demand for hospitality services and the typically imposed restrictions that are related to the reduced number of customers. Second, during the period of discontinuity of operating activity (between the moment of lockdown until the moment of the return to operating activity), businesses need to cover their fixed costs. In the hospitality industry, these costs could be relatively high because they are related to the maintenance of the property or workforce. If the return to operating activity is possible under further restrictions, the operating costs could be even higher than previously expected and planned. In particular, new sources of costs could emerge related to the implementation of the necessary safety measures (e.g., disinfection or protection of employees). The ultimate outcome is a significant decrease in operating profit, which in turn negatively influences the profitability of the business. The discrepancy between the expected and real operating profit refers to the scale of its reduction. However, in real-life situations, these discrepancies could be far more severe, leading to operating losses.

The period of discontinuity of operating activity is very severe because, due to reduced sales, there are no cash inflows, and at the same time, there is a necessity to pay the business’s obligations timely. This period is critical and could lead to severe liquidity tensions and bankruptcy threats. Thus, in Fig. 1, we highlight that the period of operating discontinuity leads to the consumption of financial slack resources, if held. To better address this issue, however, we first need to explain the concept of financial slack and the interplay between financial slack holdings and risk preparedness.

2.2. Financial slack holdings and risk preparedness

Effective risk management should result in better risk preparedness by both the implementation of physical risk control measures and the preparedness of adequate financial recovery plans. The COVID-19 pandemic has shown the relevance of being financially prepared for operating activity disruptions. To a great extent, the ability to sustain and recover from the operating discontinuity is determined by the business’ability to control the related financial consequences. In this
In general, slack is defined as actual or potential resources held in excess of operational needs that could potentially help to sustain the business and adjust to any internal or external pressures (Cyert and March, 1963; Nohira and Gulati, 1996; Zhong, 2011; Child, 1972; Dimmick and Murray, 1978; Mishina et al., 2004; Bourgeois, 1981). This definition of slack is consistent with the concept of ‘slack as a resource’ and addresses the utility of slack in the buffering (precautionary) function and in facilitating opportunities (e.g., Salancik and Pfeffer, 1978; Baker and Nelson, 2005; Mishina et al., 2004). However, according to the ‘slack as inefficiency’ view, slack is unproductive and thus costly (Daniel et al., 2004; Stan et al., 2014; George, 2005; Tan and Peng, 2003; Bromley, 1991; March and Shapiro, 1987; Phan and Hill, 1955; Zhong, 2001; Almeida et al., 2002). Facing these two competing views, the discussion on the rationale underlying slack holdings and the optimal level of slack resources remains open in the academic debate (Daniel et al., 2004; Natividad, 2013).

Following the ‘slack as a resource’ concept, financial slack is defined in the literature as the stock of liquid assets held by the business (Mishina et al., 2004; Natividad, 2013). Thus, financial slack is often associated with so-called available slack, related to unabsorbed high-discretionary resources held as cash or marketable securities (the equivalent of cash) (Nohira and Gulati, 1996; Bromley, 1991; Beranek et al., 1995; McMahon, 2006). Financial slack resources play a critical role in precautionary behavior, as due to its buffering function, financial slack determines the business’ risk-response abilities, if we consider liquidity tensions. Facing operating disruptions, the businesses may simply consume the holdings of financial slack to safeguard financial liquidity and dismiss the threat of bankruptcy (which was highlighted in Fig. 1).

In Fig. 2, we provide a conceptual model that could support the analysis of risk preparedness driven by the buffering function of financial slack. The model merges two relevant dimensions of financial slack holdings. The first dimension is the actual size of financial slack resources as reflected by the holdings of liquid assets relative to total assets. The second dimension is related to financial slack behavior – accumulation or consumption. In the model presented in Fig. 2, the highest degree of risk preparedness is attained by businesses that demonstrate financial slack holdings above the average levels and at the same time are distinguish by the ability to accumulate the financial slack resources over time. Accordingly, the lowest degree of risk preparedness is attained by entities that have relatively low (insufficient) slack holdings and at the same time demonstrate continuous consumption of existing financial slack holdings. The alternative situations (high holdings – consumed or low holdings – accumulated) signal moderate levels of risk preparedness (Fig. 2).

The model presented in Fig. 2 uses the traffic-light color system, which is a common color code in the illustration of risk heat maps (Aven and Renn, 2010). Thus, the orange or red zones signal low risk preparedness and simultaneously a high degree of vulnerability to the consequences of businesses’ operating discontinuity, such as the liquidity tensions in the aftermath of the COVID-19 outbreak.

3. Research question development

It is beyond doubt that the COVID-19 outbreak and related lockdown has led to sudden and unexpected disruptions in operating activity of hospitality businesses worldwide. Thus, this exploratory study was designed to examine the risk-preparedness of hospitality businesses, driven by financial slack holdings and persistence, consistent with the conceptual framework presented in Fig. 2. In this respect, this study explores the employment of financial slack in the buffering function, as a driver of precautionary behavior and as a relevant determinant of risk-response abilities.

The first research question addressed in this exploratory work is the following:

RQ 1. What is the degree of COVID-19 risk preparedness of hospitality businesses, in terms of their financial slack holdings and persistence?

This question is relevant, as the prior evidence on financial slack holdings does not provide clear guidance on the optimal level of slack and related slack behavior (accumulation or consumption). The reason is that holdings of financial slack are regarded as costly, as liquid assets are less productive (Opler et al., 1999), which is consistent with the ‘slack as inefficiency’ view. However, in the risk-preparedness context, high financial slack is desirable due to its buffering function, which is consistent with the ‘slack as a resource’ view.

The problem of the tradeoff between the costs and benefits (in this buffering function) of liquid asset holdings (as financial slack resources) has resulted in numerous studies that attempted to lay foundations for theoretical and applicative concepts that could support setting the optimal level of financial slack (Gentry, 1988; McMahon, 2006; Opler et al., 1999). These attempts addressed a variety of perspectives, and remained focused primarily on internally driven factors such as investment strategies, value creation abilities or conservatism of financial policies (McMahon, 2006; Daniel et al., 2004). In this exploratory work, however, we address two issues that are critical for the development of efficient system intervention tools aimed at supporting the performance of the hospitality industry in the aftermath of COVID-19 consequences: businesses location and size. Thus, this study asks the second research question:

RQ 2. Is the degree of financial-slack-driven COVID-19 risk preparedness contingent on hospitality business’ location and size?
there is empirical evidence in this regard (e.g., Ang, 1992; McMahon, 2006). The possible association between level of risk preparedness (driven by financial slack holdings and persistence) and business size is critical for tailoring the system intervention tools to the needs determined by the business’ scale of operating activity.

The third research question asked in this exploratory work addresses the interplay between financial slack holdings and a business’ performance. There is prior evidence that there is a direct association between the size of slack holdings and return on assets (ROA) or return on equity (ROE) (e.g., Smith and Kim, 1994, and Zabbar, 1996), which suggests that profitable firms tend to hold higher levels of financial slack. In other words, profitable businesses are able to accumulate financial slack resources over time. There is also strong evidence that there is a direct association between the size of slack holdings and borrowing capacity, captured by debt to assets ratios or liquidity ratios. Low borrowing capacity drives high financial constraints, and in these circumstances, firms are more prone to hold higher financial slack resources (Acharya et al., 2007). Driven by this empirical evidence, this study explores the third research question:

RQ 3. Is the degree of financial-slip-driven COVID-19 risk preparedness contingent on hospitality businesses’ performance?

This question is relevant, as the COVID-19 outbreak has resulted in sudden discontinuity of hospitality businesses, impacting their ability to generate funds internally and negatively influencing their ability to obtain funds externally. The outbreak may also amplify the consequences of low borrowing capacity. By addressing the association of financial-slip-driven risk preparedness and the level of business profitability and borrowing capacity, the findings may potentially support the question on the desired duration of system interventions to be able to efficiently smooth the liquidity tensions of hospitality businesses.

4. Research design and method

Guided by the research questions, we designed our research as a gradual procedure, which is framed graphically in Fig. 3. First, we clustered the hospitality businesses according to the degree of risk preparedness (with reference to the size and persistence of their financial slack holdings). Secondly, we explored whether the attained degree of risk preparedness is contingent on hospitality businesses location and size. The third stage was designed to capture the associations between the degree of risk preparedness and the performance of hospitality businesses. As liquid assets holdings are the main construct that determines the clustering scheme of risk preparedness, this stage was supplemented by the exploration of the associations between the liquid assets holdings and the performance-related variables. Below we explain in detail the specification of the variables critical at each stage of this research procedure.

### Financial slack holdings

To determine the financial slack holdings, we followed the concept of slack as a resource (Bourgeois, 1981) in its buffering function and ‘easy to recover’ approach (Bourgeois and Singh, 1983). The financial (available) slack is associated with uncommitted resources that are maintained for immediate access. Thus, financial slack resources are empirically identifiable through the analysis of liquid asset holdings relative to assets (cash ratio) or alternatively by liquidity ratios or cash-inflow-based ratios (Daniel et al., 2004). In this study, we follow the first approach (cash ratio); we measure financial slack holdings as the holdings of liquid assets (LQ) relative to total assets (A) (Asimakopoulos et al., 2018; Combs and Ketchen, 1999; Bates et al., 2009; Kim et al., 2011). Liquid assets comprise cash and cash equivalents (held as short-term financial investments). Short-term investments are regarded as a ‘storage’ of liquidity and typically reflect the holdings of financial assets that could be easily and quickly converted into cash (marketable securities).

To distinguish between financial slack holders and nonholders, we compared the holdings of liquid assets relative to assets (as determined by LQ/A ratio) to the benchmark level established as the mean value of LQ/A for all companies included in the sample. This approach is justified by the observations from prior research that have confirmed the industry

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**Table 1**

| Variable | Definition |
|----------|------------|
| LQ       | Liquid assets, equal to cash, cash equivalents and short-term financial investments (financial items reported on the balance sheet as a part of businesses’ current asset holdings), as of the end of 2018 |
| A        | Assets in total, as of the end of 2018 (financial item reported in the balance sheet) financial slack holders, with high level of financial slack hospitality businesses with high liquid asset holdings, identified as those with LQ/A above the average: |
| High financial slack | \( LQ/A \geq m \) where \( m \) denotes the mean value of LQ/A for the whole sample (as of the end of 2018) financial slack nonholders, but assumed to be those with moderate level of financial slack hospitality businesses with moderate liquid asset holdings, identified as those with LQ/A below the average, but above the first quartile: |
| Moderate financial slack | \( Q_1 \leq LQ/A < m \) where \( Q_1 \) denotes the mean value of LQ/A for the whole sample (as of the end of 2018) financial slack nonholders, with insufficient level of financial slack hospitality businesses with insufficient liquid asset holdings, identified as those with LQ/A below the first quartile: |
| Insufficient financial slack | \( LQ/A < Q_1 \) where \( Q_1 \) denotes the first quartile of LQ/A for the whole sample (as of the end of 2018) |

**Table 2**

| Variable | Definition |
|----------|------------|
| \( \Delta LQ/A_{2017:2016} \) | dynamics of the LQ/A ratio between 2016 and 2017 |
| \( \Delta LQ/A_{2018:2017} \) | dynamics of the LQ/A ratio between 2017 and 2018 |
| Slack accumulators | Financial slack accumulators (persistent growth of financial slack holdings); hospitality businesses distinguished by the positive dynamics of an LQ/A ratio in two consecutive time periods: |
| \( \Delta LQ/A_{2017:2016} > 0 (+) \) and \( \Delta LQ/A_{2018:2017} > 0 (-) \) | Inconclusive financial slack persistency; hospitality businesses with volatile dynamics of an LQ/A ratio in two consecutive time periods: |
| Slack consumers | Financial slack consumers (persistent consumption of financial slack holdings); hospitality businesses distinguished by negative dynamics of an LQ/A ratio in two consecutive time periods: |
| \( \Delta LQ/A_{2017:2016} < 0 (-) \) and \( \Delta LQ/A_{2018:2017} > 0 (+) \) or \( \Delta LQ/A_{2017:2016} > 0 (+) \) and \( \Delta LQ/A_{2018:2017} < 0 (-) \) | Financial slack consumers (persistent consumption of financial slack holdings); hospitality businesses distinguished by negative dynamics of an LQ/A ratio in two consecutive time periods: |

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Fig. 3. Design of empirical research.
sensitivity to slack holdings (Berger and Offek, 1995; Subramaniam et al., 2011). Accordingly, the mean value of liquid asset holdings relative to total assets (LQ/A ratio) was used to identify the cluster of hospitality businesses that can be distinguished by financial slack holdings above the average. To identify a cluster of the businesses distinguished by highly insufficient financial slack holdings, we additionally defined the bottom threshold equal to the first quartile of the LQ/A ratio. All businesses captured in between are regarded as a cluster of businesses of moderate financial slack holdings (see Table 1).

Financial slack persistence. To examine financial slack persistence, we used the data on the dynamics of the LQ/A ratio over time. In general, we classified as slack accumulators those businesses distinguished by an increase of liquid asset holdings relative to total assets (positive dynamics of LQ/A). However, to detect the persistence of financial slack accumulation over time, we analyzed the dynamics of the LQ/A ratio between 2016 and 2017 and between 2017 and 2018. Accordingly, if a business was able to increase financial slack holdings in two consecutive periods, it was assigned as a financial slack accumulator. In contrast, businesses distinguished by the negative dynamics of financial slack holdings (LQ/A) for two consecutive periods were classified as financial slack consumers. All other businesses were classified as inconclusive, as the direction of the dynamics of the LQ/A ratio was volatile in the two consecutive periods (see Table 2).

Risk preparedness. Further, driven by the conceptual framework presented in Fig. 2, we defined the clustering scheme for demarcating between five degrees of risk preparedness (hereafter referred to as D_RP), based on the message behind the possible combinations of financial slack holdings and persistence. The details are presented in Fig. 4. The cluster of very high (green zone) and high (yellow zone) risk preparedness captures the hospitality businesses of high or moderate financial slack holdings and slack accumulators or those with inconclusive persistence. The low (orange zone) or very low (red zone) clusters of risk preparedness capture the businesses of insufficient or moderate slack holdings combined with slack consumption or inconclusive slack persistence. The remaining combinations (amber zone) capture the businesses of moderate risk preparedness.

Performance characteristics. Finally, to explore the associations between the degree of risk preparedness and performance of hospitality businesses, we examined the set of well-established financial ratios (Table 3); see, for instance, (Vivel-Búa et al., 2018; Hales, 2005; Brigham and Ehrhardt, 2011). We selected the financial ratios that are critical for monitoring the changes of companies’ borrowing capacity and profitability, as these aspects are the prime concerns in the aftermath of operating discontinuity. In general, the borrowing capacity of the business is primarily determined by its liquidity and solvency position. Accordingly, to control liquidity, we employed the current ratio of liquidity (CR), and to control solvency, we computed debt to assets ratio (D/A). Businesses distinguished by high levels of liquidity (CR) and low debt to assets ratios (D/A) demonstrate greater borrowing capacity (Hales, 2005; Brigham and Ehrhardt, 2011). Profitability is measured with three basic ratios of return: on assets (ROA), on equity (ROE) and on sales (ROS), and by the analysis of the productivity of assets (PA). In general, higher levels of profitability ratios demonstrate better performance of the business (Hales, 2005; Brigham and Ehrhardt, 2011). Additionally, we controlled the associations with sales revenues (SR), as the decrease of sales remains the direct consequence of the operating discontinuity.

Holdings and dynamics of liquid assets are critical constructs in the clustering scheme for financial slack driven risk preparedness proposed in this study. Thus, we supplemented the empirical analysis by examining the associations between liquid assets holdings (LQ/A) and performance-related characteristics in the 2016–2018 time span. In this aspect, we follow the methodological approaches of a wide body of literature that aim at capturing the empirical determinants of cash ratio (LQ/A) by performing regression (e.g. Ozkan and Ozkan, 2004). For hospitality industry, regression for examining the determinants of cash ratio was applied by Kim et al. (2011); Ahmad and Adaoglu (2018), or recently Demir et al. (2019).

4.1. Data and sample selection

This exploratory study utilizes the data obtained from financial statements of hospitality businesses provided in the EMIS database (formerly known as ISI Emerging Markets, https://www.emis.com/). The EMIS database collects the financial entries of businesses operating in emerging markets, together with the major businesses’ demography characteristics (in this size, sector and location).

From the EMIS database, we obtained the data on the performance of the hospitality businesses operating in four countries: the Czech Republic, Hungary, Poland and Slovakia, to capture the country-effect. The reasoning behind selecting these countries was their homogeneity and comparability on several aspects relevant to this study. First, the Czech Republic, Hungary, Poland and Slovakia successfully underwent the process of transition from command to market economies and joined the European Union in 2004. As the members of the Visegrad Group (V4), these countries closely cooperate and are regarded as comparable on numerous dimensions of their economic performance (Wyplosz, 2000). Moreover, these countries are perceived as equally popular tourist destinations (Krzesiwo et al., 2018), in particular for winter sports, mountain walking and due to their historical heritage. Further, the percentage

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Table 3

| Borrowing capacity | Profitability | Performance characteristics |
|--------------------|--------------|-----------------------------|
| CR Current ratio of financial liquidity, computed as current assets relative to current short-term debt | ROA Return on assets, computed as net profit (loss) relative to total assets | PA Productivity of assets, computed as total revenues relative to total assets |
| D/A Debt to assets ratio, computed as long- and short-term debt, relative to total assets | ROE Return on equity, computed as net profit (loss) relative to equity | SR Sales revenues |
| ROE Return on equity, computed as net profit (loss) relative to equity | ROS Return on sales, computed as net profit (loss) relative to sales revenues | |
| PA Productivity of assets, computed as total revenues relative to total assets | |

Source: Own study based on Hales (2005) and Brigham and Ehrhardt (2011).
contribution of travel and tourism industry to GDP in these countries is relatively comparable (see the data provided in Annex, Table A1).

Another reason for the exploration of hospitality businesses operating in V4 countries is that these countries were hit by COVID-19-related restrictions at nearly the same time, with similar interventions taken against the spread of the pandemic. The first COVID-19 infections were confirmed between the 1st and 6th of March, which was followed by the decision on border closures ca. 10 days later. In this respect, the hospitality businesses operating in the sampled countries were affected by the lockdown decisions and social distancing on a comparable scale. The travel restrictions should be regarded as potentially harmful for the hospitality industry in these countries, as the World Travel and Tourism Council (WTTC, 2020) data for 2019 indicate a relative relevance of international spending related to tourism and travel activities in each of the sampled countries (54% in the Czech Republic, 76% in Hungary, 69% in Poland, and 51% in Slovakia).

From the EMIS database, we initially extracted data for all businesses actively operating in the period 2016–2018, providing travelers’ accommodations, lodging and other hospitality services (e.g., restaurants, other travel arrangements and reservation services). Under this request, we obtained 3290 observations (226 for the Czech Republic, 390 for Hungary, 206 for Slovakia and 2468 for Poland). Data for 2018 were the last obtainable entries. Thus, we assume that the situation observed in 2018 remained unchanged until the pandemic.

The obtained data were further verified to exclude all observations with missing or biased entries (e.g., entries for which the basic verification scheme for the balance between assets and liabilities was not maintained). The number of missing or biased records was considerably high in the subsamples of Czech and Polish hospitality businesses. Finally, we obtained a sample of 1154 hospitality businesses for further analysis of financial-slack driven risk preparedness (on non-parametric level), with complete data on slack holdings and persistence. For the empirical determinants of liquid assets holdings (cash ratio) we applied data for 2016–2018 time span, which initially offered 3436 firm-year observations. The descriptive statistics of the examined variables are provided in Annex (Table A2).

The basic characteristics of sampled businesses, concerning size and location, are presented in Fig. 5. To classify the businesses by their size, we followed the scheme recommended by the European Commission (2016) with respect to the number of employees. Accordingly, we
distinguished between four business size categories: micro (employment up to 9 persons), small (employment between 9 and 49 persons), medium (employment between 50 and 249 persons) and large (employment of 250 persons or more).

5. Results and discussion

5.1. Financial slack holdings and persistence

In the first stage of the empirical investigation, we conduct an entry exploration of the sampled hospitality businesses with reference to their financial slack holdings and behavior. On average, the sampled analyzed hospitality businesses hold 17.07% of their total assets as liquid assets (cash and cash equivalents), which is the mean value of the LQ/A ratio as on 2018. Holdings of liquid assets at a level higher than average was observed in 373 entities (nearly one-third of the analyzed sample, 32.3%), which defines the cluster of hospitality businesses with high financial slack resources. In the analyzed sample, there were 288 entities
(25%) clustered as having insufficient slack holdings; their LQ/A ratio was below ca. 2.08% (the first quartile). All other businesses (493, or 42.7% of the analyzed sample) were classified as having moderate financial slack holdings. In Fig. 6, we illustrate these values by placing the value of the LQ/A ratio for all observations, ranged from low values (0%) to maximum (100%). In addition, in Fig. 6, we highlighted the mean and first quartile of LQ/A as the demarcation zones.

To explore the financial slack behavior, in Fig. 7, we illustrate the data on the dynamics of the LQ/A ratio for the analyzed sample of the hospitality businesses between 2016 and 2017 and between 2017 and 2018. These data were used to cluster the analyzed hospitality businesses in three groups based on the observed persistence of financial slack resources. In the analyzed sample of hospitality businesses, a majority (621, which is 53.8% of the observations) were captured as inconclusive, as the dynamics of liquid assets relative to assets was switching from positive to negative (330; 28.6%) or from negative to positive (291; 25.1%). However, the number of businesses identified as slack consumers (172; 14.9%) was considerably less than the number of businesses captured as slack accumulators (361; 31.3%).

5.2. Mapping the degree of risk preparedness (D_RP)

By combining the information on the size and persistence of slack holdings, further analysis was directed toward assigning the sampled hospitality businesses to the predefined clusters of risk preparedness. First, we analyzed the contingency between the size and persistence of financial slack holdings. A detailed contingency table is presented in Annex (Table A3). The Pearson’s chi-square test confirms that there was a contingency between the holdings of financial slack and the level of financial slack persistence ($X^2 = 35.067; p < 0.000$). Data presented in Fig. 8 indicate that in the group of businesses with high financial slack holdings, the share of slack accumulators was visibly higher (41.8%) compared to the businesses with moderate or insufficient slack holdings (27.8% and 23.6%, respectively). This comparison clearly indicates that a relatively high percentage of slack holders was constantly sourcing their slack resources, by increasing the stock of liquid assets (relative to assets in total).

Further, in accordance with the conceptual framework presented in Fig. 2 and methodical assumptions in Fig. 4, we distinguished between five clusters of financial-slack-driven risk preparedness, ranging from 1 (very low risk preparedness) to 5 (very high risk preparedness). In Fig. 9, we provide the numbers of businesses captured in each of 9 possible combinations of financial slack size and persistence, and their assignment to the given cluster of risk preparedness. In Fig. 10, we graphically illustrate a percentage structure of hospitality businesses assigned to a given risk preparedness class. In Figs. 9 and 10, we follow the color code consistent with the idea of heat map, moving from green (high risk preparedness), through yellow, amber, orange to red (low risk preparedness).

This evidence suggests that the overall degree of COVID-10 risk preparedness of the examined hospitality businesses should be judged as relatively low (RQ1). The data clearly indicate that nearly 25% of the examined hospitality businesses fall into the cluster of very low or low risk preparedness, suggesting that one-quarter of the examined businesses are highly exposed to immediate liquidity tensions and a bankruptcy threat. The following 34% of the investigated sample was captured as having moderate risk preparedness. These businesses are also prone to liquidity tensions, as their financial slack holdings are either insufficient or recently highly consumed. A relatively positive observation is that nearly 40% of the examined businesses were...
5.3. Risk preparedness and hospitality businesses’ location and size

We further explored the contingencies between the businesses’ degree of risk preparedness and their location (country of operating activity) and size to address the second research question asked in this study (RQ2). The data presented in Table 4 indicate that weak but statistically significant contingencies were observed between the degree of risk preparedness and businesses location but not their size (the Pearson’s chi-square test). The detailed contingency tables are presented in Annex (Table A4) and summarized in Fig. 11. In general, the percentage share of the hospitality businesses with high or very high risk preparedness remains comparable if we consider business size (Panel B). However, the cross-country comparisons clearly indicate that the percentage of businesses captured as having very low or low risk preparedness was relatively lower in the Czech Republic and Hungary, in comparison to Poland or Slovakia (Panel A).

5.4. Risk preparedness and the hospitality businesses’ performance

To address the third research question asked in this study, we first explored the associations between the degree of risk preparedness (as a qualitative state) and hospitality businesses’ performance, by running non-parametric ANOVA (Kruskal-Wallis test) and establishing Rho Spearman correlations.

The Kruskal-Wallis test indicates that hospitality businesses captured in a given cluster of risk preparedness differed significantly on level of liquidity (the current ratio value). A closer analysis of mean ranks of the Kruskal-Wallis test (presented in Fig. 12) confirms that the businesses captured as having a higher degree of risk preparedness are distinguished by having better liquidity. This observation is also confirmed by the Rho Spearman correlation coefficient (Table 6). With reference to Table 5 the results of the Kruskal-Wallis test (degree of risk preparedness and performance characteristics).

| Degree of risk preparedness (D_RP) | Performance characteristics |
|-----------------------------------|-------------------------------|
|                                   | D/A  | CR  | ROE | ROA | ROS | PA  | SR  |
| p-values of Kruskal-Wallis test   | 0.015* | 0.000*** | 0.001** | 0.000*** | 0.000*** | 0.000*** | 0.625 |
| p-values of pair-wise comparisons |      |     |     |     |     |     |     |
| VH-H                             | 0.298 | 0.045* | 1.000 | 0.002** | 0.319 | 0.015* |     |
| VH-M                             | 1.000 | 0.000*** | 1.000 | 0.000*** | 0.723 | 0.000*** |     |
| VH-L                             | 0.012* | 0.000*** | 0.012* | 0.000*** | 0.000*** | 0.000*** |     |
| H-M                              | 1.000 | 0.000*** | 1.000 | 0.473 | 1.000 | 0.000*** |     |
| H-L                              | 1.000 | 0.000*** | 0.069 | 0.000*** | 0.004* | 0.000*** |     |
| H-VL                             | 1.000 | 0.000*** | 0.258 | 0.007** | 0.087 | 0.000*** |     |
| M-L                              | 0.116 | 0.000*** | 0.014* | 0.002** | 0.000*** | 0.000*** |     |
| M-VL                             | 1.000 | 0.000*** | 0.129 | 0.177 | 0.031* | 0.055 |     |
| L-VL                             | 1.000 | 0.580 | 1.000 | 1.000 | 1.000 | 1.000 |     |

Notes: VH – very high risk preparedness (green zone); H – high risk preparedness (yellow zone); M – moderate risk preparedness (amber zone); L – low risk preparedness (orange zone); VL – very low risk preparedness (red zone); Statistically significant at ***α = 0.001; **α = 0.01; *α = 0.05.

Table 6
Rho-Spearman correlation coefficients.

| D_RP  | D/A  | CR  | ROE | ROA | ROS | PA  | SR  |
|-------|------|-----|-----|-----|-----|-----|-----|
| D_RP  |      |     |     |     |     |     |     |
| D/A   | 1    | -.070* | -.375*** | .105*** | -.247*** | .151*** | .379*** | .005 |
| CR    | 1    | .482*** | -.290*** | .320*** | -.359*** | .103*** | .034 |
| ROE   | 1    | .204*** | .301*** | .248*** | .145*** | .021 |
| ROA   | 1    | .788*** | .653*** | .036 |
| ROS   | 1    | .862*** | .291*** | .186*** |
| PA    | 1    | .015 |
| SR    | 1    | .103*** |

Statistically significant at ***α = 0.001; **α = 0.01; *α = 0.05.
In general, liquid assets holdings (LQ/A) is positively correlated with productivity of assets (PA) and current ratio of liquidity (CR), and negatively correlated with debt to assets ratio (D/A), which is consistent with the prior observations on the relationships between degree of risk preparedness and the performance characteristics on non-parametric level.

Table 8 provides the results of WLS regression for the performance characteristics as the determinants of liquid assets holdings in hospitality businesses. The adjusted R-square value indicates that the model explains about 58.4% of the variation of liquid assets holdings in hospitality businesses. Following Kim et al. (2011) we performed two diagnostic tests to ensure there is no multicollinearity in our WLS regression model (VIFs < 10) and no autocorrelation which may occur with cross-time observations (Durbin-Watson statistics of 1.912, which indicates no serial correlation zone).

In general, the results of WLS regression are consistent with prior observations that businesses of higher profitability tend to hold more liquid assets. The sales-related characteristics (SR, PA, ROS or ROA) exert a positive impact on liquid assets holding in our model. This confirms that the sudden decline of sales revenues in the aftermath of pandemic may result in the inability to source the liquid assets holdings. There is also a relationship between the level of liquidity (CR) and liquid assets holdings, that suggests that the greater liquidity and the related borrowing capacity is stronger in hospitality businesses that distinguish with higher liquid assets holdings. The model found a positive association between the debt to assets ratio (D/A) as another indicator of borrowing capacity, which suggests that more financially constrained companies tend to hold more liquid assets. This is consistent with prior observations by Ferreira and Vilela (2004), although the literature evidence is inconclusive (Demir et al., 2019).

6. Concluding remarks

This study was designed to explore the degree of hospitality businesses’ risk preparedness for the consequences of COVID-19. The hospitality industry is undoubtedly one of the most severely affected by the coronavirus pandemic, as due to the system interventions taken against the spread of the disease, hospitality businesses were exposed to the severe consequences of operating discontinuities. This study explored these consequences from risk and financial management points of view by focusing on liquidity tensions in the aftermath of customer outflows and the related ability to sustain this critical situation and successfully recover from disruptions. The investigations explored the hospitality businesses’ risk preparedness as driven by financial slack holdings and persistence. The analysis has led to several conclusions that may potentially support the design of effective system interventions, as well as...
as to enhance better managerial decisions on response and recovery routes.

6.1. Policy implications

Using sample data from hospitality businesses operating in four central European countries (Czech Republic, Hungary, Poland and Slovakia), the exploration has shown that the degree of financially driven risk preparedness is relatively low. The empirical analysis has confirmed that a low or very low level of risk preparedness was observed in the cases of approximately 25% of the analyzed hospitality businesses. These data indicate that one-fourth of the businesses are unable to sustain the immediate liquidity tensions that emerged shortly after the COVID-19 outbreak and thus are highly prone to bankruptcy. Moderate risk preparedness was observed in the case of a further 34% of the examined businesses. Thus, in general, nearly 60% of the examined businesses are vulnerable to the consequences of operating disruptions. This empirical evidence shows that there is an urgent need to implement hospitality industry-tailored solutions that could prevent consequences from the liquidity shortfalls. This empirical evidence has shown that the degree of financial-slack-driven risk preparedness of the examined hospitality businesses was contingent on businesses location. It suggests that the design of system interventions directed at smoothing the liquidity tensions in the hospitality industry should be adjusted to the country-specific circumstances. The analysis performed in this study also indicates that the degree of risk preparedness is not contingent on the hospitality businesses’ size. Thus, possible intervention mechanisms should be equally weighted for all businesses, regardless of their size. These findings also indicate that the liquidity tensions faced by hospitality businesses in the aftermath of the COVID-19 pandemic may potentially hit businesses of different size on a similar scale.

6.2. Managerial implications

The study resulted in some observations relevant from the managerial perspective. In general, it was found that businesses captured as having a higher degree of risk preparedness were distinguished by having better profitability and borrowing capacity (in particular, liquidity position). These findings suggest that the businesses that currently demonstrate low and very low risk preparedness for sustaining the COVID-19 outbreak are far more exposed to the consequences of customer outflow (and the associated decrease in related revenues and profits) and the intensification of existing liquidity tensions. Managers who identify their individual businesses as of low risk preparedness should demonstrate a greater concern over controlling their operating costs and anticipating the potential difficulties in obtaining additional funding, if constrained. In these circumstances, managers should carefully consider the available system-level aid that could enhance the sustainability of their businesses. Finally, as particularly exposed to the bankruptcy threat, these businesses shall tightly monitor the innovations implemented by their competitors, to diminish the scale of customers outflow.

Facing the indecisive persistence of the COVID-19 pandemic, the situation may also significantly worsen in the group of hospitality businesses that currently demonstrate a relatively high or very high level of financial-slack-driven risk preparedness, as the COVID-19 pandemic is very influential on profitability and borrowing capacity. In this respect, the managers of the hospitality businesses that were able to safeguard the buffer of liquid assets shall be aware of the fragility of their competitive advantage. We observe that the countries manage with the persistence of pandemic, demonstrated by the consecutive waves of growing number of infections, by imposing some restrictions that affect the performance of hospitality industry. This study has shown that the restoration of slack holdings is particularly associated to the profitability or productivity of assets, which is driven by the ability to generate sales revenues. In this respect, the managers of the currently relatively well-suited businesses need to demonstrate prudential approach in their decision making.

6.3. Limitations and further research

The main limitation of this study is that due to the nature of the explored dataset, it reviews the risk preparedness observed at a single time point (end of 2018). This limitation has required the assumption that the contingencies observed as of the end of 2018 remained unchanged in the pre-COVID-19 period (end of 2019). Thus, further empirical investigations are required to confirm these observations as the data for 2019 are obtainable.

Another limitation of this study is the sample that explored the situation of hospitality businesses operating in four central European countries (Czech Republic, Hungary, Slovakia and Poland). Although the sample is homogeneous in the aspects relevant to this study, further inquiries will be made to verify the financial-slack-driven risk preparedness of hospitality businesses operating in other countries (in particular, those where the hospitality industry significantly contributes to the economy). The methodological approach developed in this study is supportive in this respect.

The findings of this exploratory work are also relevant for further inquiries addressing the details of system intervention mechanisms directed at limiting the negative consequences of the COVID-19 pandemic. Shortly after the COVID-19-related lockdown, the governments of some countries have implemented measures aimed at supporting entrepreneurs in mitigating the economic impact of the pandemic by addressing possible liquidity tensions. These measures embraced various solutions that support the maintenance of employees, loan instruments, deferral of loan repayments, and the release of taxation and social security obligations. However, there is a need to verify whether these overall intervention mechanisms were designed appropriately to meet the specific situation of hospitality industries, including in the temporal dimension.

This exploratory study also provides background for further research endeavors directed at a detailed analysis of the actual situation in the post-COVID-19 reality. In particular, further research will inevitably revise the scale of bankruptcy waves of hospitality businesses as liquidity tensions potentially emerge as one of the leading drivers. Moreover, by revising the situation of the hospitality businesses that were able to survive the COVID-19 consequences, in comparison to the disrupted ones, further studies may address the drivers of the successful recovery paths.

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Appendix A

| Table A1 | Contribution of travel and tourism industry to GDP in the examined countries. |
|----------|---------------------------------------------------------------|
| Country  | Direct contribution to GDP in real prices (USD bn) | Percentage share in GDP |
|          | 2016 | 2017 | 2018 | 2016 | 2017 | 2018 |          | 2016 | 2017 | 2018 |
| Hungary  | 3.25 | 3.33 | 3.43 | 2.58 | 2.58 | 2.54 |          |      |      |      |
| Czech Republic | 5.36 | 5.60 | 5.72 | 2.45 | 2.42 | 2.41 |          |      |      |      |
| Poland   | 9.51 | 10.15 | 10.51 | 1.89 | 1.93 | 1.92 |          |      |      |      |
| Slovakia | 2.36 | 2.46 | 2.57 | 2.53 | 2.56 | 2.59 |          |      |      |      |

Source: Own study based on dataset provided by the World Bank (2020).
**Table A2**

Descriptive statistics of the examined variables.

| LQ/A | D/A | CR | ROE | ROA | ROS | P/A | SR |
|------|-----|----|-----|-----|-----|-----|----|
| Minimum | 0.0000 | 0.0000 | 0.0000 | -113.0000 | -25.8824 | -48.3810 | 0.0010 | 0.0100 |
| Maximum | 1.0000 | 31.9231 | 402.0000 | 16.4375 | 120.0000 | 20.0000 | 71.0000 | 127.6200 |
| Mean | 0.1652 | 0.7259 | 2.4768 | 0.0906 | 0.0576 | -0.0167 | 1.4598 | 2.5251 |
| Median | 0.0736 | 0.5397 | 1.0000 | 0.0732 | 0.0246 | 0.0398 | 0.5155 | 0.9900 |
| St. Dev. | 0.2116 | 1.5391 | 10.3374 | 2.2563 | 2.1257 | 1.3589 | 2.6618 | 6.2494 |
| Variance | 0.0448 | 2.3687 | 106.6021 | 5.0910 | 4.5184 | 1.8465 | 7.1921 | 39.0547 |
| Skewness | 1.8175 | 12.9660 | 26.4390 | 38.2458 | 51.7907 | -16.3740 | 10.4967 | 9.8745 |
| Kurtosis | 2.9421 | 125.0000 | 885.3798 | 1879.7500 | 2960.1216 | 573.5353 | 217.6102 | 138.2221 |
| N | 3436 | 3436 | 3320 | 3387 | 3436 | 3436 | 3436 | 3436 |

Notes: Descriptive statistics for variables as on 2016–2018 time span.

**Table A3**

Contingencies between financial holdings and persistence.

| Persistence of financial slack holdings | Size of financial slack holdings | In total |
|----------------------------------------|---------------------------------|---------|
| High                                   | Moderate                        | Insufficient |
| Consumers                              |                                 |           |
| 41                                      | 72                              | 59       |
| 23.8%                                   | 41.9%                           | 34.3%    |
| 100.0%                                  |                                 |           |
| 11.0%                                   | 14.6%                           | 20.5%    |
| 14.9%                                   |                                 |           |
| 176                                     | 284                             | 161      |
| 621                                     |                                 |           |
| Inconclusive                            |                                 |           |
| 28.3%                                   | 45.7%                           | 25.9%    |
| 100.0%                                  |                                 |           |
| 47.2%                                   | 57.6%                           | 55.9%    |
| 53.8%                                   |                                 |           |
| 156                                     | 137                             | 68       |
| 361                                     |                                 |           |
| Accumulators                            |                                 |           |
| 43.2%                                   | 38.0%                           | 18.8%    |
| 100.0%                                  |                                 |           |
| 41.8%                                   | 27.8%                           | 23.6%    |
| 31.3%                                   |                                 |           |
| 373                                     | 493                             | 288      |
| 1154                                    |                                 |           |
| In total                                | 100.0%                          | 100.0%   |

**Table A4**

Contingencies between financial slack persistence and businesses’ location and size.

| Risk prepared-ness | Country | micro | small | medium | large | In total |
|--------------------|---------|-------|-------|--------|-------|---------|
| CZ                 | HU      | PL    | SLO   |        |       |         |
| Very low           | 2       | 9     | 35    | 13     |       |         |
| 3.4%               | 15.3%   | 59.3% | 22.0% |       |       |         |
| Low                | 6       | 60    | 117   | 50     |       |         |
| 2.6%               | 25.8%   | 50.2% | 21.5% |       |       |         |
| 11.5%              | 16.6%   | 21.1% | 27.0% |       |       |         |
| 22                 | 136     | 178   | 57    |       |       |         |
| 5.6%               | 34.6%   | 45.3% | 14.5% |       |       |         |
| 42.3%              | 37.6%   | 32.1% | 30.8% |       |       |         |
| 15                 | 106     | 146   | 46    |       |       |         |
| 4.8%               | 33.9%   | 46.6% | 14.7% |       |       |         |
| High               | 28.8%   | 29.3% | 26.3% | 24.9% |       |         |
| 7                  | 51      | 79    | 19    |       |       |         |
| Very high          | 4.5%    | 32.7% | 50.6% | 12.2% |       |         |
| 13.5%              | 14.1%   | 14.2% | 10.3% |       |       |         |
| 52                 | 362     | 555   | 185   |       |       |         |
| 4.5%               | 31.4%   | 48.1% | 16.0% |       |       |         |
| In total           | 100.0%  | 100.0%| 100.0%|       |       | 100.0% |

Notes: Descriptive statistics for variables as on 2016–2018 time span.

**References**

Acharya, V., Almeida, H., Campello, M., 2007. Is cash negative debt? A hedging perspective on corporate financial policies. J. Financ. Intermediation 16 (4), 515–554. https://doi.org/10.3386/w11391.

Ahmad, W., Adaoglu, C., 2018. Cash management in the travel and leisure sector: evidence from the United Kingdom. Appl. Econ. Lett. 26 (7), 618–621. https://doi.org/10.1080/13504851.2018.1488050.

Almeida, H., Campello, M., Weisbach, M.S., 2002. Corporate demand for liquidity. NBER Working Paper No. 9053 1–44. https://doi.org/10.3386/w9053.

Ang, J.S., 1992. On the theory of finance for privately held firms. J. Small Bus. Finance 1 (3), 185–203 available at: https://digitalcommons.pepperdine.edu/jef/vol1/iss3/1.

Asimakopoulos, P., Asimakopoulos, S., Da Silva Fernandes, F., 2018. Cash holdings of listed and unlisted firms: new evidence from the Euro area. Eur. J. Finance 25 (17), 1708–1729. https://doi.org/10.1016/j.ejifor.2019.1652197.

Aven, T., 2016. Risk assessment and risk management: review of recent advances on their foundation. Eur. J. Oper. Res. 253, 1–13. https://doi.org/10.1016/j.ejor.2015.12.023.

Aven, T., Renn, O., 2010. Risk Management and Governance—concepts, Guidelines and Applications. Springer, London.

Baker, T., Nelson, R., 2005. Creating something from nothing: resource construction through entrepreneurial bricolage. Adm. Sci. Q. 50 (3), 329–366. DOI 0001-8392/05/5003-0329/$3.00.

Bates, T.W., Kahle, K.M., Stulz, R.M., 2009. Why do United States Firms hold so much more cash than they used to? J. Finance 64 (5), 1985–2021. https://doi.org/10.1111/j.1540-6261.2009.01492.x.

Beranek, W., Cornwell, C., Choi, S., 1995. External financing, liquidity, and capital expenditures. J. Financ. Res. 18 (2), 207–222.

Berger, P., Ofek, E., 1995. Diversification’s effects on firm value. J. Financ. Econ. 37 (1), 39–65. https://doi.org/10.1016/0304-405X(94)00798-6.

Bourgeois Ill., L.J., 1981. On the measurement of organizational slack. Acad. Manage. Rev. 6 (1), 29–39. https://doi.org/10.2307/257138.
