



Culture, business environment and SMEs' profitability: Evidence from European Countries

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ABSTRACT

This paper aims to examine whether and how, certain country-specific characteristics shape the profitability of SMEs. Using a large sample of around 40,000 firms operating in 25 EU countries over the period 2006–2014 we find that freedom from corruption, a better environment in terms of the conditions that could contribute to the ease of getting credit, and fewer government regulation related to the starting, operating, and closing a business, enhance profitability. The dimensions of national culture also play an important role. Our results show that individualism, masculinity, and long-term orientation have a positive impact on profitability, whereas power distance and uncertainty avoidance have the opposite effect. We also find that the magnitude of the impact of national culture on profitability depends on political stability and institutional quality.

1. Introduction

Small and medium-sized enterprises (SMEs) play a considerable role in the EU economy. As discussed in the 2014/15 European Commission's annual report on European SMEs, these firms represent 99.8% of all enterprises in the non-financial business sector in the EU28, and they generate 58 cents in every euro of value added. They also employ almost 90 million people or in other words 67% of total employment. To a large extent this contribution to the economy depends on their well-being and financial performance. Therefore, a critical question is: What factors influence the profitability of SMEs?

Most of the existing studies that attempt to answer this question provide evidence from individual countries and examine firm-specific characteristics like life cycle (Yazdanfar and Öhman, 2015), internationalization (Majocchi et al., 2015), leverage (Asimakopoulos et al., 2009), working capital (Banos-Caballero et al., 2012; Pais and Gama, 2015), entrepreneurial orientation (Soininen et al., 2012), trade credit (Martinez-Sola et al., 2014), capital growth (Fu et al., 2002), etc. There are also some related studies like the ones of Gupta and Gregoriou (2018) and McGuinness et al. (2018) that focus on the factors that influence the financial distress and failure of failure.

In contrast, the aim of our work is to examine, whether and how, certain country-specific characteristics namely corruption, culture, and

the doing-business environment shape the profitability of SMEs. Within this context, our work also relates to cross-country studies that examine the impact of such country-attributes on other SME characteristics. For example, Ayyagari et al. (2007) conclude that lower costs of entry and better credit information sharing are associated with a larger size of the SME sector. Beck et al. (2008) report that the protection of property rights increases external financing of small firms significantly more than of large firms, mainly due to its effect on bank finance. Kreiser et al. (2010) conclude that various aspects of national culture influence the risk taking and reactivity of SMEs, whereas El Ghoul et al. (2016) find that cultural dimensions are associated with profit reinvestment. Paunov (2016) examines the adoption of quality certificates and patents to conclude that corruption affects particularly smaller firms but has no impacts on exporters or foreign- and publicly-owned firms. The importance of country-specific characteristics has been highlighted in additional studies, although not all of them provide empirical evidence. For example, Beck and Demirci-Kunt (2006) summarize various empirical studies to conclude that access to finance is an important growth constraint for SMEs; however, financial and legal institutions play an important role in relaxing this constrain. In a similar context, Berger and Udell (2006) argue that social norms, religion, and culture may have an important effect on the production of soft information for SMEs and the ability of banks to use this information to forge relationships. Finally,

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Table 1
Descriptive statistics.

	Obs	Mean	St. Dev.	Min	Max
ROA	234,216	5.337	8.443	−10.660	23.960
PR_MARGIN	223,965	3.555	6.246	−9.720	16.998
LNTA	234,216	4.087	0.304	3.482	4.587
LIQ	234,216	1.184	0.752	0.340	3.270
INTER	234,216	22.064	44.561	−8.530	175.002
SOLV	234,216	37.554	21.380	3.440	77.380
LNAGE	234,216	1.297	0.325	0.593	1.796
GDPGR	234,216	0.544	2.560	−5.185	4.689
INFL	234,216	2.079	1.215	−0.053	4.484
PDI	234,197	51.264	14.411	11	90
IND	234,197	67.447	16.117	27	89
MAS	234,197	54.652	17.417	5	79
UAI	234,197	71.228	20.530	23	100
LTO	234,197	58.050	12.651	24	83
EXPORTS	39,842	31.146	28.428	0.48	88.38
CORFR	233,995	62.320	17.158	30	96
COR_ICRG	234,216	3.635	1.070	2	6
COR_WGI	234,216	0.987	0.742	−0.267	2.470
BIBES	234,216	0.058	0.053	0	0.340
BUSFR	233,995	81.715	9.159	53.7	99.9
GETCR	234,216	67.055	17.880	15	100
POL_STAB	234,216	77.635	5.648	64.50	93.667
FIN_STAB	234,216	36.873	2.409	26	44.917
ECON_STAB	234,216	36.351	3.480	25.917	46.75
WOMEN	234,216	0.298	0.028	0.18	0.42
INNOV_IN	234,216	28.710	9.051	4.5	57
INNOV_PRO	234,216	33.356	9.730	4.9	57
COMPET	234,216	0.133	0.041	0.032	0.306
ACCESS_FIN	234,216	0.162	0.050	0.062	0.449
COST_BOR	160,527	3.947	1.165	1.647	6.955

Notes: The variables are defined in [Appendix I](#).

[Hall et al. \(2004\)](#) conclude that there are variations in the effects of the determinants of SMEs' capital structure between European countries. However, their work is limited to the examination of firm-level determinants, and while they estimate some country-by-country regressions or use country dummies, they do not attempt to reveal the country-specific attributes that drive this variation. They suggest that this can be due to differences in attitudes to borrowing, disclosure requirements, relationships with banks, taxation and other national economic, social and cultural differences.

Therefore, it is natural to assume that such country-specific attributes will also have an impact on profitability. However, the direction of the impact is ambiguous. For example, it is difficult to predict if a culture of uncertainty avoidance will lead to higher or lower profitability. Similarly, given the two opposing hypotheses about corruption, namely “grease the wheels” and “sand the wheels”, we cannot argue with confidence whether corruption will exercise a negative or positive impact on profitability. Thus, these questions have to be empirically answered. Given the lack of research on the association between these country-specific characteristics and SMEs' profitability, we aim to close this gap in the literature.

Studying SMEs is of interest not only because of their importance for the economy, but also because they differ from larger firms in various respects. For example, [Man et al. \(2002\)](#) highlight the existence of such differences in terms of the firms' organizational structure, responses to the environment, managerial styles and, the ways in which they compete with other. Within this context, advantages of SMEs can be their flexibility, closer interaction among departments, shorter lines of communication, and the presence of a founder's vision ([Yu, 2001](#); [Aragon-Correa et al., 2008](#)). Yet, the literature also emphasizes disadvantages like the lack of resources ([Aragon-Correa et al., 2008](#); [Aragón-Sánchez and Sánchez-Marín, 2005](#)) and credit availability ([Beck and Demirgüç-Kunt, 2006](#); [Berger and Udell, 2006](#)). As a result of such differences, the findings of studies focusing on large corporations may not be directly applicable to SMEs.

Our work focuses on 25 EU countries over the period 2006–2014. This allows us to consider a large number of operating environments which vary in terms of the country dimensions that we examine (i.e. corruption, ease of doing business, etc.). Another feature of our work is that we focus on manufacturing firms to have a more homogenous sample across countries. As discussed in [Cherchye and Verriest \(2016\)](#), this approach allows us to implicitly control for firm characteristics influencing profitability due to differences in business type. Using a large sample of around 40,000 SMEs operating in 25 EU countries over the period 2006–2014 we find that doing business conditions and national culture dimensions have a statistically significant impact on profitability.

The rest of the paper is as follows. Section 2 provides a background discussion. Section 3 describes the data and the methodology. Section 4 discusses the results. Section 5 concludes.

2. Background discussion

In this section we discuss in turn research on national culture, corruption, and the “doing business” environment. Our discussion is not limited to SMEs' outcomes, rather we discuss the impact of these attributes on firm outcomes, regardless of size, and when relevant to the economy as a whole.

2.1. National culture

National culture has attracted a lot of attention in the finance and business research literature in recent years. In one of the early studies, [Chui et al. \(2002\)](#) document that countries with high scores on the cultural dimensions of conservatism and mastery have lower corporate debt ratios. More recent studies tend to confirm the impact of culture on the mix of debt and the financial leverage decisions. For instance, [Zheng et al. \(2012\)](#) find that firms located in countries with high uncertainty avoidance, high collectivism, high power distance, and high masculinity tend to use more short-term debt. [Li et al. \(2011\)](#) focus on foreign joint ventures in China, originating from different countries, and they find that mastery has a negative and significant direct effect on foreign joint ventures' leverage and short-term debt decisions, and a positive and significant direct effect on the likelihood of foreign joint ventures having long-term debt. Also, embeddedness has no significant direct effect, but exercises an influence on leverage decisions through indirect effects. Finally, [Halkos and Tzeremes \(2011\)](#) conclude that lower masculine and power distance values, moderate individualistic values and lower uncertainty avoidance values have a direct positive impact on firm efficiency. However, they examine 282 multinational banks which have considerably different characteristics than the SMEs considered in the present study.

In one of the few studies that focus on SMEs, [Kreiser et al. \(2010\)](#) use data from 1048 firms from six countries (Australia, Sweden, Costa Rica, Norway, Indonesia, Netherlands) to examine the association between culture and risk-taking. They find that uncertainty avoidance and power distance have a negative impact on risk-taking, whereas uncertainty avoidance, individualism, and power distance have a negative influence on proactive firm behaviors. Using data from 35 countries, [Li et al. \(2013\)](#) also find that uncertainty avoidance, along with harmony, are negatively associated with risk-taking. They also find that individualism has a positive impact on risk-taking. Research also shows that culture has an impact on dividend policy, and liquidity. For example, [Bae et al. \(2012\)](#) conclude that uncertainty avoidance, masculinity, and long-term orientation are significant determinants of firms' dividend policies. Focusing on a sample of mostly large firms operating in 45 countries over the period 1995–2004, [Chang and Noorbakhsh \(2009\)](#) conclude that firms hold larger cash and liquid balances in countries where the people tend to avoid uncertainty more, are culturally more masculine, and have longer term orientation.

Table 2
Correlation coefficients.

	(1)	(2)	(3)	(4)	(5)											
Panel A: Firm-level variables																
LNTA (1)	1.000															
LIQ (2)	0.056	1.000														
INTER (3)	−0.038	0.368	1.000													
SOLV (4)	0.049	0.609	0.374	1.000												
LNAGE (5)	0.176	0.113	0.027	0.184	1.000											
	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Panel B: Country-level variables																
GDPGR (6)	1.000															
INFL (7)	0.264	1.000														
PDI (8)	0.004	0.070	1.000													
IND (9)	0.004	−0.060	−0.556	1.000												
MAS (10)	−0.095	0.093	−0.191	0.477	1.000											
UAI (11)	−0.100	−0.056	0.811	−0.631	−0.023	1.000										
LTO (12)	0.021	−0.164	−0.061	0.279	0.295	0.054	1.000									
EXPORTS (13)	−0.012	0.047	−0.101	−0.005	0.104	−0.066	−0.039	1.000								
CORFR (14)	0.199	−0.061	−0.512	0.270	−0.405	0.558	0.002	−0.000	1.000							
COR_ICRG (15)	0.149	−0.143	−0.389	0.144	−0.445	−0.368	0.056	−0.044	0.914	1.000						
COR_WGI (16)	0.217	−0.053	−0.492	0.268	−0.407	−0.533	0.002	−0.010	0.981	0.942	1.000					
BRIBES (17)	0.065	0.177	0.420	−0.318	0.127	0.311	0.042	0.021	−0.595	−0.572	−0.584	1.000				
BUSFR (18)	0.023	−0.018	−0.525	0.440	−0.222	−0.605	0.136	0.028	0.818	0.756	0.812	−0.521	1.000			
GETCR (19)	0.241	0.353	−0.367	0.154	0.031	−0.586	−0.163	0.077	0.471	0.349	0.465	−0.091	0.333	1.000		
POL_STAB (20)	0.254	0.008	−0.596	0.292	−0.147	−0.472	0.124	0.042	0.660	0.576	0.646	−0.420	0.506	0.237	1.000	
FIN_STAB (21)	0.354	−0.038	−0.437	0.434	0.062	−0.486	0.487	0.010	0.556	0.457	0.544	−0.293	0.495	0.345	0.611	1.000
ECON_STAB (22)	0.444	−0.019	−0.353	0.199	−0.203	−0.246	0.352	−0.009	0.498	0.419	0.475	−0.373	0.305	0.032	0.669	0.643
WOMEN (23)	0.071	0.018	0.233	−0.516	−0.134	0.452	−0.228	−0.046	−0.038	0.124	0.015	−0.031	−0.170	−0.015	−0.082	−0.247
INNOV_IN (24)	−0.132	−0.279	−0.279	0.145	0.020	0.040	0.528	−0.013	0.123	0.215	0.138	−0.197	0.242	−0.470	0.459	0.301
INNOV_PRO (25)	−0.061	−0.266	−0.370	0.175	0.045	−0.042	0.491	0.018	0.222	0.311	0.246	−0.233	0.324	−0.367	0.525	0.331
COMPET (26)	0.125	−0.031	−0.045	−0.153	−0.344	−0.135	−0.438	0.028	0.006	−0.018	0.131	0.035	−0.098	0.048	0.064	−0.170
ACCESS_FIN (27)	−0.290	0.106	0.269	−0.211	0.082	0.339	−0.248	0.002	−0.424	−0.389	−0.428	0.191	−0.248	−0.329	−0.506	−0.538
COST_BOR (28)	0.067	0.468	0.052	−0.247	0.053	0.132	−0.243	0.036	−0.213	−0.342	−0.263	−0.044	−0.149	−0.149	0.083	−0.041
		(22)		(23)		(24)		(25)		(26)		(27)		(28)		
ECON_STAB (22)		1.000														
WOMEN (23)		−0.142		1.000												
INNOV_IN (24)		0.480		−0.097		1.000										
INNOV_PRO (25)		0.466		−0.027		0.953		1.000								
COMPET (26)		−0.049		0.210		−0.216		−0.187		1.000						
ACCESS_FIN (27)		−0.435		−0.143		−0.172		−0.221		−0.173		1.000				
COST_BOR (28)		0.162		0.032		−0.012		−0.015		0.142		0.346		1.000		

Notes: The variables are defined in [Appendix I](#).

Table 3
Cultural indicators and return on assets.

	(1)	(2)	(3)	(4)	(5)
LNTA	−1.569*** (0.094)	−1.554*** (0.094)	−1.674*** (0.094)	−1.500*** (0.094)	−1.605*** (0.094)
LIQ	0.228*** (0.039)	0.245*** (0.039)	0.235*** (0.039)	0.240*** (0.039)	0.224*** (0.039)
INTER	0.073*** (0.001)	0.073*** (0.001)	0.073*** (0.001)	0.073*** (0.001)	0.073*** (0.001)
SOLV	0.097*** (0.002)	0.097*** (0.002)	0.098*** (0.002)	0.097*** (0.002)	0.098*** (0.002)
LNAGE	−1.358*** (0.092)	−1.390*** (0.093)	−1.374*** (0.093)	−1.369*** (0.093)	−1.435*** (0.093)
GDPGR	0.291*** (0.005)	0.291*** (0.005)	0.296*** (0.005)	0.291*** (0.005)	0.292*** (0.005)
INFL	0.069*** (0.011)	0.069*** (0.011)	0.064*** (0.011)	0.067*** (0.011)	0.081*** (0.011)
EU15	0.687*** (0.095)	0.855*** (0.002)	1.351*** (0.086)	1.105*** (0.089)	1.329*** (0.086)
PDI	−0.034*** (0.002)				
IND		0.025*** (0.002)			
MAS			0.019*** (0.002)		
UAI				−0.016*** (0.001)	
LTO					0.029*** (0.002)
Constant	8.748*** (0.405)	5.136*** (0.391)	5.808*** (0.380)	7.506*** (0.387)	4.908*** (0.395)
R-sq overall:	0.330	0.328	0.328	0.329	0.329
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. The variables are defined in [Appendix I](#).

2.2. Corruption

There is a debate in the literature as for the impact of corruption on economic development. On the one hand, there is a view that corruption waists public and private resources, in an obstacle to the implementation of business regulations, affects the allocation of entrepreneurship talent, oppose the adoption of new technologies, discourage investments, etc. (see e.g. [De Rosa et al., 2015](#)).¹ On the other hand, there are claims that corruption may play the role of grease in the wheels of an otherwise deficient bureaucratic environment ([Meon and Weill, 2010](#)). Furthermore, [Wieneke and Gries \(2011\)](#) build a theoretical general equilibrium endogenous growth model that explains underperformance of SMEs as an effect of corruption and non-competitive banking, which appear to be mutually reinforcing.

While most of the empirical studies examine the impact of corruption at the aggregate level of the economy, a growing number of studies

¹ For example, based on a [KPMG \(2011\)](#) survey of 214 executives, 70% believe that there are places in the world where business cannot be done without engaging in bribery and corrupt conduct. Additionally, of the remaining executives who do not believe bribery and corruption are widespread in some parts of the world, approximately 28% have chosen not to do business in a country due to bribery and corruption issues. In a survey of around 350 companies from the UK, US, Germany, France, the Netherlands, Brazil and Hong Kong, 35% of companies had been deterred from an otherwise attractive investment because of the host country's reputation for corruption ([Bray, 2007](#)). Finally, the World Economic Forum and the World Bank estimate that corruption reduces global GDP by 5% (\$2.6 trillion) per year with over \$1 trillion paid in bribes. For businesses, corruption makes up 10% of the total cost of doing business.

examines firm-level outcomes. Some studies report a positive impact (e.g. [Wang and You, 2012](#)) or mixed results (e.g. [Sharma and Mitra, 2015](#)).² However, the vast majority of the studies concludes that corruption has a negative impact on firms. For example, [Gaviria \(2002\)](#) reports that corruption and crime substantially reduce sales growth in Latin America. Similarly, [Fisman and Svensson \(2007\)](#) find that both the rate of taxation and bribery are negatively correlated with firm growth in Uganda. [Athanasouli and Goujard \(2015\)](#) show that: (i) more contract dependent firms, operating under a corrupt business environment, adopt less efficient management practices, and (ii) regional corruption is associated with lower levels of innovation and R&D investment, and lower export prospects for contract dependent firm. Using firm-level data for 48 developing and emerging countries, [Paunov \(2016\)](#) documents the impact of corruption on smaller - and larger-sized firms' adoption of quality certificates and patents. The conclusions of this study can be summarized as follows: (i) corruption decreases the likelihood that firms in these industries obtain quality certificates, (ii) corruption influences mainly smaller firms but has no impacts on exporters or foreign- and publicly-owned firms, (iii) corruption does not decrease patenting; however, it reduces machinery investments for innovation, (iv) more reliable business environments foster firms' adoption of quality certificates. Finally, recent research from the Central and Eastern European

² [Wang and You \(2012\)](#) find that corruption is likely to contribute to firms' sale income growth in China. [Sharma and Mitra \(2015\)](#) conclude that bribe works as tax on profitability of firms and encourages inefficiency. However, the evidence is inconclusive for productivity, as they fail to establish any direct impact of bribe on productivity. On the other hand, bribing to the government officers are seen to have positive effects on the firm's exporting performance and product innovation.

Table 4
Doing business environment and return on assets.

	(1)	(2)	(3)
LNTA	−1.346*** (0.096)	−1.454*** (0.095)	−1.474*** (0.095)
LIQ	0.239*** (0.039)	0.237*** (0.039)	0.236*** (0.039)
INTER	0.073*** (0.001)	0.073*** (0.001)	0.073*** (0.001)
SOLV	0.096*** (0.002)	0.096*** (0.002)	0.097*** (0.002)
LNAGE	−1.293*** (0.093)	−1.374*** (0.093)	−1.343*** (0.093)
GDPGR	0.280*** (0.005)	0.298*** (0.005)	0.297*** (0.005)
INFL	0.071*** (0.011)	0.045*** (0.011)	0.040*** (0.011)
EU15	0.687*** (0.094)	0.690*** (0.106)	1.547*** (0.087)
CORFR	0.029*** (0.002)		
BUSFR		0.039*** (0.004)	
GETCR			0.016*** (0.002)
Constant	4.208*** (0.407)	3.412*** (0.484)	4.823 (0.411)
R-sq: overall	0.327	0.328	0.328
Firms	39,945	39,945	40,066
Countries	24	25	25
Observations	233,995	233,995	234,216

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. The variables are defined in [Appendix I](#).

countries concludes that bribery has a negative impact on performance ([De Rosa et al., 2015](#); [Hanousek and Kochanova, 2016](#)).

2.3. Doing business environment

Different countries have different regulations for starting, operating and closing a business, and it is natural to assume that they will have an impact on firm outcomes. [Klapper et al. \(2006\)](#) conclude that: (i) costly regulations have a negative effect on the incorporation of firms, (ii) entrants are larger, implying that regulations discourage the incorporation of small firms, and (iii) the value added per employee in naturally “high-entry” industries grows more slowly in countries with high market entry regulations. However, the impact of such regulations on the profitability of the average firm is ambiguous. As discussed in [Klapper et al. \(2006\)](#) these obstacles to entry may reduce competition, making older firms lazy and less capable of enhancing productivity. [Beck et al. \(2008\)](#) use firm-level data from 48 countries to conclude that the protection of property rights increases external financing of small firms significantly more than of large firms. Using data from the transition countries of Eastern Europe and the former Soviet Union, [Brown et al. \(2009\)](#) show that information sharing is associated with improved availability and lower cost of credit to firms. Focusing on SMEs from emerging markets, [Dong and Men \(2014\)](#) conclude that the availability of credit information and the institutional environment can significantly affect SME financing. Finally, [Martinez Peria and Singh \(2014\)](#) reach various conclusions that relate to our work. More detailed, they find that: (i) after the introduction of a credit bureau, the likelihood that a firm has access to finance increases, maturity lengthens, interest rates drop and the share of working capital financed by banks increases, (ii) the effects of credit bureau reforms are more pronounced the greater the coverage of the credit bureau and the scope and accessibility of the credit information-sharing scheme, (iii) credit bureau reforms have a higher impact on access to finance in

Table 5
Additional results – controlling for systemic banking crises.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators and return on assets					
CRISIS_IMF	0.015 (0.026)	0.018 (0.026)	0.017 (0.026)	0.020 (0.026)	0.0082 (0.026)
PDI	−0.034*** (0.002)				
IND		0.025*** (0.002)			
MAS			0.019*** (0.002)		
UAI				−0.016*** (0.002)	
LTO					0.029*** (0.002)
R-sq overall	0.330	0.328	0.328	0.329	0.329
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,194	234,194	234,194	234,194	234,194
Panel B: Doing business environment and return on assets					
CRISIS_IMF	0.010 (0.026)	0.016 (0.026)	0.016 (0.026)		
CORF	0.029*** (0.002)				
BUSFR		0.039*** (0.004)			
GETCR			0.016*** (0.002)		
R-sq overall	0.327	0.328	0.328		
Firms	39,945	39,945	40,066		
Countries	24	24	25		
Observations	233,992	233,992	234,213		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAGE, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

countries with weaker contract enforcement, and (iv) the effects of credit bureau reform are more pronounced for firms that are smaller, less experienced, and more opaque.

3. Methodology

3.1. Dataset

We collect data from various sources. Firm-specific data are obtained from Orbis database of Bureau van Dijk. This database contains information on listed and unlisted firms. Given the cross-country coverage of our study, we focus on manufacturing firms to ensure a minimum degree of homogeneity. Industry is defined following the European Classification of Economic Activities (NACE). We choose main section C-Manufacturing from the NACE Rev. 2. [Cherchye and Verriest \(2016\)](#) discuss at least two reasons for which it might be advantageous to focus on a single industry like the manufacturing. First, it provides a relatively homogenous sample allowing for a better comparison of firm profitability between countries. In a sense, one can compare firms which are more similar to each other in terms of their operating activities. Therefore, [Cherchye and Verriest \(2016\)](#) characterize this approach as a first “natural” control for differences in profitability across countries because of differences in type of business. Second, focusing on manufacturing provides some reassurance that differences in firms’ profits are much less likely to be the product of regulations that vary across countries (e.g. as it can be the case in utilities, banking, etc.).

Following the EU definition of SMEs, we focus on firms with fewer

Table 6
Additional results - controlling for the cost of corporate borrowing.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators and return on assets					
COST_BOR	0.021 (0.013)	0.019 (0.013)	0.018 (0.013)	0.020 (0.013)	0.020 (0.013)
PDI	−0.036*** (0.002)				
IND		0.022*** (0.002)			
MAS			0.018*** (0.002)		
UAI				−0.017*** (0.002)	
LTO					0.030*** (0.002)
R-sq overall	0.329	0.327	0.327	0.328	0.328
Firms	37,637	37,637	37,637	37,637	37,637
Countries	15	15	15	15	15
Observations	160,511	160,511	160,511	160,511	160,511
Panel B: Doing business environment and return on assets					
COST_BOR	0.021 (0.013)	0.020 (0.013)	0.019 (0.013)		
CORF	0.027*** (0.002)				
BUSFR		0.041*** (0.004)			
GETCR			0.019*** (0.002)		
R-sq overall	0.327	0.327	0.328		
Firms	37,555	37,555	37,646		
Countries	15	15	16		
Observations	160,378	160,378	160,527		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAGE, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

than 250 employees, and a turnover lower than 50 million euros or 43 million euros of total assets. After excluding firms with missing data and erroneous information we end up with a sample of up to 40,066 firms. This results in an unbalanced dataset of up to 234,216 firm-year observations from the period 2006–2014.

We complement this dataset with country-level variables that we collect from various sources. Information on national culture is from Hofstede Insights. Data on freedom from corruption and business freedom are from Heritage Foundation. Information on the getting credit environment is from the World Bank Doing Business report. Information for the various country-level control variables is from sources like the World Development Indicators database of the World Bank, the International Country Risk Guide (ICRG) of the PRS Group, and reports of the European Commission and the European Central Bank. We discuss these variables in more detail below.

3.2. Methodology

To examine the impact of the various country-level characteristics on SMEs' profitability we estimate a model of the following form:

$$ROA_{ikt} = \alpha + \beta X_{ikt} + \gamma Z_{kt} + e_{ikt}$$

where ROA_{ikt} is the return on assets of firm i in country k in year t , X_{ikt} is a vector of firm-specific characteristics for firm i in country k in year t , Z_{kt} is a vector of country-specific characteristics that includes the country level variables of interest along with control variables for country k in year t , and e_{ikt} is the residual. Given the panel structure of the dataset, we use a

Table 7
Additional results: controlling for country financial stability.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators					
FIN_STAB	0.208*** (0.010)	0.217*** (0.010)	0.236*** (0.010)	0.225*** (0.010)	0.230*** (0.011)
PDI	−0.026*** (0.002)				
IND		0.019*** (0.002)			
MAS			0.016*** (0.002)		
UAI				−0.010*** (0.002)	
LTO					0.009*** (0.002)
R-sq overall	0.332	0.331	0.331	0.331	0.330
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197
Panel B: Doing business environment					
FIN_STAB	0.202*** (0.011)	0.220*** (0.011)	0.217*** (0.010)		
CORFR	0.013*** (0.002)				
BUSFR		0.006 (0.004)			
GETCR			0.007*** (0.002)		
R-sq overall	0.331	0.331	0.332		
Firms	39,945	39,945	40,066		
Countries	24	24	25		
Observations	233,995	233,995	234,216		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAGE, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

random effects model with errors clustered at the firm level. A common alternative in a panel setting is to use firm-specific fixed effects which accounts for time-invariant effects (such as ownership). However, the cultural indicators and the EU15 dummy variable that we use are time-invariant, making the use of fixed effects impossible. So, we rely on the random effects estimator.

3.3. Variables selection and expected association with ROA

3.3.1. National culture

[Hofstede et al. \(2010\)](#) define culture as “the collective programming of the mind distinguishing the members of one group or category of people from others”. Initially, based on a large scale survey of staff in IBM's subsidiaries around the world conducted in the 1970s, [Hofstede \(1980\)](#) classified culture along four different dimensions, namely: power distance (PDI), individualism (IND), masculinity (MAS), uncertainty avoidance (UAI). In the 1980s, research by the Canadian psychologist Michael Harris Bond led to the addition of a fifth dimension labelled ‘Long-Term versus Short-Term Orientation’ (LTO) into Hofstede's framework ([Hofstede and Bond, 1988](#); [Hofstede, 1991](#)). A new version of this fifth dimension, based on World Value Surveys became available in [Hofstede et al. \(2010\)](#) and it is the one used in the present study. In general, these cultural indicators are available for one point in time only. However, [Hofstede et al. \(2010\)](#) argue that there is considerable stability in the basic values of a society, with the underwritten rules for success, failure, belonging and other key traits remaining similar. Along the same lines, [Beugelsdijk et al. \(2015\)](#) explain that the argument that culture is

Table 8
Additional results – controlling for access to finance.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators					
ACCESS_FIN	−1.491*** (0.527)	−2.471*** (0.523)	−3.690*** (0.499)	−2.417*** (0.526)	−2.794*** (0.507)
PDI	−0.032*** (0.002)				
IND		0.022*** (0.002)			
MAS			0.019*** (0.002)		
UAI				−0.014*** (0.002)	
LTO					0.027*** (0.002)
R-sq overall	0.330	0.329	0.330	0.329	0.330
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197
Panel B: Doing business environment					
ACCESS_FIN	−1.005* (0.552)	−2.799*** (0.514)	−3.030*** (0.503)		
CORFR	0.027*** (0.002)				
BUSFR		0.034*** (0.004)			
GETCR			0.015*** (0.002)		
R-sq overall	0.328	0.329	0.330		
Firms	39,945	39,945	40,066		
Countries	24	24	25		
Observations	233,995	233,995	234,216		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAME, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

stable over is related to the claim that value differences between societies are deeply rooted in history and drive socioeconomic developments rather than the other way around. [Beugelsdijk et al. \(2015\)](#) replicated the Hofstede's dimensions for two birth cohorts with data from the World Values and reached two interesting conclusions. First, they report that countries' scores on the Hofstede dimensions relative to the scores of other countries have not changed very much. Second, they claim that using Hofstede's data in international research is as relevant now as it was when his work was first published. In the discussion that follows, we outline how each one of these dimensions of culture could influence the profitability of SMEs.

PDI indicates the degree to which the less powerful members of a society accept and expect that power is distributed unequally. Therefore, the members of a society with a high score in this dimension accept a hierarchical order in which everybody has a place without a need for further justification. In contrast, in societies with a lower PDI score people try to balance the distribution of power and request justification for existing inequalities. [Newman and Nollen \(1996\)](#) mention that: (i) in organizations, power distance influences the amount of formal hierarchy, the degree of centralization, and the amount of participation in decision making, and (ii) in higher power distance countries, firms tend to be more centralized and have less employee participation in decision-making. In relation to this, existing studies from the US show that organizations with higher employee involvement are growing faster and perform better (e.g. [Denison and Mishra, 1995](#)). Therefore, one would expect a negative relationship between PDI and profitability. Additionally, [Kreiser et al. \(2010\)](#) mention that managers in low power distance cultures will be: (i) more forward-looking when implementing strategies for their firm, (ii) attempt to distinguish themselves from one another in an effort to improve their industry standing, (iii) enact proactive strategies and seek the exploitation of opportunities as a means of survival as the economic

environment in lower power distance cultures tends to be more dynamic. On the basis of the above discussion, we expect that SMEs operating in countries with a national culture of power distance will be less profitable.

IND is an indicator of a culture of individualism. A high score of this variable would indicate that people are expected to take care of only themselves and their immediate families. In contrast, a low score, referring to collectivism, would indicate that individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty. The impact of individualism on profitability is ambiguous. In general, people in more individualistic cultures tend to emphasize personal accomplishments, and be overconfident which promotes corporate innovation ([Chen et al., 2017](#)). For example, [Gorodnichenko and Roland \(2017\)](#) argue that a more individualist culture results in more innovation and to higher growth because of social status rewards, whereas [Chen et al. \(2017\)](#) provide empirical evidence that firms located in countries with higher levels of individualism generate and higher impact patents, and are more efficient in converting R&D into innovative output. [Newman and Nollen \(1996\)](#) mention that in organizations, individualism is manifested as autonomy, individual responsibility for results, and individual-level rewards, and managers engage in actions in hopes of a larger strategic payoff ([Morris et al., 1993](#)). Furthermore, [Morris et al. \(1993\)](#) mention that in a strongly collectivism environment, tasks become over-segmented, such that individuals lose sight of the larger project and concentrate only on their assigned duties. All the above imply that individualism could enhance firm profitability. However, the relationship between individualism and profitability could also be negative. There are various reasons for this. For example, [Morris et al. \(1993\)](#) highlight that the existing literature suggests that: (i) various complexities in the business environment suggest that a degree of teamwork and well-coordinated task integration is vital for entrepreneurial success, (ii) in the absence of a team or group

Table 9
Additional results – controlling for SME in-house innovation.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators					
INNOV_IN	0.014*** (0.003)	0.020*** (0.003)	0.018*** (0.0030)	0.022*** (0.003)	0.001 (0.003)
PDI	−0.033*** (0.002)				
IND		0.026*** (0.002)			
MAS			0.019*** (0.002)		
UAI				−0.018*** (0.001)	
LTO					0.029*** (0.003)
R-sq overall	0.331	0.329	0.329	0.330	0.329
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197
Panel B: Doing business environment					
INNOV_IN	0.021*** (0.003)	0.018*** (0.003)	0.029*** (0.003)		
CORFR	0.030*** (0.002)				
BUSFR		0.039*** (0.004)			
GETCR			0.021*** (0.002)		
R-sq overall	0.328	0.329	0.331		
Firms	39,945	39,945	40,066		
Countries	24	24	25		
Observations	233,995	233,995	234,216		
R-sq between	0.386	0.387	0.391		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAGE, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

identification, individuals will more likely use organizational resources to satisfy self-interests, and (iii) many tasks will be left incomplete as individuals are unable to obtain cooperation from those having the expertise and necessary resources. Therefore, we expect a national culture of individualism to be associated with the profitability of SMEs, but we make no prediction about the direction of this association.

MAS refers to the dimension of masculinity and reveals the extent to which there is a preference in the society for achievement, heroism, assertiveness and material rewards for success. Within this context, higher scores in this dimension would also imply a more competitive society. Low scores on this dimension would indicate a more consensus-oriented society, characterized by femininity and a higher preference for cooperation, modesty, caring for the weak and quality of life. [Newman and Nollen \(1996\)](#) mention that in the workplace, this dimension is reflected in merit-based opportunities for high earnings, recognition, advancement, and rewards. In general, managers in masculine societies are essentially performance driven individuals ([Chang and Noorbakhsh, 2009](#)). [Kreiser et al. \(2010\)](#) also mention that managers exhibiting a high need for achievement (as in masculine cultures) are ambitious and more willing to engage in the taking of calculated, business-related risk than other managers. They also value decisive and immediate actions. Additionally, they mention that firms in masculine cultures are: (i) likely to implement strategic moves to create and exploit environmental opportunities before their competition, (ii) more proactive in their pursuit of opportunities than firms in feminine societies. Therefore, we anticipate that SMEs operating in countries whose national culture is characterized

Table 10
Additional results – controlling for innovation in production.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators					
INNOV_PRO	0.002 (0.003)	0.009*** (0.003)	0.007*** (0.003)	0.009*** (0.003)	−0.005* (0.003)
PDI	−0.034*** (0.002)				
IND		0.0250*** (0.002)			
MAS			0.019*** (0.002)		
UAI				−0.017*** (0.001)	
LTO					0.031*** (0.002)
R-sq overall	0.330	0.329	0.328	0.329	0.328
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197
Panel B: Doing business environment					
INNOV_PRO	0.008*** (0.003)	0.007** (0.003)	0.014*** (0.003)		
CORFR	0.029*** (0.002)				
BUSFR		0.039*** (0.004)			
GETCR			0.018*** (0.002)		
R-sq overall	0.328	0.328	0.330		
Firms	39,945	39,945	40,066		
Countries	24	24	25		
Observations	233,995	233,995	234,216		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAGE, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

by higher levels of masculinity will be more profitable.

UAI reveals the extent to which the members of a society feel uncomfortable with uncertainty and ambiguity. The main question here is whether societies try to control the future or just let it happen. Countries with a high score in this dimension have rigid codes of belief and behaviour and are narrow-minded when it comes to unorthodox behaviour and ideas. In contrast, countries with a low score are characterized by a more loosen up attitude where practice counts more than principles. In the context of organizations, [Chen et al. \(2017\)](#) find that firms located in countries with higher levels of uncertainty avoidance produce fewer and less significant patents, and are less efficient with their R&D expenditure. Additionally, [Kreiser et al. \(2010\)](#) highlight that firms in uncertainty-accepting societies will be more willing to take risks, display a more proactive behaviors ([Covin and Slevin, 1989](#)), perceive more opportunities as existing in the external environment ([Mueller and Thomas, 2001](#)), and act as first-movers when entering new markets ([Lieberman and Montgomery, 1988](#)). All the above imply that uncertainty avoidance (acceptance) will be negatively (positively) associated with firm profitability. On the other hand, [Boubakri and Saffar \(2016\)](#) argue that because of their heavy reliance on rules, laws, and regulations, uncertainty avoidance societies suffer from relatively less conflicts of interest and information sharing, and are more protective of investors. Additionally, [Newman and Nollen \(1996\)](#) discuss that in organizations, uncertainty avoidance is manifested by the clarity of plans, policies, procedures, and systems. In turn, reliance on clear procedures, well-known strategies, and well-understood rules helps employees reduce uncertainty and cope with their discomfort with unknown

Table 11
Additional results – controlling for competition.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators					
COMPET	−4.814*** (0.521)	−4.188*** (0.520)	−3.736*** (0.526)	−4.819*** (0.522)	−3.147*** (0.544)
PDI	−0.037*** (0.002)				
IND		0.024*** (0.002)			
MAS			0.016*** (0.002)		
UAI				−0.018*** (0.001)	
LTO					0.025*** (0.002)
R-sq overall	0.331	0.329	0.328	0.329	0.328
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197
Panel B: Doing business environment					
COMPET	−4.155*** (0.520)	−4.235*** (0.520)	−4.198*** (0.519)		
CORFR	0.029*** (0.002)				
BUSFR		0.039*** (0.004)			
GETCR			0.0160*** (0.002)		
R-sq overall	0.328	0.328	0.329		
Firms	39,945	39,945	40,066		
Countries	24	24	25		
Observations	233,995	233,995	234,216		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAME, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

situations. Such an organizational environment could make employees and firms more productive, leading to higher profitability. Therefore, there could be a positive relationship between uncertainty avoidance and profitability. Due to this ambiguity, we expect that a national culture of uncertainty avoidance is associated with the profitability of SMEs; however, we make no predictions about the direction of this influence.

LTO refers to the reaction of a society while dealing with the challenges of the present and the future. In countries with a high score people tend to take a pragmatic approach, encouraging thrift and efforts in modern education as a way to prepare for the future (i.e. long term). In countries with a low score they prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion. [Chang and Noorbakhsh \(2009\)](#) outline that in long-term oriented societies, characteristics like patience, persistence, thrift, and self-reliance are perceived as personal virtues by corporate managers, potential investments are evaluated on the basis of their long-term value generating capacity, and investors favour long-term profitability and value-enhancement. Therefore, we expect SMEs operating in countries with a national culture of long-term orientation to be more profitable.

3.3.2. Corruption

CORFR is an indicator of freedom from corruption. It takes values between 0 and 100, where a score of 100 indicates very little corruption and a score of 0 indicates a very corrupt government. According to Heritage, the score for this component is derived primarily from Transparency International's Corruption Perceptions Index (CPI). The Heritage index converts the raw CPI data to a scale of 0–100 by multiplying the CPI score by 10. As discussed earlier, the impact of corruption on firm profitability depends on whether it is the “grease the wheels” or the “sand the wheels” hypothesis that prevails. Therefore, we expect the level of corruption to be associated with the profitability of SMEs; however, we

make no predictions as for the direction of this association.

3.3.3. Business freedom and getting credit

BUSFR is an overall indicator of the efficiency of government regulation of business. It takes into account the difficulty of starting, operating, and closing a business. The business freedom score for each country is a number between 0 and 100, with higher values indicating more freedom in the business environment. The score is based on 10 factors, all weighted equally, using data from the World Bank's Doing Business study. These are: the procedures (number), time (days), cost (% of income per capita), and minimum capital (% of income per capita) for starting a business; the procedures (number), time (days) and cost (% of income per capita) to obtain a license; the time (years), cost (% of estate) and recovery rate (cents of the dollar) for closing a business. Theory provides ambiguous predictions about the relationship of the business environment with firm profitability. On the one hand, fewer restrictions on entry and exit, and an effective environment in terms of credit information sharing, access to finance, etc. can result in a competitive market with very efficient and profitable firms. On the other hand, an environment with many restrictions may result in a less competitive market, where firms are not efficient and they do not grow, but because of the high entry costs they manage to sustain rents and profits. As before, while we expect business regulations to influence the profitability of SMEs, the direction of the impact is ambiguous.

GETCR is an indicator of conditions that facilitate lending. It takes into account two sets of information. The first is the strength of legal rights index, which measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending. The second set considers the coverage, scope and accessibility of credit information available (e.g. coverage of credit bureaus or credit registries). Based on the discussion in Section 2.3., we expect that more

Table 12
Additional results - controlling for exports.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators					
EXPORTS	0.003 (0.002)	0.0040* (0.002)	0.003 (0.002)	0.003 (0.002)	0.004* (0.002)
PDI	−0.020*** (0.004)				
IND		0.0180*** (0.005)			
MAS			0.025*** (0.006)		
UAI				−0.010*** (0.003)	
LTO					0.031*** (0.007)
R-sq overall	0.322	0.322	0.322	0.322	0.322
Firms	9406	9406	9406	9406	9406
Countries	6	6	6	6	6
Observations	39,842	39,842	39,842	39,842	39,842
R-sq between	0.366	0.365	0.366	0.365	0.366
Panel B: Doing business environment					
EXPORTS	0.004* (0.002)	0.0036 (0.002)	0.003 (0.002)		
CORFR	0.083*** (0.007)				
BUSFR		0.130*** (0.011)			
GETCR			0.0120*** (0.003)		
R-sq overall	0.322	0.323	0.322		
Firms	9406	9406	9406		
Countries	6	6	6		
Observations	39,842	39,842	39,842		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAME, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

information will result in less opaqueness, which along with more effective laws, could reduce interest expenses and lead to higher profitability. Higher figures of GETCR correspond to a more favourable getting credit environment. Therefore, we expect GETCR to be positively associated to the profitability of SMEs.

3.3.4. Control variables

We use two country-specific variables to control for macroeconomic conditions. GDPGR is the annual GDP growth that controls for economic growth, as in fast growing economies firms may have higher profits (e.g. [Martinez-Sola et al., 2014](#); [Cherchye and Verriest, 2016](#)). INFL is the inflation rate, measured by the annual change in the consumer price index. It is included in the regressions because it can influence firm profits and make them more volatile ([Cherchye and Verriest, 2016](#)). Additionally, we include a dummy variable (EU15) to distinguish between old and new EU members. This variable takes the value of one in the case of the EU15 countries and zero otherwise, allowing us to account for common within-group characteristics that are not captured by the other country-level variables in our regressions.

We also use various bank-level control variables. LNTA is the natural logarithm of total assets that controls for size (e.g. [Martinez-Sola et al., 2014](#); [Cherchye and Verriest, 2016](#)). LIQ is the quick ratio, calculated as current assets minus stock over current liabilities, and it serves as a measure of liquidity or firm's availability of financial resources (e.g. [Short et al., 2007](#)). INTER is the interest cover ratio, calculated as operating profits over interest expense, that serves as an indicator of potential slack (e.g. [Bromiley, 1991](#); [Rashid and Naeem, 2017](#)). SOLV is the equity to assets ratio, to control for firm leverage (e.g. [Cherchye and Verriest, 2016](#); [Van Vu et al., 2018](#)). Finally, LNAME is the natural logarithm of years since the establishment of the firm and controls for firm experience

and potentially different challenges or opportunities for new entrants (e.g. [Van Vu et al., 2018](#); [Kafourous and Aliyev, 2016](#)).

In further analysis discussed in section 4.2. We control for additional country-level (e.g. competition) and firm-level attributes (e.g. exports). [Table 1](#) presents descriptive statistics, and [Table 2](#) presents the correlation coefficients. To reduce the impact of outliers we winsorize the variables at the 5th and 95th percentile. [Appendix I](#) provides a quick reference to the variables, whereas [Appendix II](#) and [Appendix III](#) provide averages of the variables by country.

4. Results

4.1. Base results

[Table 3](#) presents the findings for the cultural indicators. Given the correlations between some indicators (e.g. the correlation between UAI and PDI is 0.811) we include them one at a time. The results indicate that all five national culture indicators exercise a statistically significant impact on the profitability of SMEs in the European countries.

Our results show that PDI is negatively associated with the return on assets. There are at least two potential reasons for this. First, [Kreiser et al. \(2010\)](#) show that power distance has a negative influence on both risk-taking and proactive firm behaviour. As they mention, managers in high power distance cultures will be more likely to adopt “fortify-and-defend” strategies that solidify their current position in the industry. Additionally, organizations in high power distance cultures also tend to maintain tight control mechanisms and to implement hierarchical bureaucratic structures. Individuals in high power distance cultures will have less freedom and autonomy to make bold decisions, since high levels of control tend to encourage conservatism within organizations

Table 13

Additional results - controlling for the gender of entrepreneurs.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators					
WOMEN	−2.664*** (0.917)	−0.541 (1.022)	−3.463*** (0.916)	−1.297 (0.984)	−2.589*** (0.927)
PDI	−0.034*** (0.002)				
IND		0.024*** (0.002)			
MAS			0.018*** (0.002)		
UAI				−0.015*** (0.002)	
LTO					0.028*** (0.002)
R-sq overall	0.330	0.328	0.327	0.328	0.328
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197
Panel B: Doing business environment					
WOMEN	−2.868*** (0.900)	−3.494*** (0.91)	−3.549*** (0.904)		
CORFR	0.028*** (0.002)				
BUSFR		0.038*** (0.0036)			
GETCR			0.016*** (0.002)		
R-sq overall	0.327	0.328	0.328		
Firms	39,945	39,945	40,066		
Countries	24	24	25		
Observations	233,995	233,995	234,216		

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAME, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

(Thompson, 1967). Second, Newman and Nollen (1996) argue that power distance influences the amount of formal hierarchy, the degree of centralization, and the amount of participation in the decision making of the organizations. These characteristics and in particular the participation in the decision making can influence firm outcomes, like efficiency, financial performance and growth (Denison and Mishra, 1995; Hansen and Wernerfelt, 1989; Denison, 1990).

IND has a positive and statistically significant impact on profitability. The literature suggests that managers will tend to be more autonomous and independent, valuing individual results and rewards more than the managers in collectivist cultures (Hofstede, 1980; Morris et al., 1994; Newman and Nollen, 1996). This leads to higher levels of risk taking, in hopes of a larger strategic payoff, which managers view as deriving from their own effort and leadership (Morris et al., 1993). Apparently, characteristics like autonomy, independence, and higher risk-taking could result in higher profits and explain the higher ROA of firms operating in individualistic countries.

There are a number of reasons that explain the positive relationship between MAS and profitability. As discussed in Newman and Nollen (1996), the dimension of masculinity in the work-place is reflected in merit-based opportunities for high earnings recognition, advancement, and rewards. Bae et al. (2012) also highlight that the choice of jobs in a masculine culture is strongly influenced by the potential career opportunities for different professions, as well as that managers are expected to be assertive, decisive, and aggressive. At the same time organizations focus more on results and tend to reward individuals based on equity and performance rather than equality. Finally, Kreiser et al. (2010) mention that managers exhibiting a high need for achievement are ambitious and more willing to engage in the taking of calculated, business-related risks than other managers.

UAI has a negative effect on ROA, indicating that uncertainty

avoidance decreases profitability. In other words, firm profitability increases in uncertainty accepting societies. As discussed in Kreiser et al. (2010), managers in uncertainty-accepting societies score highly on McClelland's (1960) need for achievement, and they will be more willing to display commitment tolerance, and assume the risks inherent in the entrepreneurial act than managers from uncertainty-avoiding cultures. Entrepreneurs in cultures that accept uncertainty will also perceive more opportunities as existing in the external environment than the ones in cultures with high UAI scores (Mueller and Thomas, 2001). As a result, firms in uncertainty accepting cultures will be more inclined to act as first-movers when entering new markets (Lieberman and Montgomery, 1988).

Lumpkin et al. (2010) highlight that according to the literature a distinguishing characteristic of many family-controlled firms, and particularly high performing ones, is a long-term perspective (Miller and Le Breton-Miller, 2005). They also note that long term orientation in family firms can facilitate innovativeness, promote proactiveness, and autonomy. Newman and Nollen (1996), also argue that management practices consistent with a long-term cultural orientation include problem solving for the long term rather than making quick fixes. Finally, Bae et al. (2012) propose that due to their emphasis on patience, thrift, and self-reliance in countries with long term orientation, managers will accumulate earnings and pay lower dividends in the short term in anticipation of greater long-term results. All these attributes could explain the positive impact of long-term orientation (LTO) on the profitability of European SMEs.

Table 4 presents the regression results for corruption, and the doing business environment. As before, due to correlations we include these variables one at a time. For example, the correlation coefficient between BUSFR and CORFR is 0.818. The results in column 1 show that freedom from corruption has a positive impact on ROA. In others words, higher

Table 14
Additional results – examining alternative indicators of corruption.

	(1)	(2)	(8)
LTA	−1.558*** (0.095)	−1.423*** (0.096)	−1.430*** (0.094)
LIQ	0.246*** (0.039)	0.240*** (0.0385)	0.238*** (0.039)
INTER	0.073*** (0.001)	0.073*** (0.001)	0.073*** (0.001)
SOLV	0.097*** (0.002)	0.096*** (0.002)	0.097*** (0.002)
LNAGE	−1.394*** (0.093)	−1.354*** (0.093)	−1.288*** (0.093)
GDPGR	0.293*** (0.005)	0.284*** (0.006)	0.307*** (0.006)
INFL	0.074*** (0.011)	0.065*** (0.011)	0.074*** (0.011)
EU15	1.310*** (0.094)	0.896*** (0.094)	0.528*** (0.093)
COR_ICRG	0.066** (0.0283)		
COR_WGI		0.486*** (0.041)	
BRIBES			−9.438*** (0.394)
Constant	6.185*** (0.396)	5.738*** (0.386)	6.985*** (0.377)
R-sq overall	0.327	0.328	0.328
Firms	40,066	40,066	40,066
Countries	25	25	25
Observations	234,216	234,216	234,216

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. The variables are defined in Appendix I.

corruption decreases the profitability of SMEs. Thus, the results provide support to the “sand the wheels” hypothesis. It seems that companies have to pay bribes, etc. which eventually becomes a burden and reduces their profits. BUSFREE also enters the regression with a positive and statistically significant coefficient. Thus, SMEs have higher profitability in countries where it is easier to start, operate and close a business. Finally, GETCR has also a positive and significant impact on ROA. Therefore, better legal rights and the availability of credit information enhance the profitability of European SMEs. This finding is consistent and it could be related to the findings of previous studies, documenting that such an environment improves access to finance and lower the cost of funding, particularly for small firms (Beck et al., 2008; Brown et al., 2009; Martinez Peria and Singh, 2014).

Turning to the firm-level control variables we find that LNTA and LNAGE are negatively associated with ROA. Therefore, holding other things constant, larger firms, and older firms are less profitable. In contrast, higher LIQ, INTER, and SOLV translate in higher ROA. Thus, short-term financial health and long-term financial health, as reflected in the margin of safety a company has for paying interest during a given period, its liquidity, and its capitalization, are associated with higher profitability. As it concerns the country-level control variables, all three enter the regressions with a positive and statistically significant coefficient. Therefore, SMEs operating in countries with higher GDP growth, higher inflation, and in one of the EU-15 countries, appear to be more profitable. These results are robust across all the specifications presented in Tables 3 and 4

4.2. Further results

To examine the robustness of our findings and enhance our analysis, we perform many additional estimations. First, we consider alternative estimation approaches, including the use of an alternative dependent

variable. Second, we control for economic conditions, like the financial crisis, borrowing interest rates, and country economic risk. Third, we consider alternative indicators of corruption. Fourth, we control for many other attributes like SME's innovation, credit availability, and competition. Fifth, we consider simultaneously the cultural and institutional environment and examine potential interactions. In all the cases, we control for LNTA, LIQ, INTER, SOLV, LNAGE, DDPGR, INFL and EU15. However, to conserve space, we do not present these variables in the Tables.³ We discuss these robustness tests in the sub-sections that follow.

4.2.1. Alternative estimation approaches

In this sub-section we perform three tests.⁴ First, given that they key variables of interest are at the country-level, we re-estimate the specifications of Tables 3 and 4 while clustering the errors at the country-level. We continue finding that PDI, IND and UAI have a statistically significant impact on ROA. Additionally, the three business conditions variables continue to enter the regressions with a positive coefficient that is statistically significant; however, BUSFR and GETCR are now significant at the 10% level. Second, to lessen concerns about endogeneity and causality we re-estimate the specifications of Tables 3 and 4 while lagging the firm-specific control variables by one year.⁵ The use of lagged firm-specific variables has no impact on the main results. Third, we re-estimate the specifications of Tables 3 and 4 while replacing the return on assets by profit margin, as an alternative indicator of performance. The results for the cultural indicators and the business environment remain the same, the only exception being GETCR which is now insignificant.

4.2.2. Economic conditions

In this sub-section we re-estimate the specifications of Tables 3 and 4 while adding one-by-one additional variables for the economic conditions. First, we include a dummy variable for the crisis in the specifications. We use the following two approaches to define the crisis: (i) we rely on information from the IMF database on systemic banking crises (CRISIS_IMF) by Laeven and Valencia (2012). This allows us to use a country-specific indicator of banking crises. Thus, it is possible that the crisis does not start simultaneously in 2008 in all countries (e.g. in the UK it started in 2007) - as commonly assumed in the literature - or that some countries in the sample have not experienced a crisis over the period of our analysis (e.g. Estonia, Lithuania, Slovakia, etc.), (ii) we adopt a more general definition used in the literature and assume that all the crisis started in 2008 for all the countries in the sample (CRISIS_2008). Therefore, even if a given country has not experience a systemic banking crisis we assume that, starting in 2008 it was influenced by the global crisis due to spillover effects. None of the two indicators appears to influence SMEs' profitability, and the main results remain the same. We present the results with the inclusion of the CRISIS_IMF dummy in Table 5, the ones with CRISIS_2008 being available from the authors

³ In unreported regressions, we also compare the variation of ROA explained by firm-specific and country specific variables. Thus, we estimate additional models that include (i) only firm-specific variables, and (ii) only country-specific variables. It appears that the vast majority of the variation of ROA is explained by firm-specific variables. The R-square of the firm-specific only model is around 0.323. In contrast, the one of the country-specific only model is around 0.026 to 0.031. (depending on the country-level variables that we include).

⁴ As we do not introduce any new control variables, we do not tabulate these results to conserve space. Any differences in the findings are discussed in the text. All the results are available from the authors upon request.

⁵ As this point it should be mentioned that our interest lies on whether country-level variables influence firm-level profitability. However, it is difficult to expect the opposite – i.e. have causality running from an individual firm to national culture or even corruption. Also, in most of the cases, there is no point to use the lag of the country-level variables as these are time-invariant (e.g. culture) or they do not vary much from one year to another (e.g. control of corruption).

Table 15

Additional results- controlling for political stability and institutions.

	(1)	(2)	(3)	(4)	(5)
Panel A: Cultural indicators and political stability - institutions					
POL_STAB	0.075*** (0.004)	0.082*** (0.004)	0.088*** (0.004)	0.081*** (0.004)	0.082*** (0.004)
PDI	−0.017*** (0.002)				
IND		0.019*** (0.002)			
MAS			0.022*** (0.002)		
UAI				−0.008*** (0.002)	
LTO					0.024*** (0.002)
R-sq overall	0.331	0.331	0.332	0.331	0.332
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197
Panel B: Interactions of Cultural indicators and political stability - institutions					
POL_STAB_D	0.200 (0.135)	0.135 (0.150)	0.854*** (0.133)	0.154 (0.113)	−2.039*** (0.173)
PDI	−0.032*** (0.003)				
PDI*POL_STAB_D	0.006** (0.003)				
IND		0.020*** (0.002)			
IND*POL_STAB_D		0.006*** (0.002)			
MAS			0.023*** (0.002)		
MAS*POL_STAB_D			−0.004** (0.002)		
UAI				−0.017*** (0.002)	
UAI*POL_STAB_D				0.006*** (0.002)	
LTO					−0.006** (0.003)
LTO*POL_STAB_D					0.046*** (0.003)
R-sq overall	0.331	0.330	0.332	0.330	0.331
Firms	40,056	40,056	40,056	40,056	40,056
Countries	24	24	24	24	24
Observations	234,197	234,197	234,197	234,197	234,197

Notes: ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level; Robust standard errors in parenthesis; Estimations obtained from a random effects model with robust standard errors clustered at the firm level. All the regressions include a constant and the following control variables, which are not presented to conserve space: LNTA, LIQ, INTER, SOLV, LNAGE, GDPGR, INFL, EU15. The variables are defined in [Appendix I](#).

upon request.

Second, we add in the regressions the average annual cost of borrowing of non-financial corporations for new loans in each country (COST_BOR). The data are from the European Central Bank, and the sample is restricted to the euro area countries. We present the results in [Table 6](#). Surprisingly, we find that the cost of borrowing is insignificant. The inclusion of this variable in the regressions does not influence the main results.

Third, we include in the regressions the ICRG economic stability indicator (ECON_STAB) and the ICRG financial stability indicator (FIN_STAB). The first indicator assesses a country's current economic strengths and weaknesses, whereas the second assesses a country's ability to finance its official, commercial, and trade debt obligations. In both cases, higher scores indicate lower risk. Further information for the estimation of these two indicators is available in the Appendix. Both indicators enter the regressions with a positive and statistically significant coefficient. Therefore, firms in countries with higher financial and economic stability have higher profits. In general, the main results hold. The only exception

is the business freedom indicator, which becomes insignificant when we control for financial stability. To conserve space, we present the results with the inclusion of the financial stability index in [Table 7](#), the ones with economic stability index being available upon request.

4.2.3. Additional control variables

In this section, we continue re-estimating the specifications of [Tables 3 and 4](#), while controlling for various other characteristics that could influence the profitability of SMEs. The literature suggests that credit availability can be an important obstacle for SMEs ([Beck and Demirguc-Kunt, 2006](#); [Berger and Udell, 2006](#)). While we have already examined the existence of laws and conditions that are expected to facilitate credit, we have not considered the SMEs' actual access to finance. To control for this issue, we use information from the European Commission's and European Central Bank's survey on the access to finance to enterprises (SAFE). More detailed, we consider the answer to the question “What is currently the most pressing problem your firm is facing?”, and we take into account the aggregate country-level

percentage of respondents that answer “access to finance” (ACCESS_FIN).⁶ The results in Table 8, show that a higher proportion of respondents identifying access to finance as an important problem results in lower return on assets. This is robust across all the estimations. Other than that, the main results for the cultural and business environment hold.

The literature also suggests that innovation may lead to higher SME performance (Van Auken et al., 2008). To account for this, we use country-level information from the European innovation scoreboard and we estimate the specifications of Tables 3 and 4 while controlling for: (i) the percentage of SMEs innovating in-house (INNOV_IN), and (ii) the percentage of SMEs introducing product or process innovations (INNOV_PRO).⁷ In most of the cases, these variables enter the regressions with a positive and statistically significant coefficient, indicating that innovation enhances performance. The results in Tables 9 and 10 reveal that the inclusion of these variables in the analysis does not influence the main findings.

Competition may also influence performance, although its expected impact is ambiguous. On the one hand, competition can lead to lower product prices and erode profits (Dufwenberg and Gneezy, 2000). On the other hand, intense competition can lead to higher productivity growth and efficiency (Nickell, 1996; Januszewski et al., 2002). In the present study, to control for market competition, we rely again on SAFE. We consider the same question as before; however, we now take into account the proportion of respondents that identified competition as the most pressing problem (COMPET). We find that our indicator of competition enters with a negative and statistically significant coefficient in all the regressions. Thus, higher competition results in lower profits. As shown in Table 11, the main results hold.

We also control for the exporting activity of the SMEs, using the firm-level ratio of export revenue to operating revenue (EXPORTS). The results in the literature are mixed. For example, Lu and Beamish (2006) find that the exporting activity of Japanese SMEs has a positive impact on their growth, but a negative impact on their profitability. In contrast, Le and Valadkhani (2014) conclude that non-exporting Australian SMEs are less efficient than their exporting counterparts. As shown in Table 12, we find some evidence that the share of exports has a positive impact on profitability; however, this is not the case in all the specifications, and it is statistically significant at the 10% level. There are two possible explanations for this. First, due to data availability, the sample in these estimations is restricted to 39,842 firm-year observations from 9406 firms operating in six countries. Second, this finding can possibly be attributed to the fact that the European SMEs are not very active in exporting. The European Commission's 2015/2016 annual report on European SMEs highlights that in 2013, only about 1.2 million SMEs in the EU28 non-financial business sector (excluding the Czech Republic, Ireland, Luxembourg, and Spain) engaged in export activities. Considering that at the same time there were more than 20 million SMEs operating in the EU, it is evident that exporting SMEs account for nearly 6%. The inclusion of this variable in the analysis does not influence our main results.

The association between performance and the gender of entrepreneurs has also attracted attention in the literature. Artz (2017) concludes that once controlling for risk preferences, intelligence, start-up capital, prior industry experience and hours worked at the business, there are no

differences between female and male entrepreneurial success in the US. Kengne (2016) finds that South African SMEs that are jointly owned by men and women appear to outperform those owned by men; however, the presence of women among owners is not related to firm survival. In the present study, we control for the percentage of women entrepreneurs in each country, measured by the ratio of women entrepreneurs to the total number of entrepreneurs (WOMEN).⁸ We find that the country-level percentage of women entrepreneurs has a negative and statistically significant impact on firm profitability, which is robust across our estimations. Other than that, the results in Table 13 reveal that our key findings remain the same.

4.2.4. Using alternative indicators of corruption

The results presented so far show a robust impact of corruption on SMEs performance. However, one could claim that the Heritage's freedom from corruption indicator (CORFR) captures perceptions of corruption, which could differ from actual corruption (Olken, 2009; Rohwer, 2009). To address this concern, to the extent that it is possible, we follow two approaches while re-estimating the specification of Column 1 in Table 4. First, we re-estimate the specification with the use of corruption indices from two alternative sources, those being the ICRG (COR_ICRG), and the World Bank's Worldwide Governance Indicators (COR_WGI). Second, we use information on incidences of bribes, which could be seen as a proxy for actual corruption. Thus, we use the percentage of people, among the ones that had a contact with public services, that paid a bribe for public services over the last twelve months (BRIBES). This indicator is from the Global Corruption Barometer of International Transparency. The results in Table 14 are consistent with our expectations. In the case of the two indicators of corruption higher figures mean better outcomes (i.e. lower corruption) and as such we observe the anticipated positive association of ICRG_COR and WGI_COR with ROA. In contrast, the indicator of bribery is negatively associated with ROA.

4.2.5. Simultaneous control of cultural and institutional environment

In the regressions presented so far, we included the cultural indicators and the business conditions separately in the regressions. At this point, we re-estimate the specifications of Table 3 while including an overall indicator of institutional environment and political stability. We do so, to avoid overloading the regressions with all the business condition variables of Table 4 that can be correlated, and at the same time to consider potential interactions between the cultural and institutional environment. Therefore, we use the ICRG political stability indicator (POL_STAB), which captures various country-specific attributes like: government stability, investment profile, corruption, law and order, democratic accountability, bureaucracy quality, religion and military in politics, etc. Theoretically, this score takes values between 0 and 100 with higher scores indicating lower risk and a higher quality of institutions and political stability. We present the results with the inclusion of this indicator in Panel A of Table 15. We find that the ICRG political stability indicator enters the regressions with a positive and statically significant coefficient. Therefore, SMEs operating in countries with higher political stability and better institutional environment, have higher profitability. This is consistent with the results obtained in Table 4. The inclusion of this indicator in the regressions does not influence the association between the cultural indicators and ROA.

⁶ Ideally, we would like to use firm-level information on credit constraints. However, Orbis does not provide such information. Additionally, firm-level responses in SAFE are not publicly available and when access is granted on a case-by-case basis, the data are anonymized. Thus, it would be possible to match the firms that participated in the survey with our dataset.

⁷ We also considered the use of the firm-level ratio of R&D expenses to Operating revenue. Unfortunately, we had information for only 874 firms (2480 firm-year observations) or in other words about 1% of the sample. Thus, we have not pursued this analysis further.

⁸ Unfortunately, firm-level information is not available. Therefore, we rely on country-level aggregate statistics. We obtain this information from the European Commission (2014) report on “Statistical Data on Women Entrepreneurs in Europe”. Data are available in two points in time over the period of our analysis. We assign information from 2008 to the period 2006–2010, and information from 2012 to the period 2011–2014. We do not expect this approach to have a significant impact on our results, as such statistics do not change substantially over short time periods.

In Panel B, we follow a different approach. We create a dummy variable that distinguishes between the countries that score above ($POL_STAB_D = 1$) and the ones that score below ($POL_STAB_D = 0$) the sample country-level average in POL_STAB . Then, we interact this dummy variable with the cultural indicators. It should be reminded at this point, that once the equation includes an interaction effect, the statistical significance of the lower-order coefficients is no longer useful (Braumoeller, 2004). Additionally, the coefficient on the national culture dimensions only captures the effect of culture on ROA when POL_STAB_D is zero (Brambor et al., 2006). Similarly, the coefficient on POL_STAB_D only captures the effect of political stability on ROA when the national culture indicators equal zero. Thus, the lower-order coefficients in Table 15 are not directly comparable with the ones obtained in previous Tables, and we therefore turn our attention on the interaction term. In most of the cases, the interaction terms is positive and statistically significant, indicating that the impact of the cultural dimensions on profitability is enhanced in countries with higher political stability and institutional quality. The only exception is the interaction $MAS*POL_STAB_D$ which enters the regression with a negative and statistically significant coefficient. Thus, the impact of masculinity on firm return on assets is lower in countries with higher values of POL_STAB .

5. Conclusions

SMEs are considered the backbone of economic activity in a large number of countries. In Europe, they have attracted considerable attention by policy makers and the European Commission, which enacted a number of initiatives, like the EIB-EC SME Initiative and the Small Business Act. Therefore, the well-being and profitability of these firms is of interest to various stakeholders.

Using a large sample of SMEs operating in 25 European countries over the period 2006–2014, the present paper aims to extend our understanding as for the driving factors of profitability. In contrast to earlier studies which examine mainly firm-specific characteristics, we focus on country-specific attributes like culture, corruption, getting credit conditions, and government regulation related to the starting, operating, and closing a business.

Our results can be summarized as follows. First, we find robust evidence that the dimensions of national culture exercise a statistically significant impact on the profitability of European SMEs. Three of them have a positive association with profitability (i.e. individualism, masculinity, long-term orientation), whereas the other two have a negative impact on the return on assets (i.e. power, uncertainty avoidance). Second, freedom from corruption, business freedom, and the getting credit conditions have a positive influence on the profitability of European

SMEs. Finally, we find that an overall indicator of institutional development and political stability, not only has a positive impact on SMEs profitability, but it also conditions the impact of the national culture dimensions.

These results have various managerial and policy making implications. While it is not possible to change national culture, both managers and policy makers ought to take into account that cultural differences are important drivers of SMEs' profitability. Apparently, for policy makers the most important findings is the robust impact of various business conditions on SME performance. For example, the negative impact of corruption and bribes on SMEs shows that policy makers have to enhance their anti-corruption strategies. Similarly, they should take necessary actions to improve business conditions by minimizing the procedures, time and cost to operate an enterprise. They should also enhance the development of the getting credit environment, by introducing and strengthening laws that protect the rights of borrowers, promote the establishment and operation of credit bureaus and credit registries, necessary conditions for overcoming opaqueness issues with SMEs and improving their access to credit. Finally, our findings relating to political stability and institutional environment show that policy makers should give attention to dimensions like democratic accountability and bureaucracy quality, but also to avoid potential conflicts and problems that could emerge through the involvement of religion and military in politics.

Our study is not without limitations. For instance, as mentioned before, due to lack of information we have considered only key financial firm-level attributes. We hope that future research will overcome this problem. Within this context, it would be interesting to examine how certain firm-level characteristics, like managerial ability and innovation can help SMEs overcome the obstacles of adverse business conditions like corruption and limited access to credit or how different managerial styles interact with the cultural environment. Another potential avenue for future research would be to extend the analysis to include more countries.

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Appendix I. Description of variables

Panel A: Dependent variables	
ROA	Ratio of profits to total assets. Source: Orbis database
PR_MARGIN	Ratio of profits to operating revenue (turnover). Source: Orbis database
Panel B: Key control variables	
LNTA	Natural logarithm of firm-level total assets. Source: Orbis database
LIQ	Firm-level quick ratio, calculated as current assets minus stock over current liabilities. Source: Orbis database
INTER	Firm-level interest cover ratio, calculated as operating profits over interest expense. Source: Orbis database
SOLV	Firm-level leverage, calculated as equity to assets. Source: Orbis database
LNAGE	Firm age, measured by the natural logarithm of years since the establishment of the firm. Source: Orbis database
GDPGR	Annual GDP growth. Source: World Bank, World Development Indicators
INFL	Inflation, measured by the annual change in the consumer price index. Source: World Bank, World Development Indicators
EU15	Dummy variable that takes the value of 1 in the case of EU15 countries and zero otherwise
Panel C: Key independent variables (Culture and Doing business)	
PDI	National culture dimension of power distance, indicating the degree to which the less powerful members of a society accept and expect that power is distributed unequally. Source: Hofstede insights

(continued on next column)

(continued)

IND	National culture dimension of individualism, with higher values indicating that people are expected to take care of only themselves and their immediate families. Source: Hofstede insights
MAS	National culture dimension of masculinity, revealing the extent to which there is a preference in the society for achievement, heroism, assertiveness and material rewards for success. Source: Hofstede insights
UAI	National culture dimension of uncertainty avoidance, revealing the extent to which the members of a society feel uncomfortable with uncertainty and ambiguity. Source:
LTO	National culture dimension of long-term orientation, referring to the reaction of a society while dealing with the challenges of the present and the future. Source: Hofstede insights
CORFR	Indicator of freedom from corruption, with higher figures indicating lower corruption. Source: Heritage Foundation
BUSFR	Indicator of the efficiency of government regulation of business, with higher values indicating more freedom in the business environment. Source: Heritage Foundation
GETCR	Indicator of conditions that facilitate lending, assessing the strength of legal rights and the coverage, scope and accessibility of credit information. Source: World Bank Doing Business Report

Panel D: Control variables used in further analysis

CRISIS_IMF	Country-specific dummy variable for banking crises. Source: Laeven and Valencia (2012)
CRISIS_2008	Dummy variable for the financial crisis, taking the value of 1 in the post 2008 period and 0 otherwise.
COST_BOR	Country-level average annual cost of borrowing of non-financial corporations for new loans. Source: European Central Bank
ECON_STAB	Composite indicator of a country's current economic strengths and weaknesses. It takes into account the GDP per head (% relative to average GDP of all countries), real GDP growth, annual inflation rate, budget balance (% GDP), current account (% GDP). Higher scores indicate lower economic risk. Source: ICRG
FIN_STAB	Composite indicator of a country's ability to finance its official, commercial, and trade debt obligations. It takes into account foreign debt (% GDP), foreign debt service (% exports of goods and services), current account (% exports of goods and services), net international liquidity as months of import cover, exchange rate stability. Higher scores indicate lower financial risk. Source: ICRG
ACCESS_FIN	Country-level percentage of respondents identifying “access to finance” as the most pressing problem their firm is facing. Source: European Commission's and European Central Bank's survey on the access to finance to enterprises.
INNOV_IN	Percentage of SMEs innovating in-house in a given country. Source: European innovation scoreboard
INNOV_PRO	Percentage of SMEs introducing product or process innovations in a given country. Source: European innovation scoreboard
COMPET	Country-level percentage of respondents identifying “competition” as the most pressing problem their firm is facing. Source: European Commission's and European Central Bank's survey on the access to finance to enterprises.
EXPORTS	Firm-level ratio of export revenue to operating revenue. Source: Orbis database
WOMEN	percentage of women entrepreneurs in each country, measured by the ratio of women entrepreneurs to the total number of entrepreneurs. Source: European Commission's report on “Statistical Data on Women Entrepreneurs in Europe”
COR_ICRG	Assessment of corruption within the political system. Takes into account financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. However, it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, ‘favour-for-favours’, secret party funding, and suspiciously close ties between politics and business. Higher figures indicate lower corruption. Source: ICRG
COR_WGI	Indicator of control of corruption. It captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests. Higher values indicate lower corruption. Source: World Bank's Worldwide Governance Indicators
BRIBES	Percentage of people, among the ones that had a contact with public services, that paid a bribe for public services over the last twelve months in a given country. Source: Global Corruption Barometer of International Transparency
POL_STAB	Indicator of political stability. It takes into account government stability, Socioeconomic Conditions, Investment Profile, Internal Conflict, External Conflict, Corruption, Military in Politics, Religion in Politics, Law and Order, Ethnic Tensions, Democratic Accountability, Bureaucracy Quality. Theoretically, it takes values between 0 and 100 with higher values indicating higher political stability. Source: ICRG
POL_STAB_D	Dummy variable that takes the value of 1 when the POL_STAB score of given country is higher than the country-level average score of POL_STAB and 0 otherwise. Source: Authors' calculation using ICRG data.

Appendix II. Average of firm-level variables

Country	Obs.	ROA	LNTA	LIQ	INTER	SOLV	LNAGE
Austria	2183	5.88	4.23	1.67	28.36	36.71	1.30
Belgium	9495	5.31	4.10	1.75	24.81	38.58	1.37
Bulgaria	2829	6.71	3.77	1.92	18.48	41.57	1.10
Croatia	28	−1.77	4.37	1.78	9.86	51.66	1.71
Cyprus	19	−5.77	4.10	2.03	−1.59	49.71	1.43
Czech Republic	10,389	5.64	3.86	1.76	24.37	43.95	1.09
Denmark	100	3.07	4.31	2.68	20.15	62.63	1.44
Estonia	2	4.68	3.48	2.55	−2.56	77.38	1.80
Finland	4927	6.86	4.00	1.88	23.17	39.48	1.22
France	24,798	5.62	4.04	1.70	24.73	38.90	1.35
Germany	17,144	7.50	4.14	2.33	20.86	35.89	1.35
Greece	3520	2.80	4.23	1.67	14.59	38.35	1.34
Ireland	653	5.29	4.14	1.99	24.72	41.75	1.27
Italy	62,185	3.94	4.23	1.55	18.05	31.80	1.35
Latvia	16	−5.78	4.14	0.91	−2.25	29.84	1.59
Lithuania	1063	5.57	3.86	1.75	17.82	39.20	1.06
Luxembourg	247	6.64	4.19	2.29	27.59	41.75	1.25
Netherlands	221	6.82	4.28	1.58	24.95	37.15	1.45
Poland	8058	7.34	3.91	1.59	25.34	44.74	1.12
Portugal	6278	3.84	4.03	1.64	13.26	37.28	1.31
Romania	6512	5.06	3.78	1.55	21.74	39.00	1.03
Slovenia	1535	4.45	4.08	1.61	55.03	40.99	1.20
Spain	26,864	4.08	4.16	1.72	17.54	41.20	1.31
Sweden	10,805	7.09	3.98	1.87	29.37	41.00	1.37
UK	33,895	6.76	4.02	1.75	27.99	38.75	1.28

Notes: ROA = return on assets; LNTA = natural logarithm of total assets; LIQ = current ratio; INTER = interest cover ratio; SOLV = equity to assets ratio; LNAGE = natural logarithm of firm age.

Appendix III. Average of country-level variables

Country	Obs.	GDPGR	INFL	PDI	IND	MAS	UAI	LTO	CORFR	COR_ICRG	COR_WGI	BRIBES	BUSFR	GETCR
Austria	2183	0.59	2.03	11	55	79	70	60	76.72	3.74	1.52	0.08	74.22	73.55
Belgium	9495	1.61	1.99	65	75	54	94	82	73.05	3.66	1.50	0.04	92.11	54.92
Bulgaria	2829	1.45	2.75	70	30	40	85	69	37.59	3.69	−0.21	0.08	72.70	83.59
Croatia	28	−1.15	1.50	73	33	40	80	58	43.24	3.78	0.12	0.04	60.59	67.46
Cyprus	19	−2.49	0.79	n.a.	n.a.	n.a.	n.a.	n.a.	63.74	3.93	1.06	0.19	80.17	61.97
Czech Republic	10,389	1.18	2.14	57	58	57	74	70	47.47	3.66	0.32	0.14	66.47	70.19
Denmark	100	0.28	1.83	18	74	16	23	35	93.41	3.65	2.39	0.01	98.24	79.68
Estonia	2	2.24	1.37	40	60	30	60	82	66.10	5.25	1.25	0.06	79.55	72.50
Finland	4927	0.62	1.20	33	63	26	59	38	92.50	3.65	2.26	0.01	94.55	73.77
France	24,798	0.86	1.45	68	71	43	86	63	71.18	3.62	1.43	0.05	84.80	54.70
Germany	17,144	1.38	1.65	35	67	66	65	83	79.64	3.62	1.78	0.02	90.09	81.41
Greece	3520	−1.88	2.22	60	35	57	100	45	39.68	3.64	0.02	0.21	75.12	53.67
Ireland	653	1.07	1.79	28	70	68	35	24	75.91	3.62	1.64	0.03	89.18	85.52
Italy	62,185	−0.66	1.85	50	76	70	75	61	44.19	3.64	0.17	0.07	76.53	49.39
Latvia	16	0.69	2.68	44	70	9	63	69	46.20	3.93	0.28	0.18	76.37	85.55
Lithuania	1063	2.59	2.90	42	60	19	65	82	49.40	3.65	0.31	0.28	82.37	69.22
Luxembourg	247	1.83	2.18	40	60	50	70	64	83.63	3.65	2.07	0.13	74.87	23.95
Netherlands	221	3.15	1.54	38	80	14	53	67	n.a.	3.55	2.11	0.02	n.a.	68.61
Poland	8058	3.60	3.03	68	60	64	93	38	45.74	3.66	0.46	0.03	59.56	88.44
Portugal	6278	−0.45	1.91	63	27	31	99	28	62.18	3.66	1.04	0.03	81.75	49.74
Romania	6512	1.61	3.91	90	30	42	90	52	36.68	3.65	−0.20	0.21	72.05	3.85
Slovenia	1535	0.96	2.16	71	27	19	88	49	62.74	3.65	0.91	0.05	80.79	33.79
Spain	26,864	0.06	2.12	57	51	42	86	48	63.87	3.63	1.04	0.03	78.06	67.87
Sweden	10,805	1.39	1.29	31	71	5	29	53	92.02	3.63	2.24	0.01	93.59	70.69
UK	33,895	1.18	2.78	35	89	66	35	51	79.08	3.61	1.68	0.03	92.69	96.77
Country	POL_STAB	FIN_STAB	ECON_STAB	WOMEN	INNOV IN	INNON PRO	COMPET	ACCESS_FIN	COST_BOR					
Austria	85.44	37.39	37.73	0.35	34.22	39.25	0.12	0.09	2.35					
Belgium	81.20	38.41	38.95	0.30	39.53	45.83	0.13	0.10	3.20					
Bulgaria	67.75	34.79	34.25	0.34	13.55	16.47	0.12	0.13	n.a.					
Croatia	71.35	31.71	33.21	0.37	21.55	25.37	0.17	0.23	n.a.					
Cyprus	75.13	34.25	34.02	0.26	34.78	35.16	0.20	0.30	6.41					
Czech Republic	77.33	38.24	35.76	0.28	27.99	32.51	0.14	0.12	n.a.					
Denmark	81.81	43.78	40.48	0.27	36.23	36.76	0.16	0.13	n.a.					
Estonia	72.25	27.29	39.71	0.28	21.60	25.20	0.22	0.10	3.06					
Finland	90.67	35.44	40.29	0.31	37.28	42.90	0.16	0.10	3.00					
France	75.21	37.41	36.56	0.30	29.48	32.12	0.10	0.17	3.34					
Germany	84.61	41.21	41.42	0.31	43.50	50.80	0.08	0.11	3.80					
Greece	70.35	32.01	31.05	0.29	31.05	35.09	0.14	0.35	6.02					
Ireland	82.60	35.00	35.57	0.19	39.06	38.74	0.17	0.16	4.28					
Italy	75.75	35.90	35.69	0.28	33.24	36.75	0.13	0.19	4.19					
Latvia	71.42	29.35	33.21	0.37	13.75	15.64	0.11	0.16	3.50					
Lithuania	73.74	34.29	34.70	0.37	18.10	21.34	0.21	0.20	n.a.					
Luxembourg	90.74	42.49	42.11	0.39	37.82	43.83	0.25	0.11	2.66					
Netherlands	84.00	40.50	43.57	0.33	27.80	33.35	0.09	0.13	4.63					
Poland	78.06	35.59	36.43	0.35	13.74	17.36	0.19	0.10	n.a.					
Portugal	78.34	34.39	32.84	0.40	32.71	41.08	0.19	0.14	5.62					
Romania	67.48	34.93	31.64	0.29	12.71	12.63	0.14	0.17	n.a.					
Slovenia	75.87	34.49	35.78	0.28	25.83	31.61	0.13	0.18	5.10					
Spain	73.51	34.57	34.89	0.31	20.27	24.99	0.13	0.23	3.85					
Sweden	87.96	39.63	43.10	0.26	38.20	41.97	0.21	0.10	n.a.					
UK	79.23	38.38	34.94	0.28	18.65	25.86	0.13	0.14	n.a.					

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