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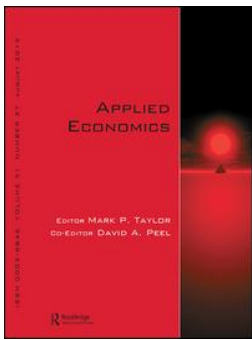
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Public guarantee schemes, corruption and gender: a European SME-level analysis

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ABSTRACT

Does a corrupt politico-institutional environment affect the demand of public subsidies for credit access – so-called public guarantee schemes – by small and medium-sized enterprises (SMEs) helmed by female entrepreneurs? The paper tackles this question by using a large sample of European SMEs over 2010–2014 while also carefully addressing possible endogeneity issues. It provides robust evidence that, compared to their male counterparts, female entrepreneurs: (a) tend to demand more public subsidies, and (b) are more sensitive to the quality of the politico-institutional environment. The upshot is that a corrupt environment is not gender neutral: in light of ‘essential gender features,’ corruption negatively influences SMEs helmed by female entrepreneurs more than male ones.

KEYWORDS

corruption; European SMEs; female entrepreneurship; gender; public subsidies

JEL CLASSIFICATION



H20; J16; J18; K40

I. Introduction


Public policy can influence entrepreneurial outcomes in non-trivial ways (e.g., Coleman et al. 2019). Among the available public policy tools to attempt to positively influence entrepreneurship, particular attention has been given to public subsidies or grants, especially the ones designed with the objective to stimulate firm-level innovation (e.g., De Blasio et al. 2018). Indeed, a subsidy earmarked for entrepreneurship – also known in policymaking as a *public guarantee scheme* – among other effects can: (a) encourage private R&D investment (Liu et al. 2019) by improving brand name capital when autonomous R&D investment of a small- and medium-sized enterprise (SME) is perceived to be too risky (e.g., Meuleman and De Maeseeneire 2012); (b) facilitate a firm's access to external sources of finance to alleviate credit constraints (Martí and Quas 2018); (c) be a cost-effective public intervention to spur credit creation (OECD 2013); and (d) benefit banks through risk sharing and saving on

regulatory capital. Moreover, subsidies are also generally perceived to be more beneficial for smaller, younger firms rather than for larger, older ones. For smaller firms usually face greater difficulties in investing in innovation (Bellucci, Pennacchio, and Zazzaro 2019).¹

Recent years have witnessed an increasing interest in what we may call the *gendering* of entrepreneurship (among others, Minniti 2009; Marlow and McAdam 2013; Adachi and Hisada 2017). This literature focuses on the effects of gender on entrepreneurship and emphasizes the obstacles women face to gain the credibility and resources required to capitalize on their entrepreneurial talent. The availability of finance – and the ability to access that finance – is a critical issue of this debate. In this respect, recent research supports the view that women are less likely to apply for bank finance and, when they do, have lower levels of collateral and poorer credit histories. The bottom line is that women generally have inferior access to

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¹Take note that this is not to say that a grant is a panacea and cost-free policy tool. When, for example, a subsidy-supported SME would have been privately financed anyways, there would be no impact on private sector access to credit. Or think of when a subsidy may exacerbate adverse selection and moral hazard because it limits SME liability – in this case, there likely would be an increase of so-called bad loans. More generally, a grant is a policy tool that can have both positive (value creation) and negative (rent seeking) aspects (Garzarelli and Keeton 2018). Here, we focus on the positive aspect of grants through the facilitation of credit access for female entrepreneurs. For an exploration of the negative aspect of grants in a germane context, see Gustafsson et al. 2020 on ‘subsidy entrepreneurship.’

 Supplemental data for this article can be accessed [here](#).

traditional private sources of funding relative to men (among others, Cavalluzzo, Cavalluzzo, and Wolken 2002; Croson and Gneezy 2009; Bellucci, Borisov, and Zazzaro 2010; Alesina, Lotti, and Mistrulli 2013; Moro, Wisniewski, and Mantovani 2017; Mascia and Rossi 2017; Galli, Mascia, and Rossi 2019).

In light of the greater hurdles that women are found to face in accessing private financing compared to men, government-supported grants can be a complementary or substitute source of funding. Grants can in this sense be interpreted as an aid to level the gender scale. Against this backdrop, this paper makes a three-fold contribution by answering the question of whether a corrupt politico-institutional environment affects the demand for public guarantee schemes by female-led SMEs.

First, it analyzes whether female-led SMEs are confronted by a higher probability to demand public support, in the form of subsidies for credit access, vis-à-vis their male counterparts. To this end we refer to the literature mentioned above that focuses on gender biases associated with access to the private credit market. We therefore fill the lacuna on public support to small businesses headed by female entrepreneurs.

The second – and more central – contribution regards the behaviour of female-led firms compared to male ones when, in deciding to consider the credit option of public subsidies, there is the perception of a corrupt environment. Most contributions on corruption and gender entrepreneurship consider the pervasive effect that corruption may have on firm performance, profitability, and investment; that is, on firms' *ex post* outcomes (Gaganis, Pasiouras, and Voulgari 2019; Goel and Ram 2013; Hanousek, Shamshur, and Tresl 2019). Differently from these contributions, we concentrate on how the *perception* of corruption matters *ex ante* in influencing the decision to apply for public subsidies. The presence of a gender-specific element in the decision-making process deserves more empirical attention because theory and evidence suggest that females tend to react differently from males in their attitude to engage in criminal activities (Dollar, Fisman, and Gatti 2001; Swamy et al. 2001).

Finally, by looking at the attitude of female-led firms to employ public channels of financial

support as an instrument that can offset the friction in private financial capital, we more generally add to the literature about the effects of public subsidies (De Blasio et al. 2018). Yet we differ by emphasizing the design of gender-specific public policies to stimulate entrepreneurial activity.

European SMEs provide the empirical setting for our research question. The motivation is straightforward. SMEs constitute the largest part of total non-financial firms of the European economy. Our empirical analysis during the 2010–2014 period suggests that demand for public subsidies by female-led SMEs is affected by corruption. More precisely, a corrupt institutional environment exacerbates the non-neutrality of gender entrepreneurship by discouraging female entrepreneurs to tap into additional credit sources. A related result is that public subsidies are biased towards female entrepreneurs. Robustness and endogeneity checks do not invalidate our findings.

The work proceeds as follows. In Section 2 we refer to the core literature that is the basis of our research hypotheses. Section 3 describes data and methodology. Section 4 discusses the results while Section 5 concludes.

II. Related literature and research hypotheses

This section develops the conceptual foundation of our paper. In the process, it derives the two hypotheses of interest.

We firstly connect to the *gendering* of entrepreneurship literature (e.g., Ahl 2006) – that is, to the study of how, *ceteris paribus*, male and female entrepreneurs could differently act even when facing the same opportunities (in profit, in access to bank credit, etc.). Different studies consider a range of influences on the gender-entrepreneurship nexus, although access to finance consistently occupies centre stage. A significant portion of the economics literature emphasizes the problems that female-led firms face in accessing bank credit from both the demand and the supply side. On the demand side, compared to men, women show different risk preferences, are less likely to incur debt, tend to refer to social networks and family, and self-restraint from applying for bank credit because they behave as discouraged borrowers (e.g., Barber and Odean 2001; Croson and Gneezy 2009; Kim and

Sherraden 2014; Carter et al. 2015; Moro, Wisniewski, and Mantovani 2017; Galli, Mascia, and Rossi 2019). On the supply side, female-led firms are confronted with a higher rate of rejection in credit loans, less availability of funds, and worse credit conditions (e.g., Cavalluzzo, Cavalluzzo, and Wolken 2002; Bellucci, Borisov, and Zazzaro 2010; Alesina, Lotti, and Mistrulli 2013; Mascia and Rossi 2017).

Results from both sides of the Marshallian scissors therefore suggest that entrepreneurship is not gender neutral when it comes to accessing the credit market. The policy result has been an increase in public intervention in the attempt to guarantee equal gender access to resources and to balance gender participation and support (Coleman et al. 2019). The normative logic is that in a scenario where the public sector may substitute (or complement) the private one as a source of finance for small businesses, subsidies can potentially counterbalance the difficulties female-led firms experience in accessing the credit market.

However, to the best of our knowledge, gender considerations tied to public subsidies for SMEs have received insufficient attention. We attempt to remedy this insufficiency. Therefore, we formulate our first hypothesis as follows:

H_1 : SMEs led by female entrepreneurs are confronted by a higher probability to demand public support, in the form of subsidies for credit access, vis-à-vis SMEs led by their male counterparts.

All else equal, this entails that a female entrepreneur would be more likely to diversify sources of financial support.

The literature recognizes that financial contracts are affected by trust (Alesina, Lotti, and Mistrulli 2013). It is in fact common knowledge that trust is crucial to fully capture gains from trade, which implies that a corrupt politico-institutional environment corrodes both interpersonal (Gillanders and Neselevska 2018) and social trust (Morris and Klesner 2010; Fiorino, Galli, and Goel 2019). At the same time, a considerable body of work points out that females react to corruption differently from males. This is an issue commonly referred to as

the *gender differences perspective* (e.g. Swamy et al. 2001), which is considered both theoretically and empirically.

Theoretically, the *gender differences perspective* suggests that the origin of inferior female corrupt behaviour differs according to sector studied (e.g., women's participation in the private sector is different from that of the public). The *perspective* in part hinges on behavioural approaches (Goertzel 1983; Gilligan 1993; Glover et al. 1997) that attempt to explain gender differences in terms of 'essential features' (or intrinsic characteristics) of females. Other works point out that what matters most are instead the opportunities that women face in their everyday life or, alternatively, in their decision-making scope (Goetz 2007; Vijayalakshimi 2008; Pande and Ford 2012). The rationale behind this is that women, given their relatively greater family responsibilities, are less involved in public affairs or are potentially excluded from traditional male patronage networks, also in terms of knowledge about how to partake in corrupt activities.

Empirically, the *gender differences perspective* finds that women (a) are more altruistically motivated; (b) express a vote preference also in light of social concerns; (c) are more ethically guided in their behaviour; (d) are more risk averse, honest and trustworthy (Dollar, Fisman, and Gatti 2001; Swamy et al. 2001; Torgler and Valev 2010); (e) and are more socially vulnerable in a corrupt environment (Goetz 2007).² These findings hold in various works that consider gender in a variety of institutional settings – bureaucracies, parliaments, financial markets, etc. (Dollar, Fisman, and Gatti 2001; Swamy et al. 2001; Sundström and Wängnerud 2016; Debski et al. 2018; Galli, Mascia, and Rossi 2018). Studies in laboratory settings moreover find women to be less corrupt, less tolerant than men of corrupt behaviour, and less likely to generally engage in unethical behaviour of various sorts (e.g., Alatas et al. 2009; Frank, Lambsdorff, and Boehm 2011; Barnes and Beaulieu 2014). The implication is that there is a lower probability of women being corrupt.

The upshot from theoretical and empirical considerations about gender differences is that females

²An alternative view is proposed by Sung (2003) and Hazarica (2018). The argument here is that measures of female participation in the labour force and in politics are potentially endogenous in liberal democracies. Other studies suggest that the relationship is specific to democracies (Esarey and Chirillo 2013) and is present when electoral accountability is high (Esarey and Schwindt-Bayer 2017).

perceive corruption as more problematic than males. It follows that one should expect to find that a perceived corrupt environment may influence expectations about the possibility of being successful in demanding grants. This defines our second hypothesis, which underpins our research question:

H_2 : The quality of a country's institutional environment is not a matter of indifference for the probability of SMEs led by female entrepreneurs to employ public subsidies for credit access vis-à-vis SMEs led by their male counterparts.

III. Data and model

Data

The analysis relies on several data sources. The principal source is the Survey Access to Finance Enterprise (SAFE), which began in 2009 and is jointly run by the European Central Bank (ECB) and the European Commission (EC). The tracking occurs in 'waves' that last six months. Each wave deals with a non-financial firm sample that is randomly selected from the Dun and Bradstreet Register (intentionally excluding the agriculture, public administration and financial services sectors). The harmonized and homogeneous dataset is stratified by country, size and sector.

SAFE provides several types of information based on self-assessed perceptions. It contains data about firms' financial needs, experience in access to finance, and several other standard traits (age, financial autonomy, ownership, sector, size, and turnover). It also includes information on the gender of the entrepreneur – variously CEO, director, owner – of the firm,³ which is of greater interest for our question. Since the SAFE is still running, this information is available only from July 2009 to March 2014, namely from the second to the tenth wave. Our analysis starts from the third wave. The rationale for dropping the second wave is to attempt to remove patterns that may be present because of 2009's financial crisis: in Europe, the liquidity shortage that followed the 2007 financial crisis impaired the functioning of credit markets, resulting in worse

credit access conditions for SMEs (Cole and Sokolyk 2016; Degryse, Matthews, and Zhao 2018).

The analysis considers 8 Euro-area economies systematically surveyed by SAFE: Belgium, Finland, France, Germany, Greece, Ireland, Italy, and Spain. These Euro-area economies are selected to explicitly account for significant differences in macroeconomic (Ferrando, Popov, and Udell 2017) and institutional conditions. For example, as regards the latter, we span from a quality of government that goes from a minimum of 0.96 (Greece) to a maximum of 1.6 for Finland (Charron et al. 2010).

The fact that our data are from countries of the same continent should not affect our estimates given the heterogeneity of the sample countries. Such heterogeneity can potentially counterbalance their same European continental origin.

As for the corruption indicators, we rely on data from the World Bank, Transparency International, and the Heritage Foundation. We complement our dataset also with data from: European Central Bank Data Warehouse, Eurostat, and, for the macroeconomic indicators, the World Bank.

The sample size ultimately reaches 38,190 observations that pool together the 8 waves of the survey from 2010 to 2014. Further information on the data sources are provided in Table A1 in the online Appendix.

Specification

The baseline estimating equation is

$$P_i(\text{subsidy} = 1) = f(\text{key variables}, \text{SME controls}, \text{macro controls}, \text{country and time}) \quad (1)$$

where $P_i(\text{subsidy} = 1)$ represents the probability of using public subsidies by the i th SME (0 otherwise), **key variables** is a vector that includes the variables of interest, **SME controls** is a vector of controls for the SME's characteristics, **macro controls** is a vector of country-level controls, and **country and time** is a vector of country and time dummies.

³SAFE data do not allow to disentangle the three roles of CEO, director and owner. We believe that especially for the micro and small firms often there is no separation between ownership and control. Therefore, to produce robust estimates in Section 4.3, we report the results obtained on a sub-sample of micro and small firms only.

The dependent variable is constructed from question Q4b of SAFE, which reads: are ‘grants or subsidized bank loans – involving, for example, support from public sources in the form of guarantees or reduced interest rate loans – relevant to your enterprise, that is, have you used them in the past or considered using them in the future?’ The nature of the answer to this question is what renders the dependent variable a dummy (equal to 1 if affirmative, and 0 if negative).

The vector **key variables** captures the hypotheses under investigation and includes *Female*, *Corruption*, and the *Female * Corruption* interaction. *Female* is the dummy identifying the gender of the entrepreneur. It equals 1 if the CEO, director or owner of the SME is female, and 0 if male.

Corruption captures the notion that a bad institutional environment increases uncertainty (e.g., Goel and Ram 2013), and affects business interactions (Gaganis, Pasiouras, and Voulgari 2019) as well as the credit market (Chaudhuri and Dastidar 2011). Economics measures corruption in two fashions. The first is through subjective indicators, which rely on survey data about corruption perception and experience. The second fashion relies on objective indicators, such as the number of corruption-related trials (e.g., Alt and Lassen 2012) or economic proxies, such as corruption measures Di Tella and Schargrodsky (2003) and Golden and Picci (2005). Perception of corruption as a barrier to apply for grants seems a more appropriate measure of corruption, for we focus on the decision to demand a subsidy and its relationship to the business environment rather than on the difficulties of accessing these financing instruments *ex post*. Furthermore, while objective measures are suitable for individual country analyses, a cross-country analysis such as ours entails institutional differences (e.g., in judicial systems) requiring the use of comparable measures. As a result, we turn to subjective indicators, and measure *Corruption* by alternatively employing three different survey-based sources.

- ‘Control of Corruption’ measures perceptions about public sector corruption. It reflects the incentives that both encourage and discourage a country’s corrupt practices. It derives from the Worldwide Governance Indicators (WGI), a set of six governance indicators produced by the World Bank.⁴ The WGI country scores on the aggregate fall approximately between – 2.5 and 2.5 inclusive, with higher scores corresponding to better outcomes (less corruption).
- ‘Corruption Perceptions Index’ (CPI) is from Transparency International. The CPI ranks 180 countries and territories by their perceived levels of public sector corruption according to experts and private sector operators. It uses a 0–100 scale, where 0 is highly corrupt and 100 the opposite.
- ‘Freedom from Corruption Index’ draws from (mainly) Transparency International and the Heritage Foundation. Similarly to the CPI, it uses a 0–100 scale, where higher values denote lower corruption levels.

SME controls contains standard firm-level controls – namely, age, financial characteristics, sector of activity, and size of SME. Combined with the dummies accounting for country and time effects, it should limit possible endogeneity problems; that is, alleviate the probability that the use of a subsidy is driven from firm-specific characteristics rather than from differences in behaviour from gender by capturing the independent impact of firm-level heterogeneity related to size, age and sector.⁵ (We return to endogeneity before long.)

Financial controls are performed by three dummy variables. The first variable, *Profit up*, accounts for changes in firm profitability (viz., net income after taxes); while the second, *Credit history up*, accounts for credit worthiness (Mascia and Rossi 2017). These first two variables are also meant to reduce the effect of potential sources of bias that could affect our models.

⁴The WGI reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2018. The set of indicators includes six dimensions of governance, viz. the traditions and institutions by which authority in a country is exercised. The construction of these composite indices is complex (it is based on an unobserved components model), drawing upon data from over 30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms in industrial and developing countries.

⁵The stratification by firm size class included micro (1 to 9 employees), small (10 to 49 employees) and medium-sized firms (50 to 249 employees). A group of large firms (250 or more employees) is also considered. The selected sectors relate to the four largest activities: industry, construction, trade and services. Agriculture, forestry, fishing, financial intermediation, public administration, activities of households, extra-territorial organizations, as well as bodies and holding companies are excluded. The age of the firms includes very recent, which equals one if the firm is less than 2 years old, recent, which has the value of one if the firm is between 2 and 5 years old, and old, which equals one if the firm is between 5 and 10 years old.

Profit up equals 1 when a SME reports a profit increase over the past six months, and 0 otherwise. We expect that a SME that improves its profitability in the previous six months is more likely to apply for subsidies. At the same time, it is not unreasonable, as pecking order theory predicts, to suppose the converse. That is to say that a SME that improves its profitability also faces a higher likelihood to resort to internal funds (Myers and Majluf 1984).

Credit history up equals 1 if the SME declares that the creditworthiness has increased over the past 6 months, and 0 otherwise. We would expect that a firm that sees an improvement of its creditworthiness over time might be more likely to apply for public subsidies.

Bank loan application is the third financial variable in **SME controls**. It controls for bank loan demand using information from SAFE question Q7a_a, which inquiries about a firm's decision to apply for bank credit (Martí and Quas 2018; Li, Lee, and Wan 2019). It equals 1 if the SME indicates that it has applied for a bank loan in the past 6 months, and 0 otherwise.

macro controls is the vector controlling for a country's macroeconomic environment. It considers two country variant variables: *Cost of borrowing* and *Credit to GDP*. *Cost of borrowing* measures the annual change in the cost of borrowing for loans to non-financial firms. The reason for incorporating this variable is that the cost of borrowing may affect price-terms and conditions adopted by a country's banks (Mascia and Rossi 2017). *Credit to GDP* is the domestic credit to private sector held by banks as percentage of Gross domestic product. Its aim is to capture a country's financial development (Breitenlechner, Gächter, and Sindermann 2015).

country and time, our final vector, includes a set of dummies for country and time. Its purpose is to control for effects of common factors specific to each country and each wave.

Table 1 reports the descriptive statistics. A snapshot of the sample observations by age, country, gender, and sector size and the correlation matrix are in the online Appendix (Tables A2 and A3).

Table 1. Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Use subsidies or grants	38,190	0.4984	0.5000	0	1
Female	38,190	0.1283	0.3344	0	1
Control of corruption	38,190	1.1467	0.7283	-0.19	2.24
CPI	38,190	64.34	16.85	33.9	94
Freedom from corruption	38,190	64.95	16.52	34	94
Bank loan application	37,952	0.2722	0.4451	0	1
Profit up	38,190	0.2339	0.4233	0	1
Credit history up	38,190	0.2116	0.4084	0	1
Cost of borrowing	38,190	3.2813	0.5380	1.89	4.43
Credit to GDP	38,190	104.57	29.61	54.55	170.72
Female share of seats in national parliaments	38,190	28.91	8.64	13.90	42.50
Self-Employment Female share	38,190	0.3695	0.2383	0	0.83
Employment Female share	38,190	0.4444	0.2031	0.03	0.74
Industry	38,190	0.2741	0.4460	0	1
Construction	38,190	0.1057	0.3074	0	1
Trade	38,190	0.2819	0.4499	0	1
Services	38,190	0.3383	0.4731	0	1
Very old	38,190	0.7938	0.4045	0	1
Old	38,190	0.1318	0.3383	0	1
Medium-aged	38,190	0.0628	0.2425	0	1
Young	38,190	0.0115	0.1068	0	1
Micro	38,190	0.3543	0.4783	0	1
Small	38,190	0.3660	0.4817	0	1
Medium-sized	38,190	0.2797	0.4489	0	1

Empirical strategy and endogeneity concerns

Given the features of the dataset as well as the binary nature of the dependent variable, our primary strategy is to estimate equation (1) through a random effects panel probit model, which is the relatively more appropriate choice when a dependent variable is binary.⁶ This model allows the use of both qualitative and quantitative regressors, because it employs maximum likelihood to assess the regression's function.

A first concern with testing the role of female-led SME on the probability of demanding public subsidies is the possibility of reverse causality. A female entrepreneur at the helm may influence the probability of demanding public subsidies when, for example, legislation on public subsidies favours female entrepreneurial leadership. If this is the case, we cannot argue that our results are showing the existence of a pattern between the leader's gender and the probability to demand subsidies.

Another concern is that entrepreneurial gender may not be fully exogenous. There may be an omitted variable issue, such as unobservable organizational and managerial skills or a given corporate culture that, *ceteris paribus*, may advantage an

⁶As the SMEs included in the survey are randomly selected in each wave, the original SAFE is built as an unbalanced panel dataset. The unbalanced panel prevents the tracking of demand for public grants through time for all the firms of the sample. One could obtain a balanced panel by tracking the limited number of firms that are present in the consecutive waves, but the cost would be a significant reduction in number of observations.

individual over another (e.g., Liu, Wei, and Xie 2014; Sila, Gonzalez, and Hagedorff 2016). Omitted variables may influence the selection of females in a leading position, and thus yield spurious results.

To alleviate these concerns we first include several controls capturing the independent impact of firm-level heterogeneity related to age, sector, and size as well as include country and time controls. Secondly, to properly address endogeneity, we employ a maximum likelihood 2-stage probit (ML2SP) methodology, which allows us to estimate IV probit models (e.g., Heger and Tykrová 2009). The two-step approach requires the identification of an instrument correlated with the key explanatory variable – *Female* in our case – but not with the error term. A valid instrument should significantly affect the presence of female entrepreneurs in these firms, be adequately variable across countries and over time, and – according to the exclusion restriction – should not exert any direct effect on the dependent variable.

Finding an instrument for our female variable is not an easy task. In light of the anonymity of SMEs in SAFE, we are not able to link firm-level information with other firm-level datasets. Therefore, the only way to merge our firm level data with other external sources is through a link with sector of activity, country and wave. We accordingly select two different instruments: (a) the share of female employment by sector of activity (Galli, Mascia, and Rossi 2019); and, (b), the share of parliamentary seats in a single or lower chamber held by females (Jha and Sarangi 2018). The use of multiple instruments improves the reliability of the results, which we can consider robust when the parameter estimates of the models that are differently instrumented are comparable in terms of significance and interpretation (Murray 2006).

The choice of the first instrument – share of female employment by sector of activity – rests on the following motivations. Where female participation in a certain sector of the labour market is higher, the likelihood that women engage in entrepreneurship activity in the same sector may be high as well. The transition from employee to employer is indeed typical of many entrepreneurs'

background. At the same time, we are also aware that in some cases an industry with a higher share of female workers might not necessarily be an industry with a corresponding share of women in higher-level positions.

In addition, female employment by sector of activity (industry, construction, services, trade, wholesale/retail) is available for each sector, country and wave.⁷ In light of these motivations, we can consider share of female employment by sector of activity a good candidate to instrument *Female* (Mascia and Rossi 2017; Galli, Mascia, and Rossi 2019). The Wald test used to check the exogeneity of our instrument (Monfardini and Radice 2008) corroborates our choice. Female employment by sector of activity satisfies the exclusion restriction (see Table A4 of the online Appendix where we report the first stage of our IV regressions and relative Wald test).

The second instrument we propose is the share of female parliamentary seats for each country. Differently from the first instrument, this one is only available at country level. The motivation for this instrument relates instead to another consideration: women participation in political life generally mirrors the role of women in society and, hence, also in management of business. Therefore, we hypothesize that this instrument is valid because it measures the presence of women in apical decision-making positions (Jha and Sarangi 2018).

One may point out that such instrument could be biased because in some countries of our sample the parliamentary seats are *de jure* allocated to women (so-called 'pink quotas'). However, the presence of women in parliament marks a cultural change, and, as a result, may improve social and business practices when it comes to gender.

We also acknowledge that the exogeneity of this instrument could be questioned: a higher share of females in parliament may influence legislation on public subsidies in the direction of female leadership, violating validity. Still, we consider the percentage of seats held by females in parliament as a valid instrument, because national parliamentary elections are not simultaneous in the countries of our sample. Moreover, the validity of this instrument – which satisfies the exclusions restrictions – is checked by the Wald test reported in Table A4.

⁷We compute data on this instrumental variable as averages of quarterly data that have been linked to each wave of our sample.

In principle, reverse causation might affect the relationship between public resources and corruption (e.g., Ades and Di Tella 1997) by, for example, leading to collusion between public officials and SMEs. Reverse causation does not apply in light of our specification: the information captured by our dependent variable is not linked to the amount of the grant, but to the probability that the SME will use a grant. We therefore exclude, by construction, possible reverse causation from the familiar perception of corruption from rent-seeking.

IV. Results

Probit and IV Probit estimates with Control of Corruption

The first set of empirical results is displayed in Table 2. Columns 1–2 report the margins of random-effects panel probit specifications. The two specifications vary for the inclusion of the variable *Bank loan application* (Column 2), the purpose of which is to control for the demand for private credit.

Concerning our first hypothesis, we rely on the coefficient of *Female*. The marginal effects of *Female*, which are positive and significant in the two specifications we consider, indicate that female-led SMEs are 1.4% (Column 1) and 1.8% (Column 2) more likely to use public subsidies compared to male-led ones. Worldwide, more males than females engage in entrepreneurial activity and tend to start ventures with lower financial capital and growth expectations (e.g., Carter et al. 2015). Our results suggest that public subsidies offer female entrepreneurs an alternative opportunity to finance their investment, which can help in counterbalancing the difficulties that they experience in the private credit market.

To test our main hypothesis we consider the interaction between *Female* and corruption as measured by the Control of corruption Index, the first corruption indicator we selected.⁸ While stronger legal, political, and economic institutional pillars enhance the quality of entrepreneurship (e.g., Chowdhury,

Terjesen, and Audretsch 2015; Gaganis, Pasiouras, and Voulgari 2019), our findings indicate that the perception of corruption (*Control of corruption*) per se does not exert a significant impact on the probability to access public subsidies. Nevertheless, the interactive term exhibits a significant and positive sign, lending support to our hypothesis. The perception of a better quality of politico-institutional environment enables female-run SMEs to increase demand for public grants – the marginal effects are 1.3 in Column 1 and 1.2 in Column 2. This finding is in line with a general view asserting that females perceive corruption as more problematic than males (e.g., Torgler and Valev 2010; Frank, Lambsdorff, and Boehm 2011).

Results from firm-level controls show that SMEs that have improved their economic and financial reliability (*Credit history up*) might be more likely to apply for public subsidies (by 6% and 5.7%, columns 1 and 2). While for those that have improved their profitability (*Profit up*) we do not obtain conclusive results. Results in columns 1 and 2 also control for a possible ‘gender effect’ on the variables capturing financial reliability and profitability by means of two gender interactions, namely *Credit history up * Female* and *Profit up * Female*. These interactions are never significant, indicating that creditworthiness and profitability are not affected by entrepreneurial gender.

Bank loan application, which controls for demand for bank loans, has a positive sign. SMEs that demand a bank loan face a 12% higher probability to demand public subsidies, suggesting that there is a ‘complementary effect’ of sorts between demand for a subsidy (public sector) and demand for a bank loan (market). SMEs active on the market also access the public sector by diversifying the financing channels (Martí and Quas 2018). The public sector is therefore not an alternative channel.⁹

The SMEs’ dummies for age, size, and sector suggest that a firm belonging to the ‘industry’ sector (compared to the services one, which is the control group) has a higher probability to use a public subsidy. Very young firms, micro and small firms instead display a lower probability to use a subsidy compared to very old and medium sized firms.

⁸*Control of corruption* was introduced several years after the CPI. Yet it is our primary measure of institutional quality because it has expanded and improved Transparency International’s measure in several ways, particularly with regard to the treatment of statistical uncertainty contained in the CPI.

⁹Our results are robust to the inclusion of the interaction between bank loan application and female. The results are available upon request.

Table 2. Estimated marginal effects using *Control of corruption* as proxy for corruption.

	Probit models		IV probit models			
	(1)	(2)	Instrument: Employment Female share	(4)	Instrument: Female share of seats in national parliaments	(6)
<i>Key variables</i>						
Female	0.0141* (0.0075)	0.0186** (0.0083)	0.2193* (0.1214)	0.2423** (0.1156)	0.1421 (0.1569)	0.1871 (0.1272)
Control of corruption	0.3865 (0.2596)	0.3702 (0.2533)	0.2650 (0.2124)	0.2543 (0.2062)	0.2708 (0.2246)	0.2593 (0.2189)
Female*Control of corruption	0.0131* (0.0073)	0.0119* (0.0070)	0.0153** (0.0064)	0.0136** (0.0056)	0.0176*** (0.0065)	0.0160*** (0.0060)
Bank loan application		0.1245*** (0.0185)		0.1080*** (0.0193)		0.1099*** (0.0147)
<i>Firm controls</i>						
Profit up	0.0052 (0.0112)	0.0080 (0.0112)	0.0053 (0.0092)	0.0076 (0.0091)	0.0054 (0.0093)	0.0077 (0.0092)
Credit history up	0.0598** (0.0240)	0.0575** (0.0238)	0.0556*** (0.0214)	0.0535** (0.0215)	0.0567*** (0.0218)	0.0544** (0.0217)
Female*Profit up	-0.0311 (0.0265)	-0.0285 (0.0253)	-0.0292 (0.0207)	-0.0271 (0.0186)	-0.0303 (0.0212)	-0.0282 (0.0194)
Female*Credit history up	0.0160 (0.0225)	0.0111 (0.0236)	0.0134 (0.0171)	0.0083 (0.0174)	0.0152 (0.0184)	0.0097 (0.0191)
<i>Macro controls</i>						
Cost of borrowing	0.0380 (0.0379)	0.0346 (0.0365)	0.0296 (0.0318)	0.0265 (0.0309)	0.0303 (0.0321)	0.0270 (0.0310)
Credit to GDP	-0.0032 (0.0024)	-0.0031 (0.0024)	-0.0022 (0.0018)	-0.0022 (0.0018)	-0.0022 (0.0019)	-0.0023 (0.0019)
<i>Sector dummies</i>						
Industry	0.1590*** (0.0212)	0.1522*** (0.0217)	0.1385*** (0.0187)	0.1346*** (0.0196)	0.1269*** (0.0197)	0.1214*** (0.0198)
Construction	-0.0016 (0.0173)	-0.0076 (0.0171)	0.0124 (0.0180)	0.0091 (0.0191)	-0.0068 (0.0144)	-0.0117 (0.0142)
Trade	0.0039 (0.0197)	0.0012 (0.0187)	0.0053 (0.0165)	0.0039 (0.0154)	-0.0026 (0.0162)	-0.0046 (0.0154)
<i>Age dummies</i>						
Old	-0.0228 (0.0162)	-0.0216 (0.0163)	-0.0252** (0.0112)	-0.0246** (0.0103)	-0.0240* (0.0143)	-0.0245* (0.0131)
Medium-aged	-0.0246 (0.0382)	-0.0247 (0.0377)	-0.0379 (0.0266)	-0.0388 (0.0264)	-0.0339 (0.0344)	-0.0365 (0.0338)
Young	-0.0977** (0.0493)	-0.0985** (0.0460)	-0.0903** (0.0365)	-0.0912*** (0.0346)	-0.0881** (0.0429)	-0.0907** (0.0403)
<i>Size dummies</i>						
Micro	-0.1331*** (0.0327)	-0.1164*** (0.0306)	-0.0995*** (0.0240)	-0.0859*** (0.0229)	-0.1016*** (0.0242)	-0.0875*** (0.0235)
Small	-0.0399** (0.0190)	-0.0336* (0.0182)	-0.0306** (0.0153)	-0.0256* (0.0146)	-0.0315** (0.0161)	-0.0262* (0.0154)
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,190	37,952	38,190	37,952	38,190	37,952
Number of countries	8	8	8	8	8	8
rho	0.447	0.431	-0.313	-0.343	-0.203	-0.263
Log-likelihood	-24,527	-24,244	-39,598	-39,147	-39,768	-39,316

Robust standard errors in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: the dependent variable is *Use of subsidies or grants*. The controls group are Services, Very old and Medium-sized for Sector, Age and Size, respectively.

Finally, the macro controls (*Cost of borrowing* and *Credit to GDP*) do not turn out to be significant.

Additionally, columns 3–6 correct for endogeneity and report the instrumental variable (IV) ML2SP estimates when female is instrumented with the share of female employment by sector of

activity, and the share of women in parliament.¹⁰ The ML2SP estimates are in line with the results of the basic probit specifications presented in columns 1 and 2: while the coefficient of *Female* is significant when we instrument the models through the first instrumental variable (columns

¹⁰Table 2 presents the results of the second stage IV probit estimates. The results of the first stage and the Wald test on the exogeneity of the instrumental variables used are reported in Table A4 in the online Appendix.

3–4), it loses significance when we use the share of women in parliament (columns 5–6). It is also worth highlighting that when we use the first instrument of female (columns 3–4) the magnitude of the marginal effects of the instrumented female variable increases to above 22%. As for the interactive term between female and corruption the evidence provided in columns 3–4 corroborates the results obtained with the basic probit estimates. Interestingly, when female is instrumented with the share of women in parliament, even though it is not significant, the interaction term between female and corruption is positive and significant, supporting our hypothesis. Overall, the evidence provided in Table 2 shows that even though we do not always detect a ‘female effect’ and a ‘corruption effect’ on the demand of public subsidies by SMEs, the significance of the interaction term between female and the corruption indicator suggests that the quality of the institutional environment affects female-led firms. A perceived corrupt environment lowers the probability that female-led firms apply for public grants, lending support to the *gender differences* literature (Dollar, Fisman, and Gatti 2001; Goetz 2007; Swamy et al. 2001; Torgler and Valev 2010). These results might indicate that corruption undermines the trust (Gillanders and Neselevska 2018) that women have in the effectiveness and fairness of the politico-institutional environment, lowering the probability to apply for public support.

IV probit estimates with CPI and freedom from corruption index

Existing indicators measuring corruption suffer from several weaknesses and have been subject of intense debate (e.g., Thomas 2009; Pollitt 2011). Every attempt to quantify corruption and, more generally, quality of governance, inevitably involves measurement errors and does not reflect the phenomenon under investigation. To avoid the risk that our results be excessively sensitive to, and therefore conditioned by, the use of a particular metric, we check the robustness of our empirical model by running the ML2SP estimates on two more indicators. These indicators, namely *CPI* and *Freedom of Corruption Index*, are based on

two slightly different conceptualizations of corruption. While the first is quite close to the *Control of Corruption Index*, the second is derived primarily from Transparency International’s CPI.

Table 3 shows the second stage results from equation (1) estimated with the full set of controls and employing in sequence the two different instruments.¹¹ The results are overall in line with those obtained when *Control of Corruption* is considered (see Table 2). The new findings obtained using both the CPI and the Freedom from Corruption indices fully corroborate the previous results. Specifically, *Female* turns out to be always significant except when the model is instrumented through the share of female parliamentary seats. The evidence also documents the sensitivity of women to the quality of the politico-institutional environment: the interaction between each indicator of corruption and the instrumented female is always significant and positive. Overall, this analysis provides further support to our central hypothesis.

Robustness test: IV estimates using a sub-sample of micro- and small firms

In this section we display the results of a robustness test performed on a sample of Micro (less than 10 employees) and Small (between 10 and 49 employees) firms only. The rationale behind this further investigation is based on several considerations. First, micro and small firms tend to suffer more than medium-sized firms from financial market frictions, given their opacity in financial statements (Cowan, Drexler, and Yañez 2015; Öztürk and Mrkaic 2014). Therefore, they might rely more on public subsidies (Pigini, Presbitero, and Zazzaro 2016). Second, given their intrinsic fragility, they may be also more affected by a bad politico-institutional environment, as they are less able to internally adapt to environmental inefficiencies. Thus, they could be more penalized by a corrupt environment compared to larger firms (Nguyen 2020). Finally, SAFE provides the gender of CEO/Director/Owner, but does not allow to distinguish among position held. Our sense is that the final effect of this lumpiness should be limited if we use a subsample of micro and small firms only, where

¹¹First stage results and the Wald test are reported in Table A5 in the online Appendix.

Table 3. Estimated marginal effects using, alternatively, *CPI* or *Freedom from corruption* as proxies for corruption.

	IV probit models			
	<i>CPI</i>		<i>Freedom from corruption</i>	
	Instrument: Employment Female share	Instrument: Female share of seats in national parliaments	Instrument: Employment Female share	Instrument: Female share of seats in national parliaments
	(1)	(2)	(3)	(4)
<i>Key variables</i>				
Female	0.2112* (0.1271)	0.1434 (0.1542)	0.2070* (0.1253)	0.1170 (0.1748)
CPI	-0.0037 (0.0050)	-0.0039 (0.0051)		
Female*CPI	0.0005* (0.0003)	0.0006** (0.0003)		
Freedom from corruption			-0.0046 (0.0043)	-0.0047 (0.0044)
Female*Freedom from corruption			0.0007*** (0.0003)	0.0008*** (0.0003)
Bank loan application	0.1087*** (0.0192)	0.1107*** (0.0144)	0.1089*** (0.0192)	0.1116*** (0.0140)
<i>Firm controls</i>				
Profit up	0.0073 (0.0092)	0.0074 (0.0093)	0.0071 (0.0092)	0.0072 (0.0093)
Credit history up	0.0543** (0.0216)	0.0553** (0.0220)	0.0544** (0.0216)	0.0557** (0.0221)
Female*Profit up	-0.0267 (0.0189)	-0.0276 (0.0196)	-0.0288 (0.0186)	-0.0300 (0.0195)
Female*Credit history up	0.0088 (0.0176)	0.0103 (0.0192)	0.0088 (0.0175)	0.0107 (0.0198)
<i>Macro controls</i>				
Cost of borrowing	0.0241 (0.0308)	0.0246 (0.0308)	0.0117 (0.0266)	0.0121 (0.0269)
Credit to GDP	-0.0002 (0.0017)	-0.0002 (0.0017)	-0.0014 (0.0018)	-0.0014 (0.0019)
<i>Sector dummies</i>				
Industry	0.1342*** (0.0196)	0.1220*** (0.0201)	0.1345*** (0.0196)	0.1224*** (0.0199)
Construction	0.0075 (0.0198)	-0.0122 (0.0145)	0.0091 (0.0201)	-0.0115 (0.0147)
Trade	0.0034 (0.0156)	-0.0047 (0.0155)	0.0043 (0.0154)	-0.0042 (0.0156)
<i>Age dummies</i>				
Old	-0.0241** (0.0105)	-0.0234 (0.0143)	-0.0247** (0.0102)	-0.0232 (0.0147)
Medium-aged	-0.0376 (0.0263)	-0.0345 (0.0352)	-0.0383 (0.0259)	-0.0337 (0.0362)
Young	-0.0908*** (0.0343)	-0.0895** (0.0417)	-0.0923*** (0.0343)	-0.0899** (0.0424)
<i>Size dummies</i>				
Micro	-0.0865*** (0.0231)	-0.0881*** (0.0235)	-0.0864*** (0.0229)	-0.0885*** (0.0233)
Small	-0.0256* (0.0147)	-0.0263* (0.0155)	-0.0257* (0.0145)	-0.0265* (0.0154)
Country effects	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes
Observations	37,952	37,952	37,952	37,952
Number of countries	8	8	8	8
rho	-0.323	-0.229	-0.338	-0.212
Log-likelihood	-39,159	-39,328	-39,155	-39,323

Note: the dependent variable is *Use of subsidies or grants*. The control groups are Services, Very old and Medium-sized for Sector, Age and Size. Robust standard errors in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

in most cases there is no separation between ownership and control.

The results of our analysis on a sub-sample of micro and small firms are displayed in Table 4, where we report the second stage of the ML2SP

marginal effects from equation (1), using alternatively the three measures of corruption (*Control of corruption*, *CPI* and *Freedom from Corruption*) and the two instruments for female. Our evidence seems robust across the

different specifications and corroborates the results reported in the first two of subsections of this Section.

Some interesting insights are the following. First, in these specifications, the instrumented variables for female are always positive and significant and their marginal effects indicate that being a female-led firm increases the probability by more than 30% to demand a public subsidy. Moreover, the interaction between female and corruption is always significant at the level of 1%. All this might suggest that micro and small female firms are more sensitive than larger ones to the quality of the institutional environment, providing evidence that the burden of corruption is not uniform regardless of size. Corruption acts as an additional cost that micro and small firms cannot easily absorb. Furthermore, micro and small firms typically do not possess the resiliency factors (such as strong bargaining power and political influence) that allow them to counterbalance the exposure to corruption (Nguyen 2020).

V. Conclusions

The role played by gender has become an important component of the academic debate on entrepreneurial behaviour, and, in recent years, an increasing number of studies have focused on female entrepreneurship. This study empirically contributes to our understanding of different entrepreneurial dynamics tied to gender, institutions and public policy by considering if the application for subsidies – in the form of public guarantee schemes – by female-led SMEs is affected by the quality of the politico-institutional environment. The consideration of this issue requires first exploring the hypothesis of the possible relevance of gender for accessing public subsidies by SMEs. In this regard, our findings on 8 Euro-area economies surveyed by SAFE show that women-led enterprises apply for public subsidies more than their male counterpart. This result – which still holds after addressing the potential endogeneity problems that may arise from our estimates – complements the literature that emphasizes greater female discouragement towards private markets (e.g., Moro, Wisniewski, and Mantovani 2017; Galli, Mascia, and Rossi 2019).

The more central finding, from our second hypothesis, is that a perceived corrupt politico-institutional environment per se is not significant in affecting public subsidy demand once one controls for firm- and country-specific heterogeneity. However, when the female variable is interacted with a corrupt environment it becomes significant.

Our robust evidence highlights that a perceived corrupt environment affects the behaviour of female-led SMEs differently from their male counterparts. A bad environment (perceived higher corruption level) is found to have a negative effect on the probability of demanding subsidies by firms owned or managed by women. This indicates that female-led firms are more sensitive than male ones to the quality of institutions. Therefore, corruption discourages women entrepreneurs from fully taking advantage of public grants as additional sources of credit. The results are consistent with the theoretical literature showing different gender preferences towards illegal activities (Dollar, Fisman, and Gatti 2001; Swamy et al. 2001). In short, bad perceived corruption is not gender neutral for entrepreneurship.

The policy implication is straightforward. Public policies can be crucial in offering the financial support that may allow female entrepreneurs to counterbalance the difficulties they face in accessing the private market of loans, and to gain greater confidence in their entrepreneurial skills. To this end, policymakers should be mindful of differences in overall corruption perceptions and perceptions in subgroups. In our case, the subgroup of female entrepreneurs is more sensitive to perceived institutional quality. Therefore, policies that aim to enhance transparency, reduce information asymmetry, and discourage corrupt behaviour may play a role in positively modifying the expectations of female-led SMEs. Gender-specific policies seem moreover to be on the right track, especially when it comes to attempting to mitigate negative spillovers generated by a low-quality institutional environment.

The limitations relating to the structure of the SAFE have been already discussed in the main body of the paper (see first and third subsection of Section III). However, those potentially relevant for future studies can be pointed out here. First, the responsiveness to the quality of the institutional environment may depend on firm-level characteristics (e.g.,

Table 4. Estimated marginal effects using, alternatively, *Control of corruption*, *CPI* or *Freedom from corruption* for a sub-sample of micro- and small firms.

	<i>Control of corruption</i>		<i>CPI</i>		<i>Freedom from corruption</i>	
	Instrument: Employment Female share	Instrument: Female share of seats in national parliaments	Instrument: Employment Female share	Instrument: Female share of seats in national parliaments	Instrument: Employment Female share	Instrument: Female share of seats in national parliaments
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Key variables</i>						
Female	0.4023*** (0.0523)	0.3382*** (0.1219)	0.3540*** (0.0662)	0.2736* (0.1517)	0.3549*** (0.0520)	0.2848** (0.1286)
Control of corruption	0.2238 (0.2019)	0.2365 (0.2167)				
Female*Control of corruption	0.0292*** (0.0063)	0.0331*** (0.0069)				
CPI			-0.0034 (0.0049)	-0.0038 (0.0052)		
Female*CPI			0.0012*** (0.0003)	0.0013*** (0.0003)		
Freedom from corruption					-0.0031 (0.0040)	-0.0032 (0.0042)
Female*Freedom from corruption					0.0014*** (0.0003)	0.0016*** (0.0003)
Bank loan application	0.0901*** (0.0115)	0.0946*** (0.0126)	0.0907*** (0.0119)	0.0959*** (0.0135)	0.0898*** (0.0115)	0.0945*** (0.0135)
<i>Firm controls</i>						
Profit up	0.0069 (0.0090)	0.0072 (0.0094)	0.0067 (0.0091)	0.0070 (0.0095)	0.0066 (0.0090)	0.0069 (0.0094)
Credit history up	0.0485*** (0.0184)	0.0506*** (0.0194)	0.0494*** (0.0187)	0.0518** (0.0204)	0.0491*** (0.0185)	0.0513*** (0.0199)
Female*Profit up	-0.0255** (0.0121)	-0.0279** (0.0140)	-0.0252** (0.0123)	-0.0276* (0.0141)	-0.0265** (0.0117)	-0.0290** (0.0137)
Female*Credit history up	0.0023 (0.0194)	0.0061 (0.0233)	0.0035 (0.0197)	0.0078 (0.0242)	0.0023 (0.0193)	0.0063 (0.0241)
<i>Macro controls</i>						
Cost of borrowing	0.0154 (0.0276)	0.0163 (0.0289)	0.0138 (0.0272)	0.0148 (0.0285)	0.0064 (0.0259)	0.0071 (0.0270)
Credit to GDP	-0.0026 (0.0017)	-0.0027 (0.0018)	-0.0007 (0.0018)	-0.0007 (0.0019)	-0.0016 (0.0018)	-0.0017 (0.0019)
<i>Sector dummies</i>						
Industry	0.1190*** (0.0189)	0.0960*** (0.0216)	0.1190*** (0.0192)	0.0971*** (0.0229)	0.1187*** (0.0187)	0.0951*** (0.0223)
Construction	0.0144 (0.0107)	-0.0234 (0.0143)	0.0134 (0.0114)	-0.0239 (0.0148)	0.0156 (0.0116)	-0.0230 (0.0148)
Trade	0.0112 (0.0105)	-0.0042 (0.0108)	0.0110 (0.0108)	-0.0042 (0.0109)	0.0122 (0.0103)	-0.0035 (0.0108)
<i>Age dummies</i>						
Old	-0.0190** (0.0094)	-0.0192* (0.0108)	-0.0188** (0.0095)	-0.0185* (0.0112)	-0.0194** (0.0093)	-0.0196* (0.0108)
Medium-aged	-0.0405 (0.0249)	-0.0388 (0.0255)	-0.0399 (0.0250)	-0.0373 (0.0260)	-0.0409 (0.0249)	-0.0392 (0.0256)
Young	-0.0875** (0.0382)	-0.0901** (0.0379)	-0.0873** (0.0384)	-0.0896** (0.0380)	-0.0885** (0.0381)	-0.0914** (0.0376)
<i>Size dummy</i>						
Micro	-0.0592*** (0.0088)	-0.0616*** (0.0092)	-0.0596*** (0.0091)	-0.0625*** (0.0093)	-0.0589*** (0.0088)	-0.0614*** (0.0091)
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	27,321	27,321	27,321	27,321	27,321	27,321
Number of countries	8	8	8	8	8	8
rho	-0.643	-0.535	-0.632	-0.505	-0.660	-0.551
Log-likelihood	-29,247	-29,365	-29,257	-29,374	-29,255	-29,372

Note: the dependent variable is Use of subsidies or grants. The control groups are Services, Very old and Medium-sized for Sector, Age and Size. Robust standard errors in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.1.

efficiency of the firm or a personal trait of the entrepreneur, such as her level of human capital), which are not provided by SAFE. We therefore cannot

exclude the possibility that female behaviour regarding perceived corruption may be related to such firm-level characteristics (e.g., Hanousek, Shamshur, and

Tresl 2019). Second, corruption may be heterogeneously distributed within the same country (one region could be relatively free from corruption even if the country may be corrupt on average); integrating firm data at local level to pay attention to the geography of corruption could improve policy design and implementation by, for example, allowing the shift of public subsidies according to different levels of corruption of different areas.

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