



Democracy favors access to credit of firms

Francis Osei-Tutu^a, Laurent Weill^{a,b,*}

^a EM Strasbourg Business School, Université de Strasbourg, 61 Avenue de la Forêt Noire, 67000, Strasbourg, France

^b Moscow State Institute of International Relations (MGIMO University), Russia

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ABSTRACT

Access to credit is one of the main obstacles for the growth of firms. We test the hypothesis that democracy exerts an impact on access to credit. We perform regressions at the firm-level on a large dataset of 46,000 firms in 108 countries. We find evidence of a negative relationship between democracy and credit constraints for firms. We further establish that democracy contributes to reduce borrower discouragement and leads to more bank loan approval decisions. Our key finding is therefore that democracy favors firms' access to credit. Our work contributes to the debate on the impact of democracy on economic development by considering one firm-level channel of transmission.

1. Introduction

Following the fall of the Berlin wall, the world has witnessed an impressive rise in the number of countries transitioning from authoritarian regimes to democratic rule. According to Democracy Project, the number of democracies in the world has nearly doubled, rising from 51 in 1989 to 99 in 2018.¹ The recent years have however suggested a potential reversal trend with the gradual move to authoritarian regimes in several countries such as Turkey or Russia. These changes in political regimes generate questions regarding which type of political regime brings about the greatest economic benefits.

Economists and political scientists have devoted a great deal of attention to this debate, with recent studies supporting the beneficial impact of democracy on economic development, at least in the long run (e.g., [Rodrik and Wacziarg, 2005](#); [Papaioannou and Siourounis, 2008](#); [Acemoglu et al., 2019](#); [Colagrossi et al., 2020](#)). In their recent paper, [Acemoglu et al. \(2019\)](#) find that democratization increases GDP per capita by about 20 percent in the next 25 years.

The beneficial impact of democracy on economic development can occur through its influence on financial development, since financial development has been shown to favor economic development ([Levine, 2005](#); [Popov, 2018](#)). At the macroeconomic level, [Huang \(2010\)](#) has shown that democratization is associated with higher financial development in a cross-country study. It is however of importance to identify the channels through which this impact takes place at the firm-level. [Delis et al. \(2020\)](#) provide the first evidence on this issue by showing that democratization reduces the cost of credit in an investigation performed on a cross-country sample of syndicated loans, which are large loans granted to large companies.

Another channel through which democracy can exert its influence on financial development is through access to credit for firms, which has been shown to be a major force through which financial development can boost economic growth. Indeed, evidence has shown that the lack of access to credit is one of the main obstacles for the growth of firms, in particular for small and medium-sized

* Corresponding author. Sciences Po Strasbourg, Université de Strasbourg, 7 Rue de l'Ecarlate, 67082, Strasbourg Cedex, France.

E-mail addresses: oseitutu@unistra.fr (F. Osei-Tutu), laurent.weill@unistra.fr (L. Weill).

¹ See the "V-Dem Annual Democracy Report 2019" by Varieties of Democracy Project (V-Dem).

firms (Beck and Demircug-Kunt, 2006; Nkurunziza, 2010). Credit-constrained firms cannot realize worthwhile projects and cannot consequently exploit all investment opportunities. Consequently, greater access to credit favors the expansion of the private sector. Lack of access to credit also contributes to hamper productivity of firms (Gatti and Love, 2008; Butler and Cornaggia, 2011) and then slows down the level of productivity of countries. Thus, the inability of firms to access credit is a major brake on economic growth, which explains the numerous efforts from international organizations to enhance access to credit for firms in developed and developing countries.

In this paper, we examine how democracy influences access to credit. We perform this analysis with firm-level data on access to credit in a cross-country study including firms from all sizes. We are then able to establish the relation at the firm-level without restricting our conclusions to one country. In comparison with the analysis of Delis et al. (2020) concentrating on large companies, our work is of broader interest for the channels of the impact of democracy since SMEs have fewer financing options than large companies and are thus more dependent on bank credit for external finance. Therefore, enhanced access to credit is expected to play a larger role in financial development than reduced cost of credit for large companies, which can rely on other financing sources.

We face one key challenge in the investigation of the link between democracy and access to credit: the identification of credit-constrained firms. A first set of works uses a perception-based approach to measure credit constraints by focusing on whether firms perceive access to finance as an obstacle to their operations (Beck and Demircug-Kunt, 2006; Clarke et al., 2006; Asiedu et al., 2013). Perception-based measures can be problematic since they are subject to perception bias and then may imperfectly inform on credit-constrained firms. A second set of studies defines credit-constrained firms as those not using formal credit (Muravyev et al., 2009; Aterido et al., 2013; Love and Martínez Pería, 2014). The concern then is that some firms do not apply for credit because they do not need it, and then cannot be considered as credit-constrained. Thus, we adopt a third approach following Popov and Udell (2012) and Léon (2015). Using data on access to credit from the World Bank Enterprise Survey, we define credit-constrained firms as either firms that applied for credit and were denied or did not apply for credit because they were discouraged. This identification strategy enables us to disentangle the effects through loan approval and borrower discouragement so that we can truly examine the effect of democracy on firms' access to credit. We combine this information on access to credit and a large set of firm-level control variables with democracy indicators from the Polity IV project and additional country-level variables. We then consider a sample of about 46,000 firms in 108 countries. We are then able to examine how democracy could influence access to credit for firms and further identify potential channels through which this effect is transmitted.

Our primary finding is that democracy favors access to credit. Firms in more democratic countries have lower credit constraints. This effect is more pronounced for small and medium-sized firms, which tend to suffer the most from credit constraints. The identification approach is further enhanced by analyzing the effects of democracy on loan approval and borrower discouragement. We establish that in more democratic countries, firms are less discouraged to apply for credit and banks are more likely to accept loan applications, consistent with the view that democracy transmits positive signals to banks and firms.

We further demonstrate the role of the individual constitutional dimensions of democracy as well as the impact of political guarantees on firms' credit access. While all four constitutional components of democracy (i.e., competitiveness of executive recruitment, openness of executive recruitment, constraints on executive, and competitiveness of participation) are important in alleviating firms' credit constraints, the openness of executive recruitment, which reflects the existence of institutions and procedures through which citizens can participate in the political process, matters the most in fostering firms' ability to access credit. The political guarantees also play an important role: rule of law, property rights, and press freedom all have significant impact in determining the negative effect of democracy on credit constraints. Overall, we show that democratization enhances firms' ability to access credit.

Our contribution to the literature is twofold. First, we contribute to the debate on the relationship between democracy and economic growth (e.g. Papaioannou and Siourounis, 2008; Acemoglu et al., 2019) by investigating a financial channel through which democracy can be beneficial for economic development. Our work provides the first evidence on the impact of democracy on access to credit, which has been shown to be a fundamental driver of firm growth (Beck and Demircug-Kunt, 2006). Second, we extend the strand of literature that examines the determinants of access to credit for firms. Existing studies have identified bank competition (Chong et al., 2013; Léon, 2015), foreign bank participation (Clarke et al., 2006), institutional development (Beck et al., 2006), gender (Asiedu et al., 2013; Aterido et al., 2013), social capital (Heikkilä et al., 2016), among others. We augment the literature by emphasizing the importance of democracy on access to credit. To the best of our knowledge, this study is the first to explore the effect of democracy on firms' access to credit.

The paper is structured as follows. In Section 2, we discuss the related literature and then present the theoretical framework. Section 3 describes the data and econometric methodology used in the study. Section 4 discusses the results, while Section 5 shows the robustness checks. Section 6 concludes the paper.

2. Related literature and theoretical framework

2.1. Access to credit

Firms play an important role in economic development. They significantly contribute to the provision of employment, creation of jobs, driving innovation throughout the wider economy, and alleviating poverty (Henrekson and Johansson, 2010; Audretsch et al., 2014; Ayyagari et al., 2014). Supporting the growth of firms is therefore a crucial policy goal for governments and international organizations around the world.

However, firms face several obstacles that hinder their growth potential. One major obstacle is the lack of access to finance. Fig. 1 shows that among fifteen obstacles affecting firm operations, access to finance was ranked as the most severe obstacle by the surveyed

firms in our sample from the World Bank Enterprises Survey. Firms that are credit-constrained are unable to realize all investment opportunities including investment in innovation and human capital (Popov, 2014; Männasoo and Meriküll, 2020). Lack of access to finance therefore hampers their level of productivity (Gatti and Love, 2008; Butler and Cornaggia, 2011) and consequently impedes their growth (Beck and Demirguc-Kunt, 2006). It is thus a major impediment to the growth of economies.

A large body of research in the past two decades has therefore examined the determinants of access to credit. We identify three broad groups of studies. The first group gathers the studies that identify firm-level factors as determinants of access to credit. Kuntchev et al. (2013) point out the role of firm size using a sample of 116 countries worldwide. They find that small and medium-sized businesses have greater difficulties in accessing credit compared to large firms. Firm age may also affect the probability to be credit-constrained. Beck et al. (2006) and North et al. (2010) show that younger SMEs are more likely to encounter problems in accessing credit since they do not have enough record of debt management. Greater opacity therefore leads to difficulties in accessing financing as it increases the issue of information asymmetry in the credit market (Stiglitz and Weiss, 1981). Governance characteristics, including the type of ownership and manager gender (Asiedu et al., 2013) and ethnicity (Asiedu et al., 2012), have also been shown to affect credit access. For example, in family-owned firms, the residual claimants are the family members and hence the incentives to undertake conservative investment strategies are greater. This reduces risk in lending as banks may expect fewer moral hazard problems (Fama and Jensen, 1983; Bopaiyah, 1998). Studies also show that informality of a firm may be an important factor that hinders access to external finance (e.g., Gatti and Honorati, 2008). Firms that operate informally are less likely to have proper documentation such as operating and business registration documents, tax-compliance certificates, and financial statements audited by external auditors, which are highly considered by financial institutions when evaluating loan applications. Also, the ability to enforce claims when borrowers default significantly plays a key role in bank lending decisions. This increases the incentives for banks to refrain from lending to informal firms since these firms are locked out of the legal and judicial systems.

The second group is composed of works that identify characteristics of the industry as potential determinants of credit availability. First, banks may prefer to grant loans to specific industries that are growing. Evidence shows that lenders normally rely on industry classification to assess the credit quality of borrowers (Petersen and Rajan, 1994). Firms operating in certain industries may thus experience difficulties in accessing credit in periods when those industries are in financial difficulties since lenders may perceive such firms as risky. Second, some sectors are more reliant on external financing than others. An example is the manufacturing industry, which requires significantly huge investments and hence requires greater need for financing. Using survey data on Eastern European transition countries, Drakos and Giannakopoulos (2011) find that firms operating in the mining sector experience greater likelihood to be credit rationed, whereas firms in real estate and hotels have the lowest probability of being credit rationed.

The third group is the literature that investigates country-level characteristics as drivers of access to credit. Existing studies identify characteristics of the banking market to influence credit access (Clarke et al., 2006; Chong et al., 2013). Using data covering 69 developing and emerging countries, Léon (2015) shows that competition in the banking sector alleviates credit constraints for firms. The institutional framework also explains cross-country variation in firms' access to financing through several institutional attributes, either directly through the efficiency and quality of the legal system (Beck et al., 2006) or indirectly by relaxing loan conditions through the protection of creditor rights and legal origins (Qian and Strahan, 2007; Bae and Goyal, 2009). The political environment is

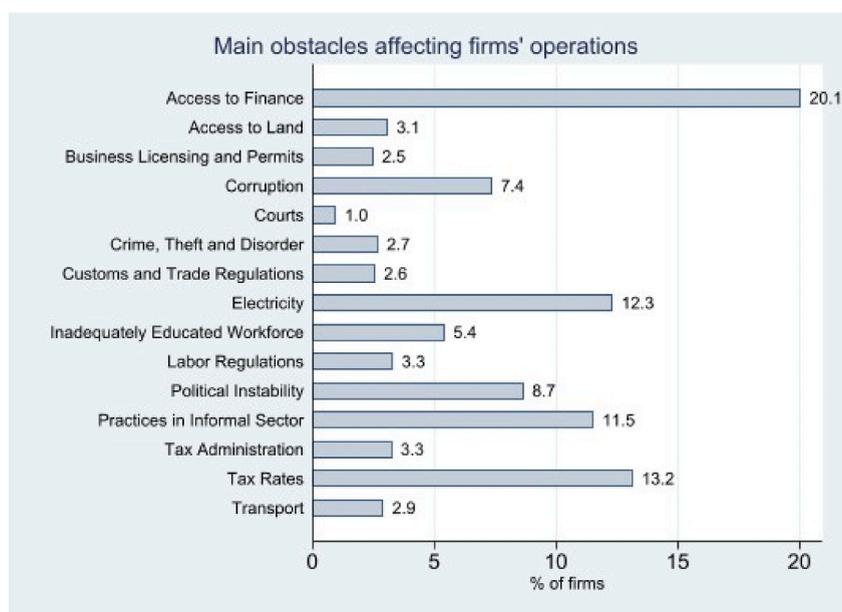


Fig. 1. Main constraints to firms' operations. This figure reports the obstacles affecting the operations of firms. The numbers represent the percentage of firms in our sample that reports the indicated obstacle as the main constraint to their operations.

Source: Data come from WBES.

another institutional attribute that may influence financing obstacles for firms. For example, [Bussolo et al. \(2022\)](#) study the impact of political connections on credit access and find that politically-connected firms have easier access to financing compared to unconnected firms.

In this paper, we complement this literature by scrutinising another well-known institutional framework: the political regime.

2.2. Democracy and access to credit

In a survey of the literature on the institutional determinants of financial development, [Haber and Perotti \(2008\)](#) document that political factors are the most potent candidates in explaining the level of financial development. They argue that, compared to other determinants including legal and cultural factors, the “changes in political institutions are natural candidates to explain the emergence (and decline) of modern banking in free Italian cities during the Renaissance, the earlier development of financial activities in the Netherlands and Britain relative to their autocratic counterparts (...), or even the involution of private corporations in Ancient Rome in the transition from the republican system to the empire” ([Haber and Perotti, 2008](#), p.3).

In this paper, we examine the role of political regimes in influencing the external financing for firms. In particular, does democracy contribute to relax or amplify firms’ credit constraints?

From a theoretical perspective, democracy is expected to alleviate firms’ credit constraints for three reasons. First, democracy is associated with inclusive institutions, which favor financial inclusion of small firms. [Acemoglu and Robinson \(2012\)](#) explain that inclusive political institutions are associated with a functioning democratic and pluralistic state. Democracy is associated with the presence of checks and balances and enhances the equal political participation of all citizens, which contribute to establish electoral pressures and control on leaders. It is also associated with greater economic liberalization ([Rode and Gwartney, 2012](#)). Inclusive political institutions contribute to the emergence of inclusive economic institutions allowing economic agents incentives and opportunities to use their skills at best. Inclusive economic institutions include free entry on markets, mass education and equal access to economic opportunities. Access to credit also represents one inclusive economic institution by allowing economic agents to exploit at best their talents. This view is documented by [Haber and Perotti \(2008\)](#) that the level of inclusiveness and political participation of citizens shape the financial structure, which strongly influences access to financing.

Second, democracy is generally associated with better institutional framework, directly but also indirectly by improving the legal framework and increasing human capital, which favors access to credit for firms. As noted by [Clague et al. \(1996\)](#), [Rodrik \(2000\)](#), [Knutson \(2011\)](#), and [Giuliano et al. \(2013\)](#), democracies facilitate the protection of property rights, have better legal systems for contract enforcement, reduce expropriation risk, promote welfare-enhancing economic reforms, and are associated with greater political stability. All these institutional factors have a beneficial impact on bank lending by increasing incentives for banks to grant credit ([Djankov et al., 2007](#); [Qian and Strahan, 2007](#)). It accords with the empirical finding from [Beck et al. \(2006\)](#) that better institutional development, measured as an aggregate indicator of World Bank Governance indicators including notably regulatory enforcement and rule of law, reduces financing obstacles for firms.

Thirdly, democracy is a political system characterized by free flow of information and protection of civil liberties, which could enhance access to credit by reducing asymmetry information. Information flows more freely in democracies than in autocracies. For example, political agents in democracies permit the publication of information on economic data such as inflation and unemployment rates by credible sources like international organizations ([Rosendorff and Vreeland, 2006](#); [Hollyer et al., 2011](#)). Democracy also enhances the freedom of the media –important for effective checks and balances– which has been shown to positively impact economic and political freedom ([Djankov et al., 2003](#)). [Beck et al. \(2008\)](#) show that in countries with less democratic institutions, characterized by low media freedom and less disclosure, there are tight regulatory restrictions on banking activities. Such severe restrictions impede the development of credit markets and consequently reduces credit availability. Furthermore, more democracy favors access to information through access to IT services, to the benefit of both businesses and banks. While businesses can use remote devices and have all the well-known advantages of information and communication technologies, banks can process information in a quicker, automated and more efficient way. These factors contribute to reduce information costs and make it less difficult for banks to gather information about firms’ credit worthiness. The presence of information asymmetries between banks and borrowers contributes to reduce credit availability ([Stiglitz and Weiss, 1981](#)), in particular for SMEs because of the paucity of information about these firms ([Petersen and Rajan, 1994](#)). Thus, the increased flow of information in democracies might alleviate credit constraints for small firms.

However, theory suggests two reasons why greater democracy may not always favor better access to credit for firms. On the one hand, as explained by [Persson and Tabellini \(1992\)](#), pressures from different interest groups could obstruct the effectiveness of democratic institutions from implementing efficient policies and taking optimal decisions. For example, special interest groups can block democratic regimes from implementing economic reforms if such groups prioritise their benefits ahead of the general wellbeing ([Fernandez and Rodrik, 1991](#)). This mechanism can thus create instability and obstruct welfare-enhancing economic reforms, which hampers the availability of credit to firms.

On the other hand, less democratic countries are associated with greater intervention of the state in bank lending, as shown by [Schoors and Weill \(2020\)](#) among others. Their governments are more likely to influence credit to firms from banks to affect the degree of political stability in the country but also to exert an impact on the political outcomes. This state support in less democratic countries can help firms to have better access to credit.

The theoretical literature thus provides conflicting predictions on the impact of democracy on firms’ access to credit. Our empirical investigation will hence contribute to settle the theoretical debate. Drawing on these arguments, we investigate whether or not democracy facilitates firms’ access to financing.

3. Data and methodology

We employ firm-level data from the World Bank Enterprise Survey (WBES). We match this data with democracy indicators from the Polity IV project, Freedom House, Acemoglu et al. (2019), Bjørnskov and Rode (2020), Economist Intelligence Unit, and Varieties of Democracy Project. Data on macroeconomic variables are collected from World Development Indicators and governance variables come from World Governance Indicators database.

We apply some filtering to the firm-level data extracted from World Bank Enterprise Surveys. For responses that the interviewer does not believe to be reliable, we drop those observations from the sample (question a16). We drop firms with missing information on credit market experience. Finally, we exclude firms with more than 1000 employees since they are very large firms and are more likely to have access to alternative sources of external financing. The final sample includes 46,653 firms from 108 countries (176 surveys from 2006 to 2018). The sample of countries and survey years is reported in the Appendix. The dataset from World Bank Enterprise Survey includes firms from all types of countries but developing countries are particularly represented. It comes from the special focus of this survey on these countries. It is not however a major concern for our analysis since developing countries have a large variation in terms of levels of democracy and of access to credit.

3.1. Measuring credit constraints

We use data on access to credit from the World Bank Enterprise Survey (WBES).² This is a cross-sectional firm-level survey conducted since the 1990s and covers a broad range of business environment topics including access to finance, gender, corruption, infrastructure, innovation, competition, informality, and performance measures.³ Since 2006, the survey questionnaires were standardized across waves and countries with common methodology, thereby enhancing comparability in cross-country studies. The survey targets formal (registered) firms with 5 or more employees and survey questions are answered by business owners and top managers.⁴ Using a stratified random sampling procedure with the size of the economy (GDP), sector, and location as strata, the survey data ensures that the samples are representative in each country.

In line with former studies on access to finance (Popov and Udell, 2012; Léon, 2015), we focus on several questions regarding firms' credit experience in the past year. We first make a distinction between firms that have a need for credit and firms which do not need bank credit. Then we identify the credit-constrained firms among those firms with a need for bank credit. In the WBES survey, firms were asked the following question: "Question K16: In the last year, did this establishment apply for loans or lines of credit?" Firms who answered "No" to this question were asked a subsequent question: "Question K17: What was the main reason the establishment did not apply for any line of credit or loan in the past year?" This question enables us to distinguish firms who did not apply for credit because they did not need loans from those who were discouraged from applying. Firms who responded "No need for a loan - establishment had sufficient capital" to this question are classified as non-borrowers whereas firms who provide a different reason (*unfavorable interest rates, complex application procedures, insufficient loan amount and maturity, did not think the application will be approved, excessive collateral requirements, or other reasons*) are classified as discouraged borrowers. Therefore, we classify a firm as discouraged only when the firm had a need for external financing but refused to make a formal demand because they were discouraged to apply, and not because the firm did not have a need for credit. Among the firms that answered "Yes" to Question K16, a firm is classified as Approved if at least one credit request was not turned down.

Following Popov and Udell (2012), we measure credit constrained firms (*Constrained*) as those firms that applied for credit and were denied or did not apply for credit because they were discouraged. This approach enables us to separate firms who did not apply for credit because they did not need it from firms who were discouraged from applying. Also, unlike other measures which are based on firms' use of formal credit, grouping both discouraged borrowers and firms that were turned down upon application allows us to observe firms who made a formal application for credit that was not fulfilled by supply or discouraged from applying due to imperfections in the credit market like high interest rates, complex application procedures or high collateral requirements.

3.2. Measuring democracy

Our primary measure of democracy is the Polity IV index from the Polity project, which is a well-established democracy measure in the literature. This indicator has been widely used in cross-country studies to analyse the impact of democracy, for example on trade (Giavazzi and Tabellini, 2005), cost of credit (Delis et al., 2020), and income inequality (Bahamonde and Trasberg, 2021).

Our democracy variable *Democracy*⁵ ranges from 0 to 10, where 0 indicates no institutional democracy and 10 indicates maximum level of institutional democracy. *Democracy* is based on three interdependent elements: (i) the existence of institutions and procedures through which citizens can participate in the political process; (ii) the presence of institutional checks and balances on the power exercised by the executive; and (iii) the protection and assurance of civil liberties and political participation of all citizens. Polity

² The World Bank Enterprise Survey data is available on the website <http://www.enterprisesurveys.org/data>.

³ Our dataset includes pooled cross-sectional data because WBES interviews different firms in each wave of the survey.

⁴ A major drawback of WBES is that it does not survey firms in the informal sector. The informal sector represents a significant proportion of firms, which are not formally registered in order to evade tax payments and compliance with labor and other regulations. In developing countries, the size of the informal sector represents about 50% of GDP (Schneider et al., 2010).

⁵ This variable is referred to as DEMOC in the Polity IV project.

project further mentions that the other aspects of plural democracy (for example the rule of law, press freedom, or checks and balances) are specific manifestations of the three independent general principles discussed above.

The use of Polity IV therefore has two main advantages for our analysis. First, our democracy measure is based on institutionalized democracy. It is important for our analysis as it enables us to study the impact of institution-based democracy, which is largely free from perceptions. The second advantage concerns the universal country coverage across time and the space of the *democracy* indicator.

However, the Polity IV democracy index is not without flaws. Gründler and Krieger (2021) highlight some methodological concerns and document that confidence intervals to ascertain the extent of measurement uncertainties are not provided by the Polity database. In this regard, we employ several alternative democracy measures from the Freedom House, Acemoglu et al. (2019), Economist Intelligence Unit, Varieties of Democracy project, and from Bjørnskov and Rode (2020) to test the robustness of our findings.

3.3. Methodology

In this paper, we examine how democracy affects firms' access to credit. Given the binary nature of the dependent variable, we estimate probit regressions with the following model specification:

$$\Pr(\text{Constrained}_{ik} = 1) = \Phi(\alpha + \beta \text{Democracy}_k + \Omega F_i + \tau C_k + \varepsilon_{ik}) \quad (1)$$

where *Constrained* is a dummy variable equal to one if a firm *i* in country *k* is credit constrained. *Democracy* captures the level of development of democratic institutions in the year prior to the survey year. *F* represents firm-level control variables; *C* represents country-level control variables; Φ is the standard normal cumulative density function; and ε is the error term.

To control for observable firm-level heterogeneity, we include nine firm-level control variables (F_i) in line with previous studies on the determinants of firms' access to credit (Asiedu et al., 2013; Popov and Udell, 2012). We control for firm size with two dummy variables. Following the WBES classification, a firm is classified as small if it has between 5 and 19 employees (*small firm*), medium if the number of employees is between 20 and 99 (*medium firm*), and consider large firms with employees of 100 or more as the omitted variable. Former literature has shown that smaller firms have lower access to credit, so we expect small firms to be the most credit-constrained. We introduce three dummy variables to capture the legal status of the firm: *sole proprietorship*, *publicly traded and private or non-traded*. We take into account ownership structure with a dummy variable *foreign owned* equal to one if at least 10 percent of a firm's ownership is held by foreigners. We expect firms with foreign ownership and which are publicly traded to be less credit-constrained since these characteristics are positively valued to get a loan. *Exporter* is a dummy variable which equals to one if at least 10 percent of a firm's annual sales is derived from direct exports. We introduce a dummy variable *audited* to capture if a firm's financial statements were checked and certified by an external auditor. Both these variables should favor access to credit since they are associated with greater transparency and performance. *Subsidiary* is a dummy variable equal to one if a firm is part of a larger group and zero otherwise. Being affiliated to a business group is expected to reduce firms' credit constraints through the possibilities of getting intragroup financing.

We consider four country-level control variables (C_k) that may affect credit access. Since access to credit may depend on the level of income and growth, we include the logarithm of GDP per capita (*Log(GDP/capita)*) and GDP growth rate (*GDP growth*). We take into account the level of financial development measured by the domestic banking credit to the private sector as a share of GDP (*Credit/GDP*). We consider macroeconomic stability measured by the inflation rate (*inflation*). All country control variables are measured with a lag of one year to be consistent with the firm-level variables.⁶

Descriptive statistics for all variables employed in our study are reported in Table 2. We observe that 61.6% of firms with a need for funds are credit-constrained, suggesting that access to financing is an important constraint for firms in our sample. We observe that borrower discouragement mainly explains credit constraints as only 43.5% of firms that needed loans made a formal demand for a loan. When applied, the majority of firms receive a loan (88.4%). In terms of size, we observe that about half of the sample have between 5 and 19 employees (47.2% of so-called *small firms*), while 35.2% of firms have between 20 and 99 employees (*medium firms*).

An important issue concerns the identification of the impact of democracy on firms' access to credit. Our empirical setting includes relevant firm-level and country-level control variables that address issues of possible bias due to omitted variables.⁷

We still go further to address any potential unobserved characteristics in several ways. First, we include year fixed effects, and industry fixed effects based on 2-digit SIC codes. The inclusion of the year fixed effects controls for time-specific global shocks that are common to all firms in our sample. The industry fixed effects based on 2-digit SIC codes control for unobserved industry-specific heterogeneity. These sets of fixed effects capture the effect of several unobserved characteristics affecting access to credit.

Second, we employ an instrumental variable approach to deal with any potential endogeneity concerns. Following the strategy of Acemoglu et al. (2019), we use an established instrument that relies on the fact that regime changes have often occurred in regional waves. This approach is used in recent works on the economic impact of democracy (e.g., Madsen et al., 2015; Gründler and Krieger, 2016; Acemoglu et al., 2019), and takes advantage of Huntington's (1991) observation that historically, transitions from autocracy to democracy or vice versa often occur through regional waves. As noted by Starr (1991), democratization generally occurs via diffusion in the international systems, thus the likelihood of political transitions often depends on the level of democracy in regional

⁶ The information on credit market experience of firms in WBES refer to the last (fiscal) year and not the year of the interview.

⁷ Two recent studies, Andersson (2016) and Kouevi-Gath et al. (2021), have documented that the level of democracy is affected by banking crises, suggesting that financial development can affect democracy. However, a change in firms' access to credit is unlikely to have the same effects on democratic transitions than a banking crisis because of the difference in terms of severity and economic impact.

Table 1
Definitions of variables.

Variable	Definition and source
<i>Dependent variables</i>	
Constrained	Dummy variable equal to one if a firm that needed external funds applied for credit and was denied or refused to apply and zero otherwise. Source: WBES
Apply	Dummy variable equal to one if a firm needed external funds and applied for credit and zero if the firm did not apply. Source: WBES
Approved	Dummy variable equal to one if a firm applied for loans and received at least one line of credit and zero otherwise. Source: WBES
Constrained (Loan Use)	Dummy variable equal to one if a firm does not have an overdraft facility, a credit line and/or a formal bank loan and zero otherwise. Source: WBES
Constrained (Working Capital)	Dummy variable equal to one if a firm does not finance part of its working capital with bank credit and zero otherwise. Source: WBES
<i>Independent Variables</i>	
<i>Democracy Measures</i>	
Democracy	Democracy measure which ranges from 0 (no institutional democracy) to 10 (maximum level of institutional democracy). Source: Polity IV project.
Polity	Combined Polity score. Computed by subtracting the autocracy score from the democracy score, and ranges from –10 (strongly autocratic) to 10 (strongly democratic). Source: Polity IV project.
Democracy (Freedom House)	Dummy variable equal to one if Freedom House regards a country as “Free” or “Partially Free” and zero otherwise. Source: Freedom House.
Democracy (Acemoglu et al.)	Dummy variable equal to one if Freedom House categorizes a country as “Free” or “Partially Free” and Polity IV gives it a positive score and zero otherwise. Source: Acemoglu et al. (2019).
Democracy (BR)	Dichotomous democracy measure from Cheibub et al. (2010) and updated by Bjørnskov and Rode (2020).
V-Dem	Electoral democracy index from the Varieties of Democracy Project. Source: Coppedge et al. (2021).
Competitiveness of Executive recruitment	The extent that prevailing modes of advancements give subordinates equal opportunities to become superordinates. Source: Polity IV project.
Openness of executive recruitment	Recruitment of the chief executive is “open” to the extent that all the politically active population has an opportunity, in principle, to attain the position through a regularized process. Source: Polity IV project.
Constraints on executive	The extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectives. Source: Polity IV project.
Competitiveness of participation	The extent to which alternative preferences for policy and leadership can be pursued in the political arena. Source: Polity IV project.
<i>Firm Level variables</i>	
Small firm	Dummy variable equal to one if a firm has between 5 and 19 employees. Source: WBES.
Medium firm	Dummy variable equal to one if a firm has between 20 and 99 employees and zero otherwise. Source: WBES.
Large firm	Dummy variable equal to one if a firm has 100 or more employees and zero otherwise. Source: WBES.
Sole Proprietorship	Dummy variable equal to one if a firm is a sole proprietorship and zero otherwise. Source: WBES.
Private or non-traded	Dummy variable equal to one if shares of a firm are privately traded or non-traded and zero otherwise. Source: WBES.
Publicly traded	Dummy variable equal to one if a firm is a publicly traded company and zero otherwise. Source: WBES.
Foreign owned	Dummy variable equal to one if at least 10 percent of a firm’s ownership is held by foreigners and zero otherwise. Source: WBES.
Exporter	Dummy variable equal to one if at least 10 percent of a firm’s annual sales is derived from direct exports and zero otherwise. Source: WBES.
Subsidiary	Dummy variable equal to one if a firm is part of a larger group and zero otherwise. Source: WBES.
Audited	Dummy variable equal to one if a firm’s financial statements were checked and certified by an external auditor and zero otherwise. Source: WBES.
Sales growth	Average growth in a firm’s sales over three years. Source: WBES.
Working capital	Measures the proportion of goods and services paid for after delivery. Source: WBES.
Competition	Captures a firm’s perceived degree of competition in the informal sector. Source: WBES.
<i>Country level Variables</i>	
Log (GDP/capita)	Logarithm of Gross domestic product (GDP) per capita. Source: WDI.
GDP Growth	Growth rate in GDP. Source: WDI.
Inflation	Rate of inflation. Source: WDI.
Credit/GDP	Domestic banking credit to the private sector as a share of GDP. Source: WDI.
Restrict	Index of regulatory restrictions on the activities of banks. Source: Barth et al. (2013).
Financial Freedom	The Index scores an economy’s financial freedom by looking into the following five broad areas: (i) the extent of government regulation of financial services; (ii) the degree of state intervention in banks and other financial firms through direct and indirect ownership; (iii) the extent of financial and capital market development; (iv) government influence on the allocation of credit, and (v) openness to foreign competition. These five areas are considered to assess an economy’s overall level of financial freedom that ensures easy and effective access to financing opportunities for people and businesses in the economy. An overall score on a scale of 0–100 is given to an economy’s financial freedom through deductions from the ideal score of 100. Source: Heritage Foundation.
Institutional Development	Average value of six governance indicators: voice and accountability, political stability, effectiveness of government, regulatory quality, rule of law, control of corruption. Source: World Governance Indicators.
Rule of law	Index to measure perceptions of the extent to which people have confidence in and abide by the rules of society (Rescaled from 0 to 10, where 10 represents better rule of law). Source: World Governance Indicators.
Property Rights	

(continued on next page)

Table 1 (continued)

Variable	Definition and source
Press Freedom	This index measures the extent to which the laws of a country protect private property rights and the degree to which its government enforces those laws. It also captures the probability that private property will be expropriated (Rescaled from 0 to 10, where 10 indicates more guaranteed legal protection of property). Source: Heritage Foundation.
Creditor Rights	A measure of the press freedom of a country (Rescaled from 0 to 10, where 10 indicates better freedom of the press). Source: Freedom House.
Corruption	This index aggregates creditor rights by following La Porta et al. (1998). Ranges from 0 (poor creditor rights) to 4 (strong creditor rights). Source: Djankov et al. (2007).
<i>Instrumental Variable</i>	Control of corruption index from the World Bank. Source: World Governance Indicators.
Regional Democratization	Average regional level of democracy.

Table 2

Summary statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Constrained	46,653	0.616	0.486	0	1
Apply	46,653	0.435	0.496	0	1
Approved	20,277	0.884	0.32	0	1
Constrained (Loan Use)	46,653	0.412	0.492	0	1
Democracy	46,653	6.208	3.138	0	10
Polity	46,653	5.137	4.936	-9	10
Competitiveness of executive recruitment	46,653	2.329	0.908	0	3
Openness of executive recruitment	46,653	3.72	0.9997	0	4
Executive constraints	46,653	5.433	1.589	2	7
Competitiveness of participation	46,653	3.357	1.179	0	5
Democracy (Acemoglu et al.)	46,653	0.745	0.436	0	1
Democracy (Freedom House)	46,653	0.781	0.414	0	1
Democracy (BR)	46,487	0.656	0.475	0	1
V-Dem	46,653	0.536	0.21	0.067	0.917
Small firm	46,653	0.472	0.499	0	1
Medium firm	46,653	0.352	0.478	0	1
Large firm	46,653	0.176	0.381	0	1
Sole Proprietorship	46,653	0.361	0.48	0	1
Private or nontraded	46,653	0.403	0.491	0	1
Publicly traded	46,653	0.04	0.197	0	1
Foreign owned	46,653	0.078	0.268	0	1
Exporter	46,653	0.138	0.345	0	1
Subsidiary	46,653	0.144	0.351	0	1
Audited	46,653	0.492	0.5	0	1
Sales growth	36,507	0.207	0.6	-2	2
Log (GDP/capita)	46,653	8.016	1.087	5.022	11.008
Inflation	46,653	0.077	0.057	-0.009	0.465
GDP Growth	46,653	5.128	2.955	-25.907	15.029
Credit/GDP	46,653	40.768	28.828	1.344	241.311
Creditor Rights	44,196	1.832	1.024	0	4
Restrict	37,607	7.816	1.814	4	12
Corruption	45,496	-0.488	0.558	-1.523	2.247
Financial Freedom	45,118	48.092	14.667	10	80
Institutional Development	46,653	-0.358	0.522	-1.542	1.74
Rule of law	46,653	4.185	1.104	1.686	8.946
Property Rights	45,118	3.679	1.459	1	9
Press freedom	46,582	4.71	1.765	0.6	9

neighbouring countries. To capture the effect of this democratic wave, we build *Regional democratization*, which uses the average democracy level of regional neighbours (leaving out the country's own democracy), as an instrument for the domestic level of democracy. Following the World Bank Classification, we classify countries into seven geographic regions: Africa, East Asia and the Pacific, Eastern Europe and Central Asia, Western Europe and other developed countries,⁸ Latin America and the Caribbean, the Middle East and the North of Africa, and South Asia.

More formally, we construct our instrument as follows:

$$Z_k^p = \frac{1}{|P|} \sum_{j \in P} d_j^{(p)} \text{ with } P = \{j : j \neq k, pj = pk\} \quad (2)$$

⁸ This group of countries includes Greece, Israel and Sweden.

where p_k denotes the geographic region in which country k is located; d denotes the domestic level of democratization; and Z is the jack-knifed regional level of democracy (*Regional democratization*).

4. Results

4.1. Main estimations

Table 3 reports the results of the main estimations. We consider five different specifications based on the inclusion of fixed effects and control variables to test the sensitivity of our results.

We add year fixed effects in column (1), and industry fixed effects in column (2). We continue by adding either firm-level control variables in column (3) or country-level control variables in column (4). Finally, the specification in column (5) includes all control variables. In all estimations, we report the marginal effects, calculated as the discrete change in the expected value of the dependent variable as the dummy variable changes from 0 to 1.

Our main finding is the negative and significant coefficient for *Democracy* in all estimations. The overarching message from the regressions is that firms in more democratic countries have fewer constraints in accessing credit than firms in less democratic countries. Thus, the quality of democratic institutions contributes to alleviate credit concerns for firms.

From the marginal effects, the estimated effect of the coefficient on *Democracy* is meaningful. When considering the specification with all control variables and fixed effects in column (5), we observe that for a one-point increase in democracy, firms' credit constraints would reduce by 1 percentage point. This finding is consistent with the view that democratic institutions tend to transmit positive signals to banks and firms and thereby increasing credit access to firms. Examining the countries in our sample, we observe that, for instance, 24.5% of firms from Turkey were financially constrained in 2007 when Turkey had a democracy score of 8. In 2012, when Turkey's democracy score increased to 9, 21.3% of firms on average were credit constrained. Conversely, in Madagascar, the proportion of firms that were credit constrained increased from 63.4% in 2008 when the country had a democracy score of 7–78.4% in 2012 when the democracy score dropped to 4.

We turn our attention to the firm-level control variables. We observe that smaller firms have a high probability to be financially constrained than larger firms with the significantly positive coefficients for *Small firm* and for *Medium firm*. The positive and significant coefficient for *Foreign owned* shows that foreign-owned firms are more likely to be credit constrained than domestically owned firms. We explain this finding by the fact that banks can have better information on domestically-owned firms than on foreign-owned firms, which contributes to the ability of these firms to have higher probability to access credit, given the key role of information asymmetries in SME financing. We also observe that *Sole Proprietorship* firms are more likely to be credit constrained whereas *Private or nontraded* and *Publicly traded* firms have a higher likelihood to access credit. Further, the significantly negative coefficients for *Exporter*, *Subsidiary*, and *Audited* show that exporting firms, firms belonging to a larger group, and firms whose financial statements were certified by an external auditor are less likely to have credit constraints. For the country-level control variables, we find that *Log(GDP/capita)* and *GDP Growth* are negative and significant, indicating that greater economic development is associated with less credit constraints. *Inflation* has a significantly positive coefficient, showing that firms in countries with high inflation are more likely to be financially constrained. Finally, we find that firms in financially developed countries have high probability to access credit with the significantly negative coefficient for *Credit/GDP*.

To strengthen our analysis, we use instrumental variable (IV) probit approach to deal with any potential endogeneity concerns. We replicate the estimations from Table 3 using *Regional democratization* as instrument and report the results in Table 4. We also report the F-value of the first stage and the Wald test. In all IV specifications, the F-values of the first stage are far beyond the conventional critical values thus dispelling the weak instrument eventuality, while the Wald test suggests that it is appropriate to use an instrumental variable model. We still observe that democracy has a negative and significant impact on access to credit. Hence the results using the IV estimations confirm our key findings obtained with the probit regressions. Following Delis et al. (2020), we use the simple probit regressions in the rest of our specifications in the paper since the IV results converge to the results with probit regressions.

In summary, our results provide evidence that democracy affects firms' access to credit. Firms in more democratic countries are less likely to be financially constrained compared to firms in less democratic countries. Therefore, our finding supports the hypothesis that democracy has a positive impact on access to credit for firms.

4.2. Estimations by firm size

The baseline estimations indicate that democracy contributes to facilitate firms' ability to access credit. We can question whether this impact varies by firm size. This question is of particular interest since credit constraints are more pronounced for small firms (e.g., Beck and Demircuc-Kunt, 2006). These firms are indeed more vulnerable to information asymmetry problems on the credit market. Therefore, it is important to examine whether all types of firms benefit similarly from the effects of democracy, a political regime associated with better flow of information and more favourable institutional environment.

We perform separate estimations for the three size groups of firms i.e., small, medium, and large firms. The results are presented in Table 5. We find that the coefficient of *Democracy* is significantly negative for small and medium firms whereas we observe negative but insignificant coefficient for large firms. This finding shows that democracy favors access to credit particularly for small and medium-sized firms.

The implications of this finding are important. Since small and medium firms suffer the most from credit constraints, this finding

Table 3

Main Estimations This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "constrained". Definitions of variables are provided in Table 1. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Democracy	-0.025*** (0.001)	-0.025*** (0.001)	-0.017*** (0.001)	-0.014*** (0.001)	-0.01*** (0.001)
Small firm			0.205*** (0.006)		0.199*** (0.006)
Medium firm			0.088*** (0.006)		0.084*** (0.006)
Sole Proprietorship			0.043*** (0.006)		0.03*** (0.006)
Private or nontraded			-0.087*** (0.006)		-0.064*** (0.006)
Publicly traded			-0.065*** (0.011)		-0.059*** (0.011)
Foreign owned			0.056*** (0.008)		0.033*** (0.008)
Exporter			-0.079*** (0.006)		-0.063*** (0.006)
Subsidiary			-0.026*** (0.006)		-0.017*** (0.006)
Audited			-0.099*** (0.004)		-0.10*** (0.004)
Log (GDP/capita)				-0.069*** (0.003)	-0.051*** (0.003)
Inflation				0.371*** (0.04)	0.478*** (0.039)
GDP Growth				-0.004*** (0.001)	-0.004*** (0.001)
Credit/GDP				-0.001*** (0.000)	-0.001*** (0.000)
Observations	46,653	46,637	46,637	46,637	46,637
Pseudo R ²	0.092	0.1	0.173	0.129	0.189
Correctly predicted (%)	65.94	67.32	71.30	69.53	72.52
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	Yes	Yes	Yes

stresses the beneficial effects of democratization for access to credit of firms.

4.3. How does democracy affect access to credit?

Our main estimations have shown that democratization alleviates firms' credit constraints. We explore this evidence in greater depth by examining the channels through which democracy can facilitate access to credit for firms.

We want to investigate whether the transmission channel goes through borrower discouragement channel by encouraging firms to apply for loans and/or through the loan approval channel by enhancing the number of approved credit applications.

A large strand of the literature has stressed that borrower discouragement explains more the low use of bank credit than bank rejection decisions. For instance, [Brown et al. \(2011\)](#) attribute the low use of credit to the fact that a higher percentage of firms in need of loans are discouraged from applying. This is also observed in our sample as 56.5% of firms who needed loans refused to apply because they were discouraged, even though 88.4% of the firms who applied were approved the credit.

We therefore examine how democracy could influence firms' decision to apply for a loan (the borrower discouragement channel), and banks rejection/approval decisions (the loan approval channel).

4.3.1. Impact of democracy on a firm's decision to apply for credit

A set of factors contribute to discourage firms with a need for external finance from applying for credit. [Brown et al. \(2011\)](#) suggest that high interest rates, collateral requirements, and complex application procedures are factors that discourage potential borrowers from applying for credit. Therefore, the level of democracy in a country can play a role in affecting firms' loan application decisions by influencing these different factors. Democracy can influence firms' decision to apply for loans through its effect on the cost of credit ([Delis et al., 2020](#)) and creating the environment favourable for loan access. If firms perceive that, for example, there is low asymmetry information, cost of credit is low, and property rights are protected, they will be less reluctant to demand for credit. We expect therefore that these factors would reduce borrower discouragement and thus that democracy would be associated with more likelihood to apply for credit.

To test this borrower discouragement channel, we investigate whether democracy contributes to influence firms' decision to apply for credit. The dependent variable is *Apply*, a dummy variable equal to one if a firm needed an external credit and applied, and zero

Table 4

IV Probit This table presents the results of instrumental variable (IV) probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "constrained". The instrumental variable is "Regional Democratization". Definitions of variables are provided in Table 1. The Wald Test compares the instrumented model and non-instrumented model. Under the null hypothesis, both models provide similar results. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Democracy	-0.021*** (0.001)	-0.021* (0.012)	-0.016*** (0.003)	-0.014*** (0.004)	-0.01** (0.004)
Small firm			0.240*** (0.008)		0.245*** (0.008)
Medium firm			0.105*** (0.007)		0.106*** (0.008)
Sole Proprietorship			0.053*** (0.007)		0.041*** (0.008)
Private or nontraded			-0.081*** (0.009)		-0.067*** (0.009)
Publicly traded			-0.062*** (0.014)		-0.063*** (0.014)
Foreign owned			0.054*** (0.009)		0.0376** (0.01)
Exporter			-0.101*** (0.008)		-0.086*** (0.008)
Subsidiary			-0.045*** (0.008)		-0.034*** (0.008)
Audited			-0.129*** (0.006)		-0.133*** (0.007)
Log (GDP/capita)				-0.071*** (0.006)	-0.056*** (0.006)
Inflation				0.411*** (0.061)	0.576*** (0.067)
GDP Growth				-0.006*** (0.001)	-0.006*** (0.001)
Credit/GDP				-0.002*** (0.000)	-0.001*** (0.001)
Observations	46,653	46,637	46,637	46,637	46,637
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	Yes	Yes	Yes
F-1st (excl. IV)	5411.15	5167.45	3648.73	2245.84	1980.10
Wald Test	730.64***	707.76***	511.55***	294.12***	262.01***

Table 5

Estimations by Firm Size This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "constrained". Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Small firms (1)	Medium firms (2)	Large firms (3)
Democracy	-0.014*** (0.001)	-0.011*** (0.001)	-0.002 (0.002)
Observations	21,983	16,396	8231
Pseudo R ²	0.138	0.156	0.172
Correctly predicted (%)	69.14	70.65	66.84
Firm Controls	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes

otherwise. The results are displayed in columns (1)–(2) of Table 6, in which we include all fixed effects but alternatively perform the estimation without and with all control variables. Our results show that democracy has a significantly positive coefficient, suggesting that democratization is associated with less borrower discouragement. Thus, firms with a need for external finance are less reluctant to apply for credit in democracies.

To provide additional insights, we examine whether this effect is observed for all size groups of firms. In columns (3)–(5) of Table 6, we re-estimate the model by considering separately the three different size groups of firms. In all estimations, we find significantly positive coefficients for *Democracy*. Thus, we observe that democracy contributes to reduce the reluctance of firms whatever their size

Table 6

Firms' Credit Application Decisions This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "Apply". Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Full Sample		Small firms	Medium firms	Large firms
	(1)	(2)	(3)	(4)	(5)
Democracy	0.027*** (0.001)	0.011*** (0.001)	0.016*** (0.001)	0.01*** (0.001)	0.004** (0.002)
Observations	46,641	46,641	21,985	16,394	8231
Correctly predicted (%)	33.83	27.97	29.48	31.03	34.63
Pseudo R ²	0.108	0.19	0.133	0.169	0.209
Firm Controls	No	Yes	Yes	Yes	Yes
Country Controls	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes

to demand credit.

This finding is important for policy considerations, given the severity of borrower discouragement in SME financing as observed in our sample. It suggests that governments should focus on building and strengthening democratic institutions since they have the potential of influencing a firm's probability to apply for a loan.

4.3.2. Impact of democracy on a bank's credit approval decision

Institutions have been shown to influence bank lending behaviour. Recent studies have shown that improvements in legal environment make banks increase their credit supply (Haselmann et al., 2009), and lend proportionally more to SMEs (Haselmann and Wachtel, 2010). As explained before, better institutions through effective legal systems and contract enforcement, lower asymmetric information, better property rights protection, and political stability are established ideals inherent in democratic regimes. We contend that there is a positive link between these constitutional characteristics of democracy and a bank's likelihood to accept credit demands. Thus, in democratic regimes, we expect banks to reject less credit applications from firms.

To test this loan approval channel, we examine how democracy affects banks' credit approval behaviour. The dependent variable *Approved* is a dummy variable equal to one if a firm applied for external finance and received at least one line of credit and zero otherwise. The sample for this analysis is restricted to the subsample of firms that applied for a loan. We therefore have 20,277 observations. The results of the estimations are reported in columns (1)–(2) of Table 7, in which we include all fixed effects but alternatively perform the estimations without and with all control variables. In both estimations, we find that the coefficient for *Democracy* is positive and statistically significant. This indicates that banks are more likely to approve credit applications in democratic countries than in autocracies.

In columns (3)–(5) of Table 7, we further perform estimations by firm size. We consider separately the three size groups of firms. We find that *Democracy* is significantly positive for small and medium firms. However, *Democracy* is not significant for large firms. This indicates that democracy facilitates more loan approval decisions for small and medium sized firms. In other words, democracy favours more loan approval decisions for small and medium firms, which are the most affected firms by credit constraints because of information asymmetry problems.

This finding confirms what we know from the literature: banks can easily turn down credit applications when the environment for financial intermediation is not favourable. However, in a democratic environment, where contracts are well enforced through effective legal systems, property rights are better protected, political cycles are well-defined securing stability, and information flows easily,

Table 7

Banks' Credit Approval Decisions This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "Approved". Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Full Sample		Small firms	Medium firms	Large firms
	(1)	(2)	(3)	(4)	(5)
Democracy	0.005*** (0.001)	0.004*** (0.001)	0.008*** (0.002)	0.004*** (0.001)	–0.001 (0.001)
Observations	20,265	20,265	7037	7970	5160
Pseudo R ²	0.045	0.088	0.073	0.066	0.105
Correctly predicted (%)	61.55	61.52	60.44	61.53	61.55
Firm Controls	No	Yes	Yes	Yes	Yes
Country Controls	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes

banks have incentives to efficiently intermediate funds thereby leading to less severe loan rejection decisions.

4.4. Components of democracy and political guarantees channels

We have shown that democracy favours access to credit. We take now one step further to identify the constitutional dimensions of democracy and political guarantees channels that could affect the ability of firms to access credit. We therefore proceed to assess the characteristics of democracy by considering the components of Democracy (Polity IV Project) and political guarantees.

First, we consider the four components of democracy (Polity IV). Polity IV emphasises the institutional characteristics of democracy, as measured by the following: *Competitiveness of executive recruitment* refers to the “extent that prevailing modes of advancement give subordinates equal opportunities to become superordinates”; *Openness of executive recruitment* measures “whether recruitment of the chief executive is “open” to the extent that all the politically active population has an opportunity, in principle, to attain the position through a regularized process”; *Constraints on executive* refers to “the extent of institutionalized constraints on the decision making powers of chief executives, whether individuals or collectivities”; and *Competitiveness of participation* which refers to “the extent to which alternative preferences for policy and leadership can be pursued in the political arena”.

Table 8 presents the results on the effects of the constituents of democracy on firm’s access to credit. We obtain two findings. First, we find that all four components are significantly negative. This means that all constituents of democracy contribute to favor access to credit for firms.

Second, we observe that among the four components, the constituent of democracy with the greatest impact in terms of economic significance on access to credit is *Openness of executive recruitment*. In other words, what matters the most for access to credit is the existence of institutions and procedures through which citizens can participate in the political process. This constituent of democracy is fundamental to ensuring inclusive and equal political participation. It accords with Acemoglu and Robinson (2012)’s view that inclusive institutions contribute to favor growth. These inclusive institutions are associated with a functioning democratic and pluralistic state and contribute to give economic agents incentives and opportunities. These opportunities notably favor better access to credit.

Secondly, we consider the role of the political guarantees channels in influencing firms’ ability to access external financing. Due to the fact that the potent channels are numerous, our choice of variables to measure political guarantees is motivated by the availability of data and the minimization of the effect of endogenous perceptions. We take into account three variables in accordance with the three channels through which democracy can affect access to credit: rule of law (a proxy for inclusive institutions) with data from World Governance Indicators, property rights (a proxy for the protection of property rights) with data from Fraser Institute, and press freedom (a proxy for freedom of the press) with data from Freedom House. We rescale all the three variables so that each variable will range from 0 to 10 (higher values reflect better political guarantees). The results are reported in Table 9.

The first channel is the rule of law which proxies for inclusive institutions. We find a significantly negative coefficient, suggesting that inclusive institutions –an important characteristic of a well-functioning and effective democratic regime – fosters economic activity and thereby contribute to enhance better credit access for firms. In column (2), we observe that better protection of property rights, which captures the degree to which laws of a country protect private property rights and the extent to which the government enforces those laws, play an important role in firms’ ability to access credit. In the last column, we find that better flow of information in democracies, proxied by the freedom of the press, is significantly related to better access to credit for firms.

5. Robustness tests

In this section, we examine the robustness of our findings in several ways. In all robustness tests, we consider the specification with all control variables and all fixed effects unless otherwise indicated.

Alternative measures of democracy. We consider several different democracy indicators. We start by using two alternative

Table 8

Components of Democracy This table presents the results of probit estimations examining the relation between democracy and firms’ access to credit. The dependent variable is “constrained”. Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Competitiveness of Executive Recruitment	Openness of Executive Recruitment	Constraints on Executive	Competitiveness of Political Participation
	(1)	(2)	(3)	(4)
Democracy Channel	−0.027*** (0.003)	−0.029*** (0.002)	−0.025*** (0.002)	−0.018*** (0.002)
Observations	46,637	46,637	46,637	46,637
Pseudo R ²	0.187	0.188	0.19	0.187
Correctly predicted (%)	72.52	72.55	72.70	72.40
Firm Controls	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

Table 9

Political Guarantees Channels This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "constrained". Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Rule of law (1)	Property rights (2)	Press freedom (3)
Political guarantees channel	-0.024*** (0.002)	-0.004** (0.002)	-0.008*** (0.002)
Observations	46,637	45,105	46,566
Pseudo R ²	0.187	0.186	0.186
Correctly predicted (%)	72.38	72.27	72.39
Firm Controls	Yes	Yes	Yes
Country controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes

indicators from the Polity IV database, based on different ways to measure what our main democracy measure assesses. On the one hand, we use the alternative democracy measure from Polity IV. This variable *Polity* is the combined Polity score ranging from -10 to 10, where -10 indicates high autocracy and 10 indicates high democracy. On the other hand, we transform the *Polity* variable as the dummy variable *Polity Dummy* which is equal to one if *Polity* is positive and zero otherwise.

We then utilize five democracy measures from other sources. We consider the democracy measure from Freedom House. This variable capture perception-based assessment of how civil and political rights are protected in a country. Therefore, this variable considers democracy on a different basis than our main democracy index from the Polity IV database which is based on institutionalized democracy and not on perception. We name this variable *Democracy (Freedom House)* and it takes a value of one if Freedom House regards a country as "Free" or "Partially Free" and zero otherwise. We also employ the democracy measure of [Acemoglu et al. \(2019\)](#) which combines data from the Polity IV and Freedom House. This variable *Democracy (Acemoglu et al.)* is coded as one (democratic) if Freedom House categorizes a country as "Free" or "Partially Free" and Polity IV gives it a positive score (Polity IV scale of -10 to 10). Conversely, if a country is regarded as "Not Free" in Freedom House and receives a negative score in Polity IV, it is coded as zero (autocratic). Next, we draw on the dichotomous indicator of democracy from [Bjørnskov and Rode \(2020\)](#) which is an extension

Table 10

Alternative Measures of Democracy This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "constrained". Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Polity	-0.005*** (0.000)						
Polity Dummy		-0.045*** (0.006)					
Democracy (Freedom House)			-0.047*** (0.006)				
Democracy (Acemoglu et al.)				-0.058*** (0.006)			
Democracy (BR)					-0.031*** (0.005)		
V-Dem						-0.138*** (0.013)	
<i>Economist Intelligence Unit</i>							
Full Democracy							-0.092*** (0.017)
Flawed democracy							-0.05*** (0.007)
Hybrid Regime							-0.048*** (0.007)
Observations	46,637	46,637	46,637	46,637	46,474	46,637	46,474
Pseudo R ²	0.187	0.187	0.187	0.187	0.187	0.188	0.188
Correctly predicted (%)	72.53	72.40	72.46	72.44	72.39	72.50	72.37
Firm Controls	Yes						
Country Controls	Yes						
Year FE	Yes						
Industry FE	Yes						

of the democracy index from Cheibub et al. (2010). *Democracy (BR)* defines a country as democratic “if elections were conducted, these were free and fair, and if there was a peaceful turnover of legislative and executive offices following those elections”. Additionally, we use the democracy measure from Varieties of Democracy (V-Dem) project. Developed by Coppedge et al. (2021), the V-Dem data is based on expert views and surveys and provides a multidimensional collection of democracy indicators. We employ the electoral democracy index which captures fairness of elections and the freedom of expression. This variable ranges from 0 to 1, where larger values reflect better quality of electoral democracy. Finally, we employ the Economist Intelligence Unit’s democracy index. Following their classification, we categorize countries into four groups: (1) full democracy; (2) flawed democracy, (3) hybrid regime; and (4) authoritarian regime. The omitted category is the authoritarian regimes.

The estimations are reported in Table 10. We observe that the coefficient for the democracy variable is significantly negative whatever the chosen democracy indicator. Estimations in column (7) further show that as a country moves up to a higher level of democracy, the likelihood to be credit-constrained for a firm is reduced. Therefore, our key finding that firms in more democratic countries are less credit constrained is robust to the use of alternative measures of democracy.

Alternative measures of credit constraints. We test the sensitivity of our results to the use of alternative credit constraint measures. Following existing studies (e.g., Aterido et al., 2013), we measure financial constraints as whether a firm uses formal credit or not. Specifically, we use two dummy variables: *Constrained (Loan Use)* coded as one if a firm does not have an overdraft facility, a credit line and/or a formal bank loan and zero otherwise; and *Constrained (Working Capital)* which is coded as one if a firm does not finance part of its working capital with bank credit and zero otherwise.

In comparison with our main indicator of credit constraints, these variables do not consider whether a firm needed external finance or not. Therefore, they do not provide the same information on the presence of credit constraints at the firm level. We however employ them to test the robustness of our findings.

Table 11 reports the results. For each alternative credit constraint measure, we test two specifications alternatively with all control variables but no fixed effects, and with all control variables and fixed effects. The dependent variable in columns (1)–(2) is *Constrained (Loan use)* and columns (3)–(4) is *Constrained (Working Capital)*. In all estimations, we still observe that the coefficient for *Democracy* is significantly negative, corroborating our finding that democracy alleviates firms’ credit constraints.

Additional control variables. A potential concern for our model is the omission of some important variables. To rule out this possibility, we test the stability of our results when we include additional controls. Estimation results are reported in Table 12.

In the six first columns, we alternatively add one of the six following control variables: *Sales growth*, computed as the average growth in a firm’s sales over three years, which captures the recent performance of a firm (it is not included in the main estimations because it is not available for about one quarter of the firms in our sample); *Creditor rights* based on the creditor rights index from Djankov et al. (2007) to take into account creditor rights (we use the creditor rights index for 2002); *Restrict*, the index of regulatory restrictions on the activities of banks from Barth et al. (2013), to capture the financial regulatory environment; *Corruption*, the control of corruption index from the World Governance Indicators (World Bank) to control for the influence of corruption; *Financial Freedom*, the indicator of financial freedom from Heritage Foundation; *Institutional Development*, measured as the average of the six governance indicators from the World Governance Indicators, to appraise institutional development. Finally, we add all the variables together in column (7) to check the sensitivity of our results. In all estimations, we still observe that *Democracy* is negative and significant. Thus, these estimations provide additional support to our finding that democracy favors firms’ credit access.

Sample Construction. We check the sensitivity of our results to the construction of the sample. First, we exclude all countries with less than 100 observations from our sample. These countries can suffer from a lack of representativeness given the small number of observations. The estimation is displayed in column (1) in Table 13. We still observe that the estimated coefficient of democracy is negative and significant.

Second, we check whether our results are driven by developed countries. It has been argued that democracy requires a certain level of economic development to be able to thrive and that autocracy is the optimal political regime for very poor countries (e.g., Posner, 2010). To rule out the possibility that our findings are driven by developed countries, we redo our estimation only for the subsample of

Table 11

Alternative Measures of Credit Constraints This table presents the results of probit estimations examining the relation between democracy and firms’ access to credit. The dependent variables are “constrained (loan use)” and “constrained (working capital)”. Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Constrained (Loan Use)		Constrained (Working Capital)	
	(1)	(2)	(3)	(4)
Democracy	−0.025*** (0.001)	−0.023*** (0.001)	−0.021*** (0.001)	−0.018*** (0.001)
Observations	46,653	46,644	40,306	40,295
Pseudo R ²	0.171	0.205	0.111	0.129
Correctly predicted (%)	59.94	61.41	67.23	68.36
Firm Controls	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes

Table 12

Additional Control Variables This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "constrained". Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimated marginal effects are reported and robust standard errors are in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democracy	-0.01*** (0.001)	-0.012*** (0.001)	-0.016*** (0.001)	-0.006*** (0.001)	-0.009*** (0.001)	-0.006*** (0.001)	-0.015*** (0.001)
Sales growth	-0.026*** (0.004)						-0.025*** (0.004)
Creditor Rights		0.019*** (0.002)					-0.001 (0.003)
Restrict			-0.006*** (0.002)				-0.001 (0.002)
Corruption				-0.073*** (0.005)			-0.146*** (0.016)
Financial Freedom					-0.001*** (0.000)		-0.002*** (0.000)
Institutional Development						-0.075*** (0.006)	0.128*** (0.019)
Observations	36,501	44,183	37,591	45,483	45,105	46,637	28,076
Pseudo R ²	0.201	0.191	0.206	0.192	0.189	0.191	0.219
Correctly predicted (%)	71.10	72.41	70.94	72.26	72.37	72.59	69.07
Firm Controls	Yes						
Country Controls	Yes						
Year FE	Yes						
Industry FE	Yes						

"low-income" and "lower middle-income" countries based on the World Bank classification. It is reported in column (2) in Table 13. We again point out a negative and significant coefficient for democracy. This confirms that our finding is not restricted to developed countries: democracy is beneficial for access to credit, regardless of the level of economic development of the country.

Third, our sample excludes very large firms with more than 1000 employees. These firms are excluded from our analysis due to the fact that they are more likely to have access to other sources of external financing. As a sensitivity test, we check whether our main results stand when we do not exclude these very large firms from our sample. Column (3) of Table 13 presents results on the sample including firms that have more than 1000 employees. We observe that the coefficient of *Democracy* remains significantly negative. Thus, including very large firms does not alter our results.

Fourth, we restrict the sample to countries that have more than one survey. Some countries in our sample period have either two or three surveys (66 countries). As a robustness check, we perform estimations by considering only these countries. This robustness check allows us to take advantage of the changes in democracy and observe its impact on access to credit. Estimation results are reported in column (4) in Table 13. The results confirm our main findings that democracy favours better access to credit.

Econometric concerns: We tackle potential econometric issues. First, our results may be subject to selection bias. Our sample is restricted to firms who have a need for bank credit since a credit-constrained firm is only observable if the firm expresses a need for bank financing. However, the selection into the group of firms with a need for credit may not be random and could therefore bias our estimates. To overcome this potential selection issue, we apply a probit model with sample selection proposed by Van de Ven and Van Praag (1981). The probit model with sample selection takes into account two binary equations (selection and outcome equation) and requires relevant exclusion variables which have to influence the selection equation (need for credit) but uncorrelated to the outcome equation (credit access) for a robust identification. Following former studies (Popov and Udell, 2012; Léon, 2015), we employ two exclusion variables: *Working capital* which captures the share of goods and services paid for after delivery, and *Competition* capturing a firm's perceived degree of competition from the informal sector. The results are reported in column (5) of Table 13. We find that the coefficient of *Democracy* remains significantly negative despite the change in model specification. This further provides additional support for the robustness of our finding.

Second, we include country fixed effects. Our baseline model includes relevant country-level control variables that take into account differences in the macroeconomic environment. As a robustness check, we estimate the model by including country fixed effects to take into account unobserved country-level heterogeneity. Results in column (6) in Table 13 confirm our main finding that democracy contributes to alleviate firms' financing constraints.

Third, since the main variable of interest (*Democracy*) only varies at the country-level, we re-estimate our model by clustering the standard errors at the country-survey level. This also partly controls for autocorrelation at the country level (Cameron and Miller, 2015). Results in column (7) in Table 13 show that the coefficient of *Democracy* is still negative and significant. This provides additional support to the robustness of our finding.

Table 13

Additional Sensitivity Tests This table presents the results of probit estimations examining the relation between democracy and firms' access to credit. The dependent variable is "constrained". Definitions of variables are provided in Table 1. Firm controls represent the full set of firm-level control variables used in Table 3 and country controls represent the full set of country-level control variables used in Table 3. Estimations in column (5) apply the probit with sample selection model. The Wald test compares the simple probit model with the probit model with sample selection. Under the null hypothesis, the probit with sample selection model is not different from the simple probit model. Estimated marginal effects are reported and robust standard errors are in parentheses. Standard errors are adjusted for clustering at the country-survey level in column (7). *, **, and *** indicate statistical significance at the 10%, 5% and 1% level, respectively.

	Excluding countries with <100 obs.	Evidence from low income and lower middle-income countries	Including firms with >1000 employees	Countries with more than one survey	Probit with Sample Selection	Country FE	Country-survey cluster
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democracy	-0.01*** (0.001)	-0.007*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)	-0.007*** (0.001)	-0.033*** (0.005)	-0.01** (0.001)
Observations	45,757	24,538	46,980	32,230	44,677	46,200	46,637
Pseudo R ²	0.19	0.181	0.193	0.181	-	0.265	0.189
Correctly predicted (%)	72.60	64.98	71.30	70.75		75.91	72.52
Wald Test	-	-	-	-	6.90***	-	-
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

6. Conclusion

This paper examines the impact of democracy on access to credit. We use data on a large cross-country sample of firms to investigate whether democracy affects credit availability at the firm level.

Our main finding is that democracy favors access to credit. We find evidence of a negative effect of democracy on credit constraints for firms. This effect is particularly observed for small and medium-sized firms, which tend to suffer the most from financing constraints. We further establish that democracy contributes to reduce borrower discouragement and leads to more bank loan approval decisions.

We interpret these findings by the fact that democracy alleviates credit constraints for firms by favoring inclusive institutions, including financial inclusion of small firms, by strengthening the institutional framework increasing incentives for banks to lend, and by reducing information asymmetries.

Our paper has of course a few caveats. Even if we use a large cross-country dataset of firms, we can regret that our sample does not include a panel dimension so that we can follow over time the same firms. In a related vein, we would benefit from the fact that the same countries are present in the sample over a long period. It would strengthen the analysis of a country-specific characteristic like democracy.

Our paper therefore contributes to provide a financial channel to the finding of a beneficial influence of democracy on economic development as observed by Acemoglu et al. (2019). Access to credit is one of the key obstacles for firm growth. Thus, democracy benefits firm growth through access to credit. Complementing the finding from Delis et al. (2020) that democracy reduces cost of credit for large firms, our works altogether show that democracy contributes to facilitate firm credit. They are consequently of major importance to provide foundations to the positive economic impact of democracy, and support the view that one key policy implication is to favor democratization.

A natural extension is to investigate whether democracy exerts an influence on the type of credit, for instance by favoring more credit to innovative firms and thus contribute through this channel to innovation and consequently growth. This question opens avenues for further research.

Declaration of competing interest

None.

Data availability

The authors do not have permission to share data.

Appendix

Countries in our sample include (year of the survey):

Albania (2007, 2013), Angola (2006), Argentina (2006, 2017), Armenia (2009, 2013), Azerbaijan (2009, 2013), Bangladesh (2013), Belarus (2008, 2013), Benin (2009, 2016), Bhutan (2009), Bolivia (2006, 2017), Botswana (2006), Brazil (2009), Bulgaria (2007, 2009, 2013), Burkina Faso (2009), Burundi (2006, 2014), Cambodia (2016), Cameroon (2009, 2016), Cape Verde (2009), Central African Republic (2011), Chad (2009), Chile (2006), China (2012), Colombia (2006, 2017), Cote D'Ivoire (2016), Croatia (2007, 2013), Czech Republic (2009, 2013), Democratic Republic of Congo (2013), Djibouti (2013), Dominican Republic (2016), Ecuador (2006, 2017), Egypt (2016), El Salvador (2006, 2016), Eritrea (2009), Estonia (2009, 2013), Eswatini (2006, 2016), Fiji (2009), Gambia (2006, 2018), Georgia (2008, 2013), Ghana (2007, 2013), Greece (2018), Guatemala (2006, 2017), Guinea (2006, 2016), Guinea Bissau (2006), Honduras (2006, 2016), Hungary (2009, 2013), India (2014), Indonesia (2009, 2015), Iraq (2011), Israel (2013), Jordan (2013), Kazakhstan (2009, 2013), Kenya (2007, 2013, 2018), Kosovo (2009, 2013), Kyrgyz Republic (2009, 2013), Laos (2009, 2012), Latvia (2013), Lebanon (2013), Lesotho (2016), Liberia (2017), Lithuania (2009, 2013), Madagascar (2009, 2013), Malawi (2009, 2014), Malaysia (2015), Mali (2007, 2016), Mauritania (2006, 2014), Mauritius (2009), Mexico (2006), Moldova (2009, 2013), Mongolia (2009, 2013), Montenegro (2009, 2013), Morocco (2013), Mozambique (2007, 2018), Myanmar (2014), Namibia (2006, 2014), Nepal (2009, 2013), Nicaragua (2006, 2016), Niger (2009, 2017), Nigeria (2007, 2014), Pakistan (2007, 2013), Panama (2006), Paraguay (2006, 2017), Peru (2006, 2017), Philippines (2009, 2015), Poland (2009, 2013), Romania (2009, 2013), Russia (2009, 2012), Rwanda (2006, 2011), Senegal (2007, 2014), Serbia (2009, 2013), Sierra Leone (2017), Slovakia (2009, 2013), Slovenia (2009, 2013), South Africa (2007), Sri Lanka (2011), Suriname (2018), Sweden (2014), Tajikistan (2008, 2013), Tanzania (2006, 2013), Thailand (2016), Timor-Leste (2009, 2015), Togo (2009, 2016), Turkey (2008, 2013), Uganda (2006, 2013), Ukraine (2008, 2013), Uruguay (2006, 2017), Vietnam (2009, 2015), Yemen (2013), Zambia (2007, 2013).

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