GINÉS HERNÁNDEZ-CÁNOVAS
Universidad Politécnica de Cartagena, Spain, gines.hernandez@upct.es

ANA MOL-GÓMEZ-VÁQUEZ
Universidad Politécnica de Cartagena, Spain, ana.mlgv@gmail.com

JOHANNA KOËTER-KANT
Vrije Universiteit Amsterdam, Netherlands, j.koeter-kant@vu.nl

LEGAL AND INSTITUTIONAL DETERMINANTS OF FACTORING IN SMES: EMPIRICAL ANALYSIS ACROSS 25 EUROPEAN COUNTRIES

Abstract:

We use a survey data set of 4348 SMEs from 25 European countries to analyze the association between the use of factoring as a form of SME financing and the legal environment of the country where in which they operate. Our findings indicate that firms operating in countries with legal environments that weakly protect the rights of creditors, such as those under French-civil-law, with political instability or high enforcement costs, are more likely to use factoring. We hypothesize that in such environments bank financing could be more restricted and factoring might be an alternative source to alleviate SMEs financing constraints. In line with this argument, we find that firms experiencing some financing difficulties are more likely to use factoring. We also show that the likelihood of using factoring increases for firms located in growing economies. Factoring might be a means for these firms to finance the enlargement of their business activity.

(Ginés Hernández-Cánovas acknowledges financial support by Fundación Séneca (Project 15403/PHCS/10), and by Ministerio de Ciencia e Innovación (Project ECO2011-29080)

Keywords:

Factoring, SMEs financing, financial constraints, legal system.

JEL Classification: G00, G30, G32

Introduction

SMEs often face significant difficulties in obtaining the financing they need in order to grow and innovate. They are to a very large extent dependent on bank loans for their external financing. According to the 2013 SMEs Access to Finance Survey, conducted by European Commission, is the willingness of banks to provide loans still decreasing in 2013 although, to a lesser extent than in the previous years.

A suitable alternative to bank financing at the disposal of SMEs is factoring (Berger and Udell, 2006). Factoring is a financial transaction in which a firm sells its accounts receivable to a third party at a discount. This form of financing has received growing attention in the finance literature. Most of the existing research has explained the use of factoring at the firm level (Sopranzetti, 1998; Soufani, 2001, 2002a, 2002b; Summers and Wilson, 2000). However, a number of recent contributions suggest that the use of factoring by SMEs might be dependent on country-specific characteristics. Gianetti (2003), Hall et al. (2004), García-Teruel and Martínez-Solano (2010) and Hernández-Cánovas and Koëter-Kant (2010, 2011) find that financing decisions for SMEs are highly dependent on the country where the firm operates. Klapper (2006) shows that the factoring industry is larger in countries with greater economic development and in economies which are growing at high rates.

Given the importance for SMEs to have access to external financing other than bank loans, and to complement the factoring research mentioned above, this study analyzes the effect of country-specific characteristics on the use of factoring for a cross-country sample of SMEs. Such a comprehensive study as ours has to best of our knowledge not been conducted before.

We perform our analysis using a survey data-set of 4348 small and medium-sized firms from 25 European countries. Our sample perfectly suits our purpose because the observed variation in legal and institutional environments across the 25 countries in our sample enables us to analyze the effect of country factors on the use of factoring.

Our evidence indicates that the use of factoring for small and medium-sized firms varies across European countries. We begin our analysis by showing how firms in countries under French-civil-law make a higher use of factoring than firms in countries under English-common-law, German and Scandinavian-civil-law. When going more into dept we also find that the use of factoring is greater in countries with political instability and inefficient contract enforcement. Moreover, our results show that firms operating in countries which are growing at high rates are more likely to use factoring.

Our study makes two important contributions to the finance literature. First, our paper contributes to complete the framework in which the feasibility of different lending technologies and, hence, the availability of funds to SMEs, depends on the nation´s legal and institutional environment. Second, we contribute to the SME financing literature suggesting that factoring might be an alternative source of funding in those countries where poor protection of creditors results in credit rationing for small firms.

This article is organized as follows. Section 2 analyzes existing literature and provides the motivation for the study. Section 3 presents the data and methodology. Section 4 presents the results. Summary and conclusions are given in Section 5.

Theory and hypotheses development

During the last years several papers have shown the existence of a causal link from a country´s legal environment to the availability of SME financing. Soft commercial laws and institutions that weakly apply the law or do not enforce debt contracts have an effect on bank financing. This effect seems to be even larger for small firms since they are more dependent on bank loans for their external financing needs (Giannetti, 2003; Beck et al., 2008, Jõeveer, 2013). The underlying idea is that additional risk arising from inefficient legal systems reduces the incentive of banks to grant loans to their opaque and therefore riskier small borrowers.

However, factoring contracts do not involve a credit relationship because the transaction contains a sale and a purchase. After purchasing the client's accounts receivable the factor obtains full ownership. This exchange of property implies that in the event of the client´s bankruptcy the accounts receivables would not be part of its state of bankruptcy which makes the legal environment less important for factors than for banks. This might have implications in the way factoring is, compared to bank loans, affected by the efficiency of the legal environment and therefore, a suitable financing tool for constrained firms (Bakker et al., 2004; Berger and Udell, 2006).

The law and finance literature (La Porta et al., 1997, 1998) suggests that differences in legal system across countries might influence the use of factoring by firms. Banks might be less prone to granting loans in countries with legal systems that softly protect creditor rights and weakly enforce debt contracts. The use of factoring as an alternative source of funding is more likely in such environments because firms might have reduced access to bank financing. Supporting this argument, existing empirical evidence shows that firms located in countries with a low functioning legal system are more financially restricted (Demirgüç-Kunt and Maksimovic, 1998; Giannetti, 2003; Beck et al., 2006).

In addition to the above legal considerations, there could be other factors of the institutional framework of the country in which firms operates that may help to explain the observed differences in the use of factoring across European countries. For example, evidence in previous literature shows that the size of the factoring industry is larger in countries with greater economic development and higher rates of growth (Klapper, 2006). A sound and growing economy offers more investment opportunities to firms, and factoring might be used to finance the enlargement of their business activities. Therefore, we expect a positive relationship between the economic development and the use of factoring by European SMEs.

According to Bakker et al. (2004), the association between the use of factoring and the development of the banking sector is ambiguous. Since banks may provide factoring as a complement to their financial services, the overall financial development may prompt the use of factoring. However, for firms operating in countries with less developed banking sectors factoring may arise as a substitute for bank financing.

Existing literature indicates that formal information sharing mechanisms help to increase bank lending and reduce credit rationing (Jappelli and Pagano, 2001; Love and Mylenko, 2003). Although to a lesser extent than banks, factors also need business credit bureaus to obtain information about the obligors on their receivables and reduce the risk associated with default payments (Klapper, 2006). However, large factors may enjoy economies of scale in developing their own databases on account payment performance,

allowing them to expand their services in countries with underdeveloped information infrastructures (Bakker et al., 2004). Therefore, we could expect either a positive or a negative association between the availability of credit information and the use of factoring.

Data and method

Data

To create our initial sample we use several data sources. First, country-specific variables are obtained from Klapper (2006), Djankov et al. (2007), the United Nations Statistics Division and the World Bank. Second, firm-specific variables are obtained from the Survey on SME Access to Finance carried out by the European Commission between 2005 and 2006.[i] From the 4583 interviews available in the Survey, we drop 125 firms in the financial sector due to the regulated environment they are operating in. From the remaining sample, we select 4348 observations which contain information about the use of factoring.

Method

To assess the impact of country-specific characteristics on the use of factoring for European SMEs, we estimate logistic regressions in the following form:

$$F_i = \Phi\left[\alpha_0 + \beta_1 LE_i + \beta_2 IE_i + \beta_3 FSC_i + \varepsilon_i\right]$$

Where i represents the ith firm in the sample; F_i is the use of factoring for firm i; LE_i is a vector of legal environment variables; IE_i is a vector of institutional environment variables; FSC_i represents the set of firm-specific control variables and ε_i is the residual.

The dependent variable

To create the dependent variable we utilize the Survey's question in which managers are asked if the firm uses factoring to finance its activities. Using the answers we built a dummy variable, factoring, which takes the value one when factoring has been used by the firm and zero otherwise.

Table 1 gives an overview of the use of factoring by country ranked in descending order. The average ranks from 54.86% in Spain to 6.55% in Germany, indicating the existence of large variations in the use of factoring by firms across European countries.

Table 1. Overview of the Use of Factoring by Country.
This table reports means for the use of factoring by country. Definitions and sources of the variables are provided in table 2.

Country	N	Factoring (%)
Spain	288	54.86
The Netherlands	193	43.52
France	292	33.56
Czech Republic	202	32.18
Luxemburg	95	31.58
Estonia	100	29.00

Cyprus	84	27.38
Slovenia	115	25.22
Italy	297	23.91
Ireland	98	22.45
United Kingdom	286	20.28
Malta	75	20.00
Slovakia	107	18.69
Greece	97	16.49
Belgium	193	14.51
Sweden	229	11.79
Portugal	98	11.22
Latvia	115	10.43
Finland	79	10.13
Hungary	219	9.59
Poland	318	9.12
Lithuania	98	8.16
Austria	186	7.53
Denmark	194	7.22
Germany	290	6.55
Total	4348	20.91

The independent variables

This section describes the explanatory variables used in our empirical study. Table 2 provides detailed definitions of all the variables, while table 3 reports the correlations.

Legal environment variables. Next we define the variables that we include in our model to proxy for a country´s legal system in terms of creditor rights efficiency.

According to La Porta et al. (1998), variations in creditor rights protection and contract enforcement across countries are originated by their legal origins. Countries under English-common-law give creditors the highest protection while countries under German and Scandinavian-civil-law heritage have the most efficient and strongest legal system to enforce financial contracts. Countries under French-civil-law offer the poorest creditor protection regarding both the quality of law and the efficiency of enforcing mechanisms. [ii]

Table 2. Variables, Descriptions and Data Sources.
This table reports the definitions and sources of the variables used in our analyzes.

Variable name	Description and source
Dependent variable:	
Factoring[a]	An indicator of the use of factoring by firms measured as a dummy variable that takes on the value one when the firm uses factoring and zero otherwise.
Country and industry dummies:	
Industry dummies[a]	Seven industry dummies indicating the firm´s main activity. Each variable takes on the value one if the firm belongs to one of the following sectors: extraction or production of raw materials, construction or civil engineering, production and manufacturing of goods, trade and distribution, transport, business services and, other services to consumers; and zero otherwise.
Country dummies	Twenty-five country dummies.
Legal environment variables:	

Legal origin[b]	Four legal origin dummies indicating the legal origin of each country. Each variable takes on the value one if the country has one of the following legal origins: English-common-law, French-civil-law, German civil-law or Scandinavian civil-law; and zero otherwise.
Creditor rights[b]	An indicator of the protection of creditor rights measured in 2003. This index is composed by four levels being the number 4 the highest protection of creditor rights. It is calculated by adding 1 for each of the following conditions: (i) the country imposes restrictions, such as creditor's consent or minimum dividends, to file for reorganization; (ii) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (iii) the debtor does not retain the administration of its property pending the resolution of the reorganization; (iv) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm.
Enforce debt[c]	Enforce debt variable measures the official costs of going through court procedures for debt recovery divided by the debt value in 2003.
Corruption control[d]	Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests in 2003. This variable is computed as an index that ranges from -2.5 (for very poor performance) to +2.5 (for excellent performance).
Political stability[d]	Political stability and absence of violence measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism in 2003. This variable is computed as an index that ranges from -2.5 (for very poor performance) to +2.5 (for excellent performance).
Institutional environment variables:	
GDP capita[e]	GDP per capita is the natural logarithm of GDP in current prices in U.S. dollars divided by population in 2003.
GDP growth[e]	Ratio of growth of GDP expressed in current prices in U.S. dollars in the period 2002-2003.
Private credit[f]	A measure of the financial intermediary development, calculated as claims on the private sector by the deposit money banks to GDP in 2003.
Credit information[c]	Credit information variable measures rules and practices affecting the coverage, scope and accessibility of credit information available through either a public credit registry or a private credit bureau in 2003. This variable is computed as an index that ranges from 0 to 6, with higher values indicating the availability of more credit information.
Firm-specific variables:	
Size[a]	An indicator of the firm size which we use to define three dummy variables following the European Commission Recommendation of 6th May 2003 (2003/361/CE): size1 takes on the value 1 when the firm has less than 10 employees and zero otherwise, size2 takes on the value one when the number of employees is between 10 and 49 and zero otherwise, and size3 takes on the value one when the number of employees is between 50 and 249 and zero otherwise.

Age[a]	A measure of the number of years that the firm has been in operation, which we use to define three dummy variables: age1 takes on the value one when the firm has been in operation less than 2 years and zero otherwise, age2 takes on the value one when the firm has been in operation between 2 and 10 years and zero otherwise, and age3 takes on the value one when the firm has been in operation more than 10 years and zero otherwise.
Constrained[a]	A measure of the existence of financial constraints in the firm, which we proxy creating the dummy variable constrained that equals one when the firm needs and easier access to means of financing in order to assure the development of the firm and zero otherwise.

Data sources:
[a] Survey on SMEs Access to Finance carried out by the European Commission between 2005 and 2006.
[b] Djankov et al. (2007).
[c] Doing Business Indicators 2005.
[d] The Worldwide Governance Indicators (WGI) project financed by the World Bank: (http://info.worldbank.org/governance/wgi/index.aspx#home).
[e] United Nations Statistics Division.
[f] The Financial Development and Structure dataset (http://go.worldbank.org/JC243H0MO0).

Examination of table 1 reveals that the use of factoring is more common among SMEs operating in Spain, the Netherlands and France, than among SMEs in Germany, Denmark and Austria. It seems that legal origin explains some of the observed differences in the use of factoring across European SMEs. Firms in countries under French-civil-law are more likely to use factoring than firms in countries under German and Scandinavian-civil-law heritage, with firms in Common-law countries being in the middle. However, we also find firms with a relatively high use of factoring in countries under German law such as Czech Republic and Slovenia, and firms with a reduced use of factoring in countries under French-law, as in Lithuania and Portugal.

To shed additional light on the use of factoring, we take into account that the effective protection of creditors in a country depends on both the quality of law and the enforcement of law (or rule of law). The quality of law refers to the inclusion in a country´s commercial law of regulations aimed at protecting the rights of creditors, while the enforcement of law concerns to the strength of the legal system in enforcing contracts and applying the law. We measure the quality of law in a country using the variable creditor rights that is computed as an index that ranges from 0 to 4. Lower values indicate softer laws that fail to protect the rights of creditor (see La Porta et al., 1998).

As for the rule of law, we use three variables to account for differences in the enforcement of law across countries. The enforce debt variable measures the costs incurred by lenders during the resolution of the disputes through the court procedures for debt recovery divided by the debt value. Higher scores represent environments with weaker contract enforcement. The variable corruption control refers to the control of corruption and captures perceptions of the extent to which public power is exercised to achieve private benefits. Political stability variable measures the likelihood that a government in a country is abolished by violent and unconstitutional actions. Both

variables range from -2.5 to +2.5, where higher values represent greater levels of control of corruption and more political stability.

Table 3. Correlations.
This table reports pairwise correlations. Definitions and sources of the variables are provided in table 2.

	Factoring	Creditor rights	Enforce debt	Corruption control	Political stability	GDP capita	GDP growth	Private credit	Credit information	Size	Age
Factoring											
Creditor rights	-.0037										
Enforce debt	.1604***	.1959***									
Corruption control	-.0086	.3101***	-.1526***								
Political stability	-.1435***	-.0111	-.2766***	.1579***							
GDP capita	.0575***	.1772***	.1133***	.8199***	-.0003						
GDP growth	.1121***	-.1499***	.2047***	-.0615***	.1484***	.1041***					
Private credit	.0607***	.3747***	.2490***	.7939***	-.0659***	.7757***	-.0223				
Credit information	.0727***	.4242***	.2803***	.1220***	-.4359***	.2483***	-.2876***	.3114***			
Size	.0939***	-.0126	-.0052	-.0743***	.0131	-.0864***	-.0208	-.0769***	-.0151		
Age	.0159	.0717***	.0290*	.0447***	-.1503***	.0916***	-.1416***	.0594***	.1089***	.1221***	
Constrained	.0147	-.0041	-.0067	-.0925***	.0108	-.1031***	-.0401***	-.0941***	-.0061	-.0377**	-.0572***

Statistical significance at the 10%, 5%, 1% level is indicated by *, **, ***, respectively.

We expect that the use of factoring is higher for firms in environments with weak and inefficient protection of creditors. Therefore, the signs on the coefficients of the variables creditor rights, corruption control and political stability should be negative and for the enforce debt variable should be positive.

Institutional environment variables. In addition to the legal factors, we also control for other indicators of the institutional environment of the country in which the firm operates that may originate differences in the demand and supply of factoring across European SMEs.

We measure the development of the banking sector using the variable private credit which is calculated as claims on the private sector by the deposit money banks to GDP in 2003. As a measure of the degree of the economic development we create the variable GDP capita which equals the natural logarithm of GDP in current prices in US dollars divided by the population in 2003. GDP growth is a variable that represents the growth of the economy and it is computed as the increase in GDP in current prices in US dollars between 2002 and 2003. Finally, as a proxy for the development of the information infrastructure in a country we include the variable credit information. This variable measures rules and practices affecting the coverage, scope and accessibility of credit information available through either a public credit registry or a private credit bureau in 2003. Credit information is computed as an index that ranges from 0 to 6, with higher values indicating the availability of more credit information to facilitate lending decision.

According to our arguments in the previous section we expect a positive sign on the coefficients of the economic variables, while for private credit and credit information we could expect either a positive or a negative sign.

Firm-specific characteristics. Several firm-specific variables have been included to control for firm heterogeneity in our sample. Firstly, we create three dummy variables to classify firms into micro, small or medium size in terms of the number of employees working in the firm[iii]. Size1 takes on the value one when the firm has less than 10 employees and zero otherwise, size2 is equal to one when the number of employees is between 10 and 49 and zero otherwise, and size3 takes on the value one when the number of employees is between 50 and 249 and zero otherwise.

According to Soufani (2001, 2002a) the smallest firms are not very attractive for factors since they cannot diversify the credit risk due to low levels of business activity. However, evidence provided by Summers and Wilson (2000) indicates that factoring is greater in small and growing firms because of the credit rationing problem that those firms have to deal with. As for larger firms, Smith and Schnucker (1994) states that they may have economies of scale in managing their accounts receivable, which make them less likely to use factoring. Therefore, we might expect either a positive or negative association between the use of factoring and firm size.

We define three dummy variables to reflect the age of the firm. Age1 takes on the value one when the firm has been in operation less than 2 years and zero otherwise, age2 takes on the value one when the firm has been in operation between 2 and 10 years and zero otherwise, and age3 takes on the value one when the firm has been in operation more than 10 years and zero otherwise. The evidence provided by Soufani (2002a, 2002b) shows that older firms are less likely to use factoring because they might have a consolidate position in the market with stronger relationships with their banks. In addition to that, he also finds that younger firms have more difficulties to get bank financing because they do not have the assets required to collateralize a loan. Therefore, we expect that the likelihood of using factoring is higher in younger firms.

According to Summers and Wilson (2000) and Soufani (2002a), firms experiencing financial difficulties and those that have exhausted their bank and trade credit financing capacity are more likely to use factoring. It seems that for constrained firms factoring arises as alternative to the more usual sources of financing. We control for the existence of financial restrictions creating the dummy variable constrained. This variable equals one when the firm needs an easier access to means of financing in order to assure its development and zero otherwise.

We also add seven industry dummies to control for the differences across industries in transparency, tangibility of assets and loan types (Berger and Black, 2011), or the existence of specialized investments and customized products lines (Smith and Schnucker, 1994). Each dummy variable takes on the value one when the firm belongs to one of the following sectors: extraction or production of raw materials, construction or civil engineering, production or manufacturing of goods, trade and distribution, transport, business services and, other services to consumers; and zero otherwise. In the interest of brevity, the industry dummies are not shown in the tables and their results are not discussed.

Results

Descriptive and univariate statistics

According to our general prediction there should be a negative association between the use of factoring and the quality and the enforcement of creditor rights, with firms operating in weak legal systems being more likely to use factoring. Analysis of table 4 confirms this association in Spain and France for example, but in other countries such as Lithuania and Poland we observe the opposite relationship. Spain and France have a weak legal system in terms of creditors rights protection (2 and 0 respectively), political stability (-0.04 and 0.18 respectively) and enforcement costs (0.141 and 0.117 respectively), and as expected SMEs in those countries are among those with the highest use of factoring in table 1 (54.86% and 33.56% respectively). Reduced control of corruption (0.26 and 0.38 respectively), high enforcement costs (0.141 and 0.087 respectively) and poor protection of creditor rights (2 and 1 respectively) also make Lithuania and Poland´s legal system unattractive for banks, but the percentage of firms using factoring in these countries is in the lowest quintile of table 1 (8.16% and 9.12% respectively).

Table 4. Country-Specific Characteristics.
This table reports means for each country variable by country. All variables are defined as in table 2, except for the variable GDP capita which is in levels instead of the log form.

Country	Enforce debt	Corruption control	Political stability	Creditor rights	Private credit	GDP growth	GDP capita	Credit information
Austria	0.098	2.10	0.95	3	1.04	0.224	31218	5
Belgium	0.062	1.38	0.84	2	0.73	0.233	30251	6
Cyprus		1.21	0.47		1.59	0.26	18256	
Czech Republic	0.096	0.44	0.85	3	0.29	0.215	9343	5
Denmark	0.066	2.45	1.17	3	1.47	0.223	39488	3
Estonia	0.106	0.79	0.86		0.45	0.344	7282	5
Finland	0.072	2.48	1.66	1	0.6	0.215	31522	4
France	0.117	1.34	0.18	0	0.85	0.234	28917	3
Germany	0.105	1.94	0.55	3	1.15	0.208	29384	6
Greece	0.127	0.42	0.47	1	0.59	0.32	17356	4
Hungary	0.081	0.60	1.11	1	0.37	0.258	8243	3
Ireland	0.211	1.49	1.33	1	1.08	0.29	39631	5
Italy	0.176	0.53	0.41	2	0.8	0.236	26172	6
Latvia	0.11	0.18	0.97	3	0.34	0.208	4775	4
Lithuania	0.141	0.26	1.01	2	0.18	0.313	5424	3
Luxembourg		1.71	1.44		0.99	0.291	65325	
Malta		0.98	1.54		1.03	0.192	12648	
The Netherlands	0.17	2.08	1.14	3	1.44	0.229	33356	5
Poland	0.087	0.38	0.54	1	0.27	0.094	5676	5
Portugal	0.175	1.13	1.27	1	1.38	0.224	15472	5
Slovakia	0.15	0.31	0.91	2	0.34	0.36	6151	3
Slovenia	0.163	0.86	1.15	3	0.4	0.26	14617	3
Spain	0.141	1.35	-0.04	2	1.05	0.288	21023	6
Sweden	0.059	2.23	1.32	1	0.99	0.254	35221	4
United Kingdom	0.157	2.07	0.25	4	1.36	0.159	31134	6

One reason for a reduced use of factoring in spite of having a weak legal environment might be the existence of underdeveloped economies, small banking systems and inefficient information infrastructures. In table 4 we observe that Lithuania has the second lowest GDP per capita (5424) and one of the worst information infrastructures (3), Poland has the lowest GDP growth (0.094) and the third smallest economy (5676), and both countries have the two smallest banking systems in our sample (0.18 and 0.27 respectively). Therefore, analyzing the association between legal environment and the use of factoring requires that in addition we control for these other institutional factors of the country where the firms operate that might also influence the demand and the supply of factoring.

Next we look at the use of factoring by firm specific characteristics ranked in descending order in table 5. Panel A shows that the largest firms in our sample (the medium-sized group) have the highest use of factoring (27.17%), while in panel B we find that firms in production and trade industries (26.39% and 22.63% respectively) are the most dependable on factoring financing. This confirms that we also need to control for firm heterogeneity in our sample when analyzing differences in the use of factoring across countries.

Table 5. Overview of the Use of Factoring by Firm Size and Industry.
This table reports frequency counts for the use of factoring by firm size and industry.

Panel A: Use of factoring by firm size		
Number employees	N	Factoring (%)
0-9	2388	17.55
10-49	1257	23.79
50-249	703	27.17
Total	4348	20.91
Panel B: Use of factoring by industry		
Industry	N	Factoring (%)
Production	830	26.39
Trade	1485	22.63
Extraction	71	21.13
Construction	530	20.57
Services to consumers	660	16.67
Services business	583	16.64
Transport	189	12.17
Total	4348	20.91

Regression analyses

In model 1, table 6, we first analyze the existence of cross-country differences in the use of factoring by regressing the variable factoring on twenty-four country dummies – we leave out the dummy for United Kingdom which is our base category – and firm-specific control variables.[iv] Firms in France, the Netherlands and Spain are more likely to use factoring than firms located in United Kingdom. On the contrary, firms in Austria, Belgium, Demark, Finland, Germany, Hungary, Latvia, Lithuania, Poland, Portugal and Sweden are less likely to use factoring.

Regarding to firm-specific control variables in model 1, table 6 shows a negative sign for the coefficient of the variable size1, indicating that the micro firms are less likely to

use factoring than the medium-sized firms. This result confirms the evidence provided by Summers and Wilson (2000) linking the use of factoring to small firms due to the fact that they might have more problems to access bank financing. Our results also show that SMEs declaring a need to easier access to financing are more likely to use factoring. The coefficient of the variable constrained is positive and statistically significant at the 1% level.

In model 2 of table 6, we drop the country dummy variables and include the legal origin variables. Our results indicate that the likelihood of using factoring is the lowest for firms in Scandinavian-civil-law and German-civil-law countries, and the highest for firms in French-civil-law countries. The coefficients on the legal origin dummies are significant at the one percent level. These results confirm our expectation that SMEs in countries with poor protection of creditor rights are more likely to use factoring, probably as an alternative to reduced availability of bank financing.

Now that we have established the existence of cross-country differences in the use of factoring, we drop the legal origin variables and include our set of legal environment variables in model 3, Table 6. Consistent with our expectations, we find a negative sign on the coefficients of creditor rights and political stability, and a positive coefficient for enforce debt. As predicted by Bakker et al. (2004) and Klapper (2006), the likelihood of using factoring increases with weaker legal environments. However, contrary to our prediction, the variable corruption control presents a positive sign. Lower levels of corruption might reduce the cost and increase the efficiency of collection activities and contingent claims on problematic accounts receivables, increasing the willingness of factors to buy accounts receivables.

Table 6. Logistic Regressions of Use of Factoring on Country and Firm-Level Variables.
The dependent variable is Factoring. All regressions include industry effects. Standards errors are robust to heterogeneity. Definitions and sources of the variables are provided in table 2.

	Logit (1)	**Logit (2)**	**Logit (3)**	**Logit (4)**	**Logit (5)**
Constant	-1.2207***	-1.3164***	-2.1109***	-4.1388***	-2.3169*
	(0.3474)	(0.3570)	(0.3701)	(1.0094)	(1.2567)
Legal origin dummies:					
French-civil-law		0.4002***			
		(0.1484)			
German-civil-law		-0.7438***			
		(0.1569)			
Scandinavian-civil-law		-0.9608***			
		(0.2070)			
Legal environment:					
Creditor rights			-0.1106**		-0.0723
			(0.0440)		(0.0554)
Enforce debt			10.3024***		10.0802***
			(1.1627)		(1.7019)
Corruption control			0.2623***		0.5542***
			(0.0718)		(0.1834)
Political stability			-0.8668***		-0.9992***
			(0.1012)		(0.1162)
Institutional environment:					
GDP capita				-0.0137	-0.0978
				(0.1094)	(0.1464)
GDP growth				6.4988***	4.5386***

				(0.8161)	(0.8661)
Private credit				0.4849***	-0.4051
				(0.1857)	(0.3192)
Credit information				0.1865***	0.0175
				(0.0403)	(0.0524)
Firm characteristics:					
Size1	-0.4960***	-0.5065***	-0.4912***	-0.4439***	-0.4962***
	(0.0959)	(0.0974)	(0.0976)	(0.0944)	(0.0982)
Size3	0.1466	0.1276	0.1441	0.1474	0.1436
	(0.1217)	(0.1213)	(0.1212)	(0.1187)	(0.1220)
Age1	-0.1046	0.0016	0.0310	-0.3696*	-0.0781
	(0.1940)	(0.1921)	(0.1883)	(0.1892)	(0.1916)
Age2	0.0582	0.1252	0.2177**	0.1431	0.1940*
	(0.1013)	(0.0949)	(0.0980)	(0.0947)	(0.1013)
Constrained	0.3122***	0.2835**	0.2057*	0.2584**	0.2290**
	(0.1149)	(0.1159)	(0.1154)	(0.1107)	(0.1161)
No. of firms	4025	3692	3692	3787	3692
Pseudo-R^2	0.1270	0.0685	0.0743	0.0485	0.0825

*, **, *** denote significance at the levels of 10%, 5% and 1%, respectively and the standard errors are in brackets.

In model 4, table 6, we analyze the association between our set of institutional variables and the use of factoring. The variable GDP growth is significant at the one percent level, and positively associated with the use of factoring. This result confirms the argument in Klapper (2006) that the use of factoring increases in economies which are growing at high rates. The positive and statistically significant coefficient of the variable private credit shows that the likelihood of using factoring is higher in economies with larger banking sectors. Therefore, factoring seems to be offered by banks as a complement to their other financial services. We also find that the variable credit information is positive and significant, corroborating that factors need developed information structures to reduce the risk of default payments.

Finally, table 6, model 5, shows the influence of the legal environment on the use of factoring while including as well the institutional variables to control for country heterogeneity. Results remain qualitative the same, except for the variable creditor rights that is not longer significant, indicating that the use of factoring increases with enforcement costs and political instability, whereas reduced corruption helps to expand factoring among SMEs.

Regarding to firm-specific characteristics, size1 and constrained remain unchanged along our five specifications, while the dummy variable age1 become significant in model 3 and 5, and age2 in model 4. The positive coefficient of age2 and the negative coefficient of age1 indicate that factoring is mainly used by middle age firms. It seems that on the one had very young firms are not attractive to factors because they have inadequate customer base and lack track record in sales and management, whereas on the other hand the oldest firms can turn to other sources of financing (Soufani 2001, 2002a).

Summary and conclusion

Using a sample of 4348 SMEs from 25 European countries, we examine the cross-country determinants of the use of factoring by firms. Previous studies link the use of factoring to

firm-specific characteristics while only one contribution shows that the development of the factoring industry is also driven by country factors. However, the influence of legal and institutional factors on the use of factoring for European SMEs is to our knowledge not available yet.

We assess the determinants of the use of factoring by examining the country's legal and institutional environment while controlling for firm-specific characteristics. Our results show that country-specific factors have an influence on the use of factoring by SMEs. An important finding is that the country legal origin is a key element, with those firms operating in French-civil-law countries having the highest likelihood of using factoring. This suggests that factoring is more likely to be used in weaker legal environments where creditors are not effectively protected. More specifically, we find that firms in countries with political instability and high enforcement costs are more likely to use factoring. One explanation is that in such environments bank financing could be more restricted and factoring might be an alternative source of financing for SMEs.

We also provide insight into the institutional factors that could foster the use of factoring by SMEs. We find that firms operating in growing economies are more likely to use factoring. Moreover, our results also show that reduced corruption seems to be important to extent the use of factoring, helping factors to achieve a higher efficiency in collection activities and contingent claims.

The evidence presented in this article could help policymakers to understand how the nation´s institutional environment affects the feasibility of deploying the different lending technologies which in turns determines the availability of funds to SMEs. This will support government policies that aim at promoting structures that help to supply funds to creditworthy transparent and opaque SMEs.

Future research could examine the direct relationship between factoring and bank financing and whether that association depends on the country where the firm operates. Researchers could also extend the empirical analyses in this paper to other alternative sources of financing such as leasing.

References

Bakker, M.H.R., Klapper, L. and Udell, G.F., 2004. Financing small and medium-size enterprises with factoring: Global growth and its potential in Eastern Europe. *Report, The World Bank, May*.

Beck, T., Demirgüç-Kunt, A., Laeven, L. and Maksimovic, V., 2006. The determinants of financing obstacles. *Journal of International Money and Finance*, 25, pp. 932-52.

Beck, T., Demirgüç-Kunt, A. and Maksimovic, V., 2008. Financing patterns around the world. Are small firms different? *Journal of Financial Economics*, 89, pp. 467-87.

Berger, A.N. and Black, L.K., 2011. Bank size, lending technologies, and small business finance. *Journal of Banking and Finance*, 35, pp. 724-35.

Berger, A.N. and Udell, G.F., 2006. A more complete conceptual framework for SME finance. *Journal of Banking and Finance*, 30(11), pp. 294-96.

Demirgüç-Kunt, A. and Maksimovic, V., 1998. Law, finance, and firm growth. *Journal of Finance*, 53(6), pp. 2107-37.

Djankov, S., McLiesh, C. and Shleifer, A., 2007. Private credit in 129 countries. *Journal of Financial Economics*, 84, pp. 299-329.

García-Teruel, P.J. and Martínez-Solano, P., 2010. Determinants of trade credit: A comparative study of European SMEs. *International Small Business Journal*, 28(3), pp. 215-33.

Giannetti, M., 2003. Do better institutions mitigate agency problems? Evidence from corporate finance choices. *Journal of Financial and Quantitative Analysis*, 38(1), pp. 185-212.

Hall, G.C., Hutchinson, P.J. and Michaelas, N., 2004. Determinants of the capital structures of European SMEs. *Journal of Business Finance and Accounting*, 31(5-6), pp. 711-28.

Hernández-Cánovas, G. and Koëter-Kant, J., 2010. The institutional environment and the number of bank relationships: An empirical analysis of European SMEs. *Small Business Economics*, 34(4), pp. 375-90.

Hernández-Cánovas, G. and Koëter-Kant, J., 2011. SME financing in Europe: Cross-country determinants of bank loan maturity. *International Small Business Journal*, 29(5), pp. 489-507.

Jappelli, T. and Pagano, M., 2001. Information sharing, lending and defaults: Cross-country evidence. *Journal of Banking and Finance*, 26(10), pp. 2023-54.

Jõeveer, K., 2013. What do we know about capital structure of small firms? *Small Business Economics*, 41(2), pp. 479-501.

Klapper, L., 2006. The role of factoring for financing small and medium enterprises. *Journal of Banking & Finance*, 30, pp. 3111-30.

La Porta, R., López-de-Silanes, F., Shleifer, A. and Vishny, R.W., 1997. Legal determinants of external finance. *Journal of Finance*, 52(3), pp. 1131-50.

La Porta, R., López-de-Silanes, F. and Shleifer, A., 1998. Law and finance. *Journal of Political Economy*, 106(6), pp. 1113-55.

Love, I. and Mylenko, N., 2003. Credit reporting and financing constraints. *World Bank Policy Research Working Paper* 3142 (October).

Smith, J.K. and Schnucker, C., 1994. An empirical examination of organizational structure: The economies of the factoring decision. *Journal of Corporate Finance*, 1, pp. 119-38.

Soufani, K., 2001. The role of factoring in financing UK SMEs: A supply side analysis. *Journal of Small Business and Enterprise Development*, 8(1), pp. 37-46.

Soufani, K., 2002a. On the determinants of factoring as a financing choice: Evidence from the UK. *Journal of Economics & Business*, 54, pp. 239-52.

Soufani, K., 2002b. The decision to finance account receivables: The factoring option. *Managerial and Decision Economics*, 23 pp. 21-32.

Sopranzetti, B.J., 1998. The Economics of Factoring Accounts Receivables. *Journal of Economics and Business*, 50, pp. 339-59.

Summers, B. and Wilson, N., 2000. Trade credit management and the decision to use factoring: An empirical study. *Journal of Business Finance & Accounting*, 27(1-2), pp. 37-68.

Notes

[i]. Data sources have been obtained by the survey carried out by the European Commission. The information about the fifteen Old Member States was obtained in September 2005, while the information about the ten New Member States was collected between April and May 2006.

[ii]. We use the same legal origin classification as in Djankov et al. (2007). Belgium, France, Greece, Italy, Lithuania, the Netherlands, Portugal, and Spain are under French-civil-law. Ireland and United Kingdom are under English-common-law. Austria, Czech Republic, Germany, Hungary, Latvia, Poland, Slovakia and Slovenia are under German-civil-law. Denmark, Finland and Sweden are under Scandinavian-civil-law. Cyprus, Estonia, Luxemburg and Malta are undefined and leave out of the analysis.

[iii]. We use the criteria of firm size defined by the European Union in the Commission Recommendation of 6th May 2003 (2003/361/CE).

[iv]. When analyzing the dummy variables, the base category is always the group of firms whose average use of factoring is the closest to the sample average: firms operating in United Kingdom for the country dummies, firms under English-common-law for the legal origin dummies, the micro firms for the size dummies, the oldest firms for the age dummies, and the extraction industry for the industry dummies.