






Finance and Financial Management Collection

John A. Doukas, *Editor*

Trade Credit and Financing Instruments

Lucia Gibilaro

BEP BUSINESS EXPERT PRESS

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Dedication

The best of me is because of you.

Abstract

Trade credit is extensively used in both domestic and international commercial transactions. Although it clearly supports growth, its significance is even greater for developed countries, where the market has recovered remarkably since the global financial crisis. The number and heterogeneity of motivations to trade credit justify the variability observed in the data on global trading, and the role of trade credit has become crucial in supply chain coordination. A range of diverse trade credit finance solutions are available and include products and services offered by financial intermediaries and market products, highlighting a very interesting set of intermediate solutions that have emerged as a result of new technologies utilized in financial services. For financiers trade credit is an attractive option, but an in-depth evaluation of the possibility of losses forms the basis of a deep understating of numerous sources that can create credit risk (default and dilution risk). This book offers managers a complete analysis of the various facets of commercial credit and presents an analysis of the various types of markets, instruments, and risks associated with trade credit in supply chains across the globe.

Keywords

Asset-based lending; capital requirements; concentration; corporate distress; credit risk; credit risk management; financial market; financing solution; international trade; relationship lending; supply chain; trade credit

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Introduction

The life of a business is inextricably tied to the origination of trade credit, a relationship that has withstood the test of time, since trade credit is now extensively used in both international and domestic transactions in developed and developing countries. Therefore, the financing of trade credit is still a requirement for enterprises and an important area for developing markets such as those who could wither and bounce back strongly from the 2008 global financial crisis. In light of the slim chances of trade credit becoming an outdated topic, the evolution of the environment in which trade credit can be utilized has been accompanied by the identification of trade credit's new roles due to its flexible nature. The evolution of technology has expanded the scope of trade credit financing, and, as a consequence, market dynamics are characterized by the emergence of new providers, customers, and products.

The range of solutions to finance trade credit is fairly diversified, ranging from offers by financial intermediaries to offers from new or developing markets; in this scenario, a very interesting set of intermediate solutions have come about because of the use of new technologies in financial services. Despite the regulatory barriers of credit markets at the global level, banks and financial intermediaries have been pressurized to enter into cooperative agreements with enterprise groups connected through either corporate control or business relationships (Global Supply Chain Finance Forum 2016).

Assuming brisk market demand for trade credit financing, it is very important to delve into the motivations of the interest of new providers. A distinctive role for financiers can be identified in the credit risk mitigation determined by trade credit, such that more recent financing solutions based on crowd-lending have enabled retail investors' investment in trade credits (Zhang et al. 2016). The recognition of the possibility of credit risk mitigation associated with trade credit for financiers requires a deeper understanding of credit risk sources, that is, default risk and credit risk, and the relationship between these two categories of risks. Consequently,

financiers faced obstacles in developing a full understanding of the underwritten risks in regards to the supplier–debtor relationship. Moreover, because by financing trade credit financiers can end up creating sustained exposure arising from preexisting supply relationships, it is crucial to understand through the vast amount of information available about the circumstances under which such concentrated exposures can threaten the stability of financing sources. The impact of such an understanding can be felt quite strongly, given the support trade credit extends to the economic growth of developing countries (Fisman and Love 2003) and the share of trade credit in the total assets of medium-sized enterprises in select sectors in developed countries (Carbo Valverde et al. 2016).

The findings presented in this book address risk mitigation for trade credit financiers in a global context. Chapter 1 examines the relevance of the topic by measuring different groups of countries' access to trade credit in global trade and later focuses on G7 countries, whose results are presented based on geographical area and type of industry. Focusing on European countries, the chapter analyzes the importance of trade credit based on the criteria of firm size. A multidimensional analysis of trade credit is then presented based on three categories: country, sector, and firm size. Trade credits are not uniform, and their ability to mitigate risk depends on the determinants of their origination. Chapter 2 thus presents a detailed review of both the theoretical and empirical literature on the motivations for recourse to trade credit. Starting with traditional theories based on economic sector and corporate characteristics, the chapter reveals a more recent role of trade credit in coordinating business relationships. The literature on the supporting the practice of extending trade credit to boost growth is then reviewed, and the chapter ends with a special discussion on trade credit during the global financial crisis.

Over the years, solutions to trade credit financing have evolved significantly, broadening the categories of potential financiers and determining their associated risk exposure. After presenting a taxonomy, Chapter 3 discusses in detail bank and market instruments and the implications of legal and operational characteristics for the effectiveness of risk mitigation through debtors' credit reimbursements.

After presenting an institutional and market analysis on trade credit, Chapter 4 takes the reader to a credit risk framework for understanding

the trade credit financing exposure at both the individual and portfolio levels. There are two perspectives that this chapter uses to help readers understand risk characteristics. The first one focuses on the dual nature of credit risk in the context of financing of supply chains; default risk and dilution risk are also analyzed, with a discussion on potential overlaps and where to look for information that can be used to evaluate such overlaps. The second perspective focuses on risk concentration, and the implications of a single-name and sectorial/geographic approaches in trade credit financing are discussed.

CHAPTER 1

Trade Credit around the Globe

Introduction

Trade credit originates from the development of business relationships, and new motivations for using trade credit have been discovered over time. The flexibility and up-to-date attributes of trade credit in addressing multifaceted needs emphasize its diversified nature. A uniform approach to the analysis would thus overlook the richness of the information that can be extracted from the segmented analysis of firms' recourse to trade credit. Such information is deemed particularly useful for trade credit financiers in appreciating the potential for growth and the selection of proper financing instruments in a changing environment.

This chapter presents an analysis of trade credit at the international level. First, since the assessment of trade credit in international transactions is still an issue due to the lack of availability of data, a long-term estimation has been obtained by identifying the contributions of different groups of countries that differ geographically as well as in terms of economic development (see Trade Credit around the World section). Since geography alone cannot sufficiently explain trade credit usage, further segmentation by industry is proposed for developed countries (see Industry Segmentation section). The diversification of motivations affecting firms' usage of trade credit justifies further analysis by firm type for a select group of European countries (see Segmentation by Firm Type section). Last, a multidimensional analysis simultaneously examines geographical, sectorial, and firm-type categories in the usage of trade credit (see Synthesis: Multidimensional Segmentation section). Conclusions section concludes the chapter.

Trade Credit around the World

One way to develop interfirm relationships is through trade credit, that is, client's delaying payment for goods purchased from and services provided by vendors in well-established trade relationships. Motivations for using trade credit are multifaceted (see Chapter 2); it is therefore a persistent and global phenomenon in financial transactions. Growing firms invest in trade credit to develop interfirm relationships (Summers and Wilson 2003) in both domestic and international trade. A moderately in-depth analysis of trade credit must be conducted at the global level because national standards in collecting data are not homogeneous and the need for greater improvements in this area has also been expressed at the international level (Development Working Group 2011).

The degree to which trade credit supports international trade has been extensively discussed and has garnered distinct attention, particularly since the 2008 global financial crisis, as characterized by a correlated drop in trade finance and trade at the peak of the global downturn (Asmundson et al. 2011), showing that shortages of trade credit and trade finance services can affect international trade growth (International Chamber of Commerce, or ICC 2016). The measurement of such gaps, however, has been difficult due to definition issues. Trade finance assumes various financial obligations, with different degrees of risk mitigation and lending involved in facilitating the movement of merchandise between importer and exporter and vice versa (Baft-Ifsa 2011). Therefore, it encompasses both traditional bank-intermediated financial instruments and direct interfirm loans (Amiti and Weinstein 2011).

Recent estimates show that more than the half of the volume of international trade finance is supported by trade credit, and bank-intermediated trade finance services support 20 to 40 percent of international trade (Committee on the Global Financial System 2014). In light of relevant changes in time series on trade credit published by the Task Force on Finance Statistics (TFFS 2016), a reliable estimation of trade credit in international trade has used data on short-term trade credit insurance[1]

[1]The Berne Union's members represent over 11 percent of such business and, following integration with the Prague Club, the represented countries stand for 90 percent of the world's population (Berne Union 2016).

provided by Bern Union (Auboin and Engemann 2014). Specifically, the Berne Union collects quarterly data on short-term credit limits[2] by destination country. Therefore, the ratio of the credit limit to the amount of imported goods and services provided by the World Trade Organization indicates the importance of the extension of trade credit to international trade for a given country. At the global level, trade credit accounted for an average of 22 percent of international trade during the past decade, with modest variability since the global financial crisis and a current upward trend (ICC 2016). The patterns of the different geographical areas are correlated with global patterns, even though Europe and Central Asia, the Middle East and North Africa, and Latin America and the Caribbean appear to rely more on trade credit in international transactions compared with other geographical areas (Figure 1.1). In particular, Western Europe plays a leading role in trade finance markets, whereas China does not, and, at lesser levels, North America's contribution to international trade credit has recently started to grow again (ICC 2016). Among the reasons for the increase in the value of trade finance, financiers predominantly point out the increase of trade activities (International Monetary Fund, or IMF, and Baft-Ifsta 2011).

Income analysis shows that higher-income countries rely more on trade credit in international trade compared with middle- and low-income countries, even though all groups show growing reliance since the drop during the global financial crisis, with remarkable acceleration in the first quarters of the previous year in the analyzed timeframe (Figure 1.2). Consistent with the increase in the importance of the role of trade finance in facilitating activities in emerging Asian countries (IMF and Baft-Ifsta 2010) and supporting poor trade (ICC 2016), recent years show low- and lower-middle income groups overtaking the upper-middle income group (ICC 2016). Therefore, trade credit contributes to development.

The role of trade credit is crucial in supporting international trade, but it is even more important in supporting domestic transactions as has

[2]Financial intermediaries can mitigate the risk of nonpayment by other firms, and short-term insured trade credit can thus encompass insurance on bank-intermediated trade finance.

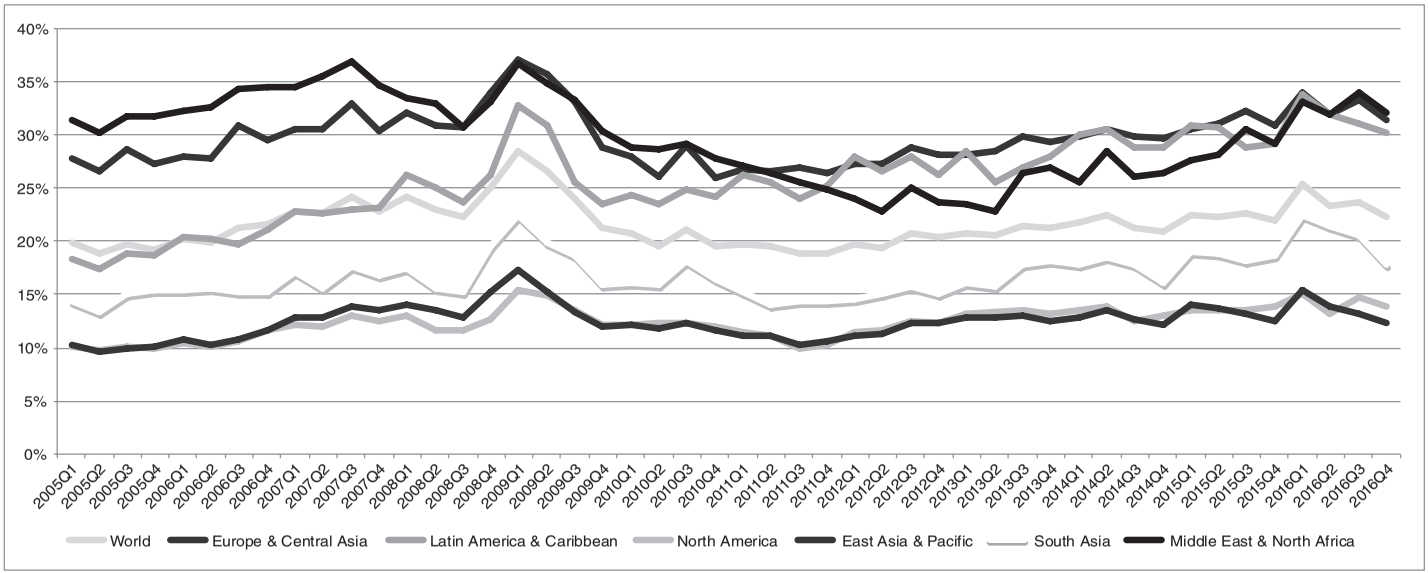


Figure 1.1 Trade credit in international trade

Source: Data from the Berne Union, the World Bank, and the World Trade Organization processed by the author.

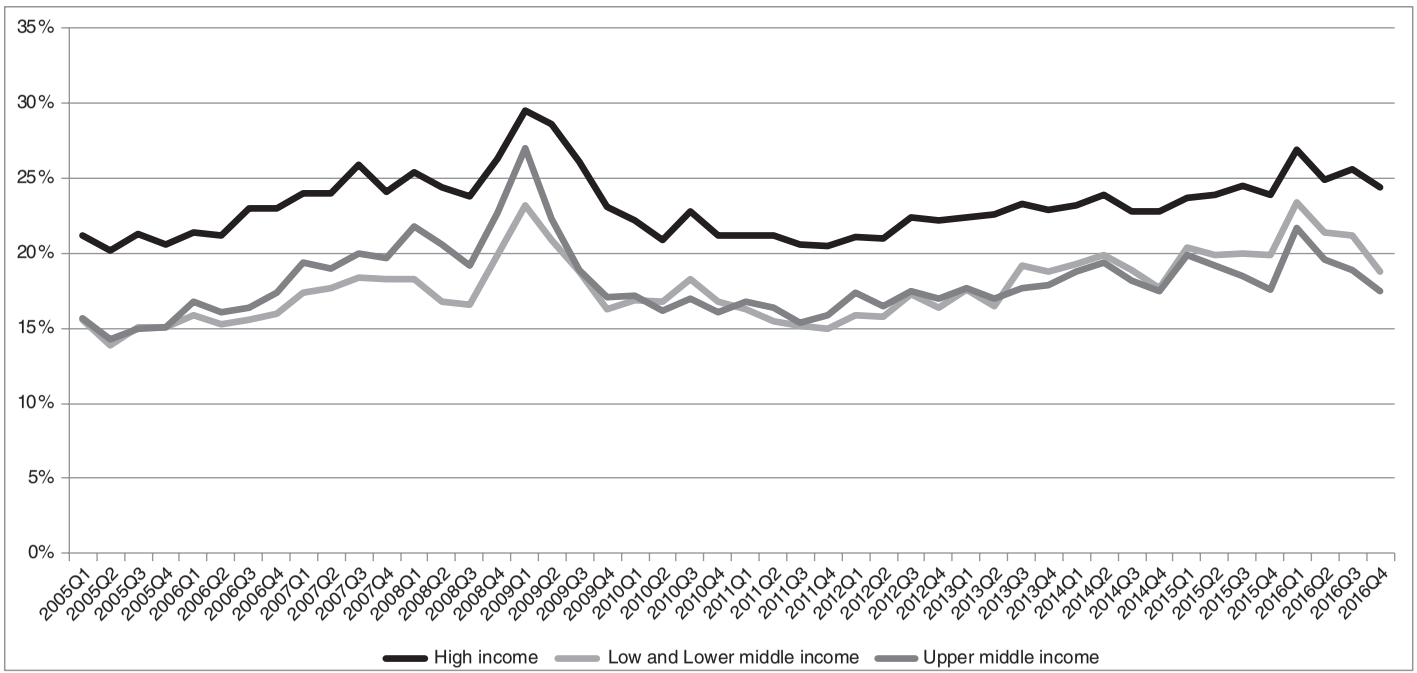


Figure 1.2 Trade credit in international trade and country income levels

Source: Data from the Berne Union, the World Bank, and the World Trade Organization, processed by the author.

been happening in developed countries. Trade credit ranks among the most important sources in the financial structure of firms in G7 countries (Rajan and Zingales 1995; Fitzpatrick and Lien 2013), and a positive net trade credit position supports investments (Beck et al. 2008), despite relevant variability both within and between countries (Seifert et al. 2013). Figure 1.3 shows the share of trade credit in total assets in the G7 countries between 2007 and 2015. European countries have a higher contribution of trade credit in total assets; moreover, the incidence of trade credit appears to be cyclical, even though it smoothens out after 2011. Anglo-Saxon countries and Japan are characterized by a modest share of trade credit in total assets, and, following the global financial crisis, the variability of the incidence rate appears moderate. Overall, Italy shows the highest contribution of trade credit to total assets and, with respect to other continental European countries, the gap is increasing over time.

A comparative analysis of year-end trade credit to yearly total sales (Figure 1.4) shows a moderately variable pattern for all G7 countries, even though changes in geographical rankings can be observed. Whereas Italy and France are first in terms of trade credit support to total sales, Canada and the United States rank above the other European countries. Notwithstanding the potential importance of year-end accounting transactions, the empirical findings can be interpreted in light of differences in the determinants of trade credit extension and the average duration of delayed payments (Petersen and Rajan 1997).

Industry Segmentation

Because suppliers lend inputs, trade credit origination and terms tend to vary by industry (Bukart and Ellingsen 2004). Therefore, the patterns are not necessarily clustered by geography. Moreover, even though the long-run averages of the share of trade credit in total assets are comparable across sectors, their variability is not.[3] In the manufacturing sector,

[3]Due to the unavailability of comparable segmented data, the analysis by sector excludes the United Kingdom.

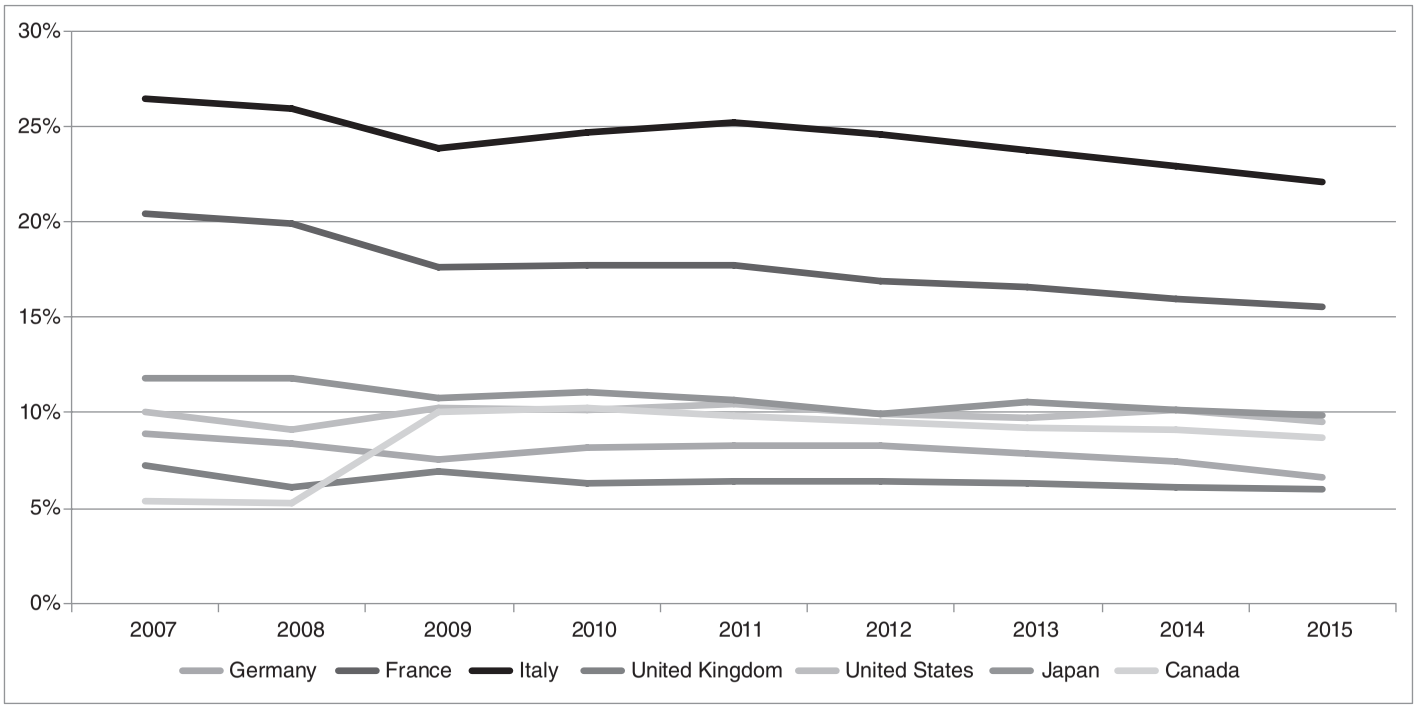


Figure 1.3 Trade credit in total assets in the G7 countries

Source: Data from Eurostat, Statistics Canada, the Statistics Bureau of Japan, the U.S. Census Bureau, processed by the author.

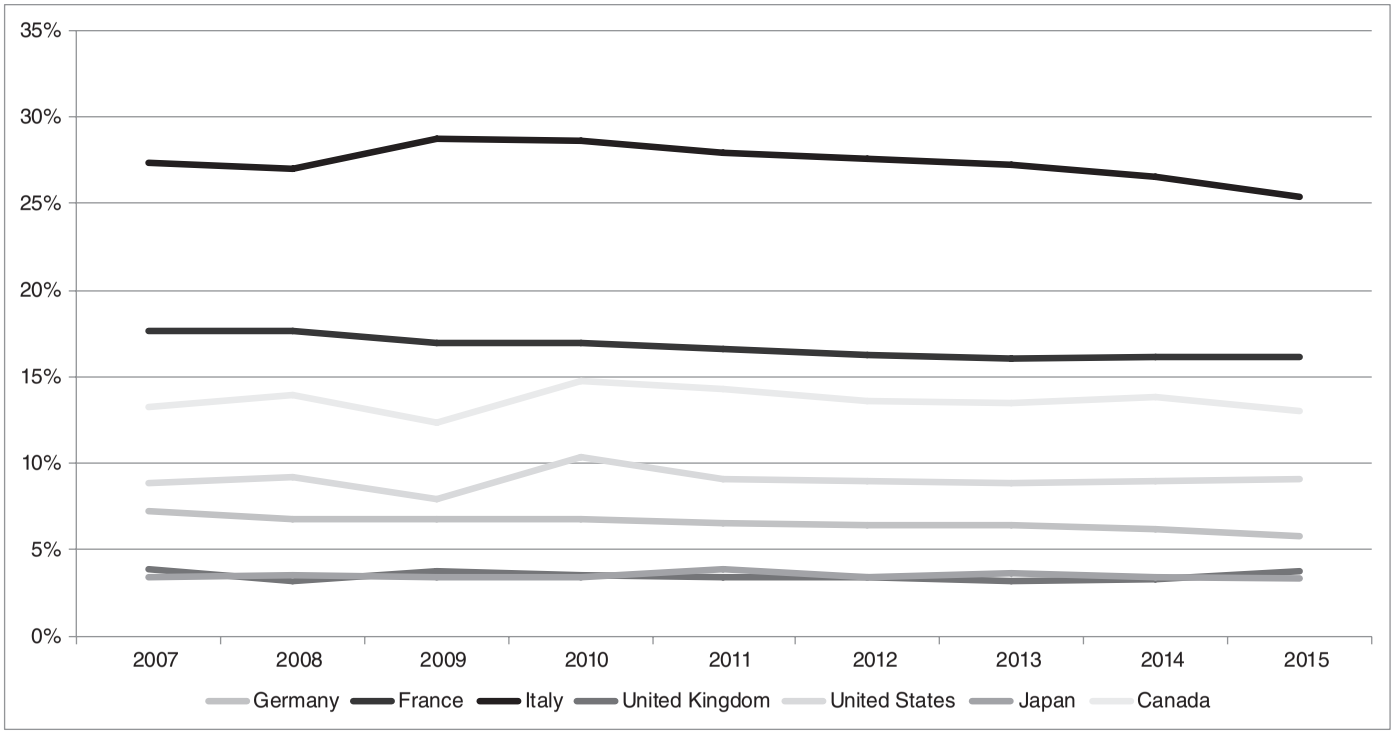


Figure 1.4 Trade credit in sales in the G7 countries

Source: Data from Eurostat, Bach, the Office of National Statistics, Statistics Canada, the Statistics Bureau of Japan, and the U.S. Census Bureau, processed by the author.

the contribution of trade credit to total assets is mainly decreasing, and, at the same time, the differences between countries are also decreasing over time (Figure 1.5). Although evidence for Italy and France is consistent with the aggregate data (Figure 1.3), Germany exhibits a relevant negative gap with respect to the other European countries, which can be explained by the shorter duration of trade credit extension (Atradius 2017). Japan is characterized by the most cyclical pattern, whereas the trade credit of Italian manufacturing firms represents roughly one-third of investments.

Compared with the manufacturing sector, trade credit shows remarkable differences between the wholesale and retail trade sectors (Figure 1.6). First, the trends among countries are not positively correlated; second, the ranking among countries alternates somewhat. Germany has the greatest relevance among the sample countries, whereas the evidence is exceptionally scant for Italy and characterized by an obvious cyclical pattern.

In the service sector, trade credit to total assets is greatest for Italy and lowest for Japan. Germany exhibits the strongest pattern of increase, particularly since the global financial crisis (Figure 1.7).

Analysis of trade credit turnover for the manufacturing sector (Figure 1.8) shows that, in Italy, sales benefit from the highest support, with the most delayed payments, even though the trend has been decreasing since 2011. On the contrary, support of trade credit in sales is the lowest for Germany and has hardly ever changed over time. Japan is characterized by a cyclical trend, whereas Canada, France, and the United States show an increasing trend in trade credit.

Overall, support of delayed payments for sales in the wholesale and retail trade sectors is the lowest among the industrial sectors, not exceeding 20 percent, even for Italy (Figure 1.9). In terms of trends, Japan's is cyclical, and Canada's is upward.

Overall, the service sector (Figure 1.10) in Italy contributes the most delayed payments to support sales, over 35 percent. Moreover, the gap between Italy and the second-ranked country, France, exceeds 15 percent, even though it is decreasing during the past years of the analyzed

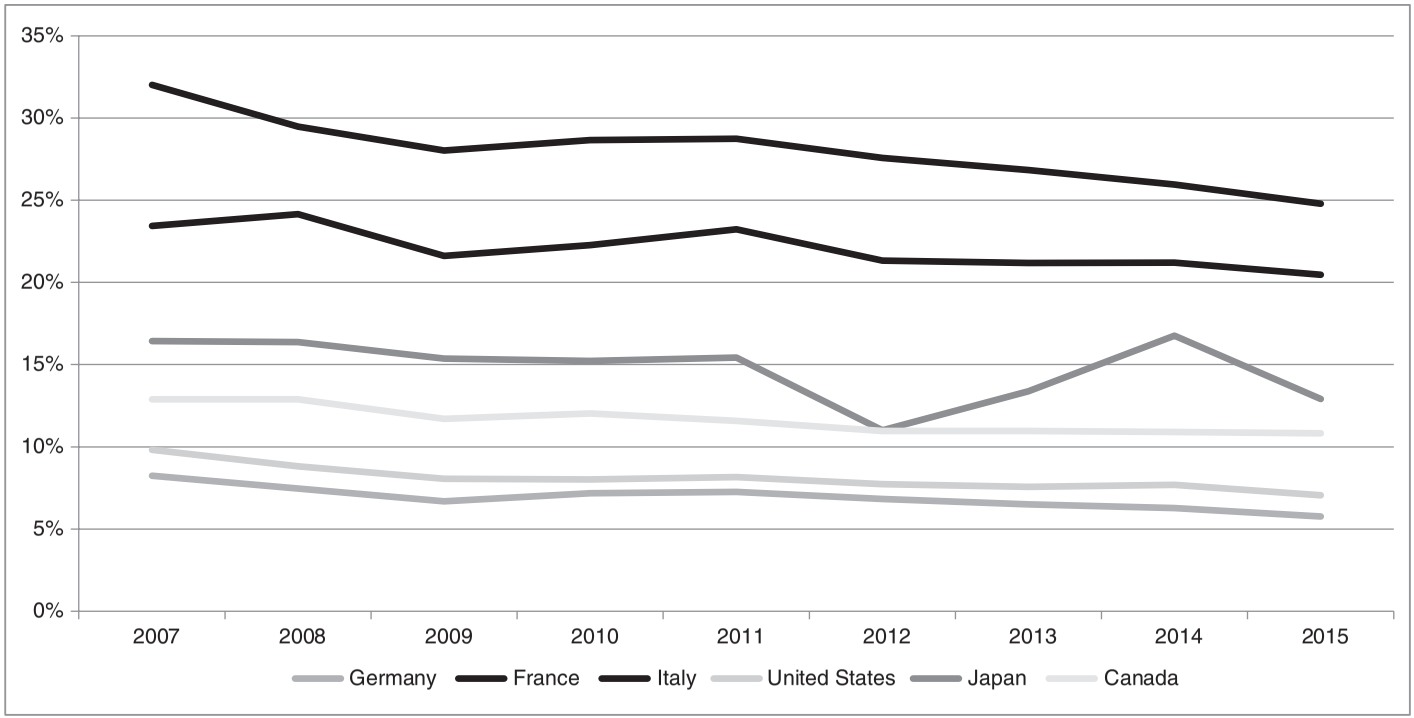


Figure 1.5 Trade credit to total assets in the manufacturing sector in the G7 countries

Source: Data from Bach, Statistics Canada, the Statistics Bureau of Japan, and the U.S. Census Bureau, processed by the author.

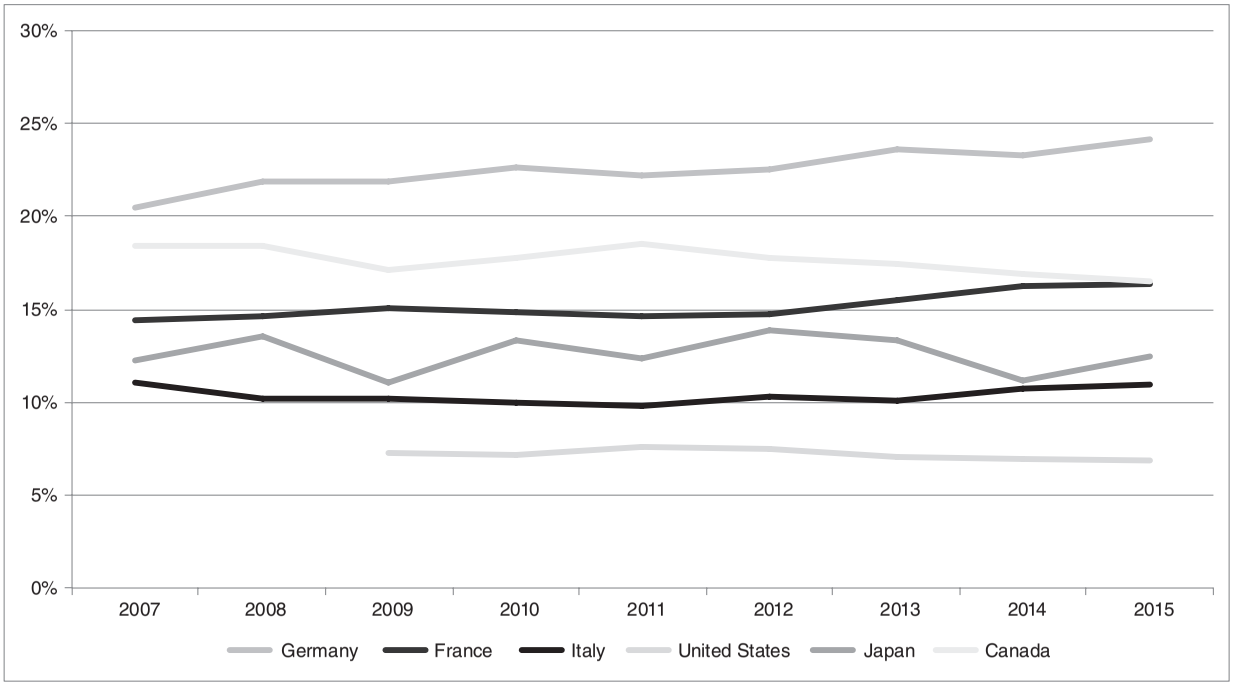


Figure 1.6 Trade credit to total assets in the wholesale and retail trade sectors in the G7 countries

Note: Data for the United States are available starting from 2009.

Source: Data from Bach, Statistics Canada, the Statistics Bureau of Japan, and the U.S. Census Bureau, processed by the author.

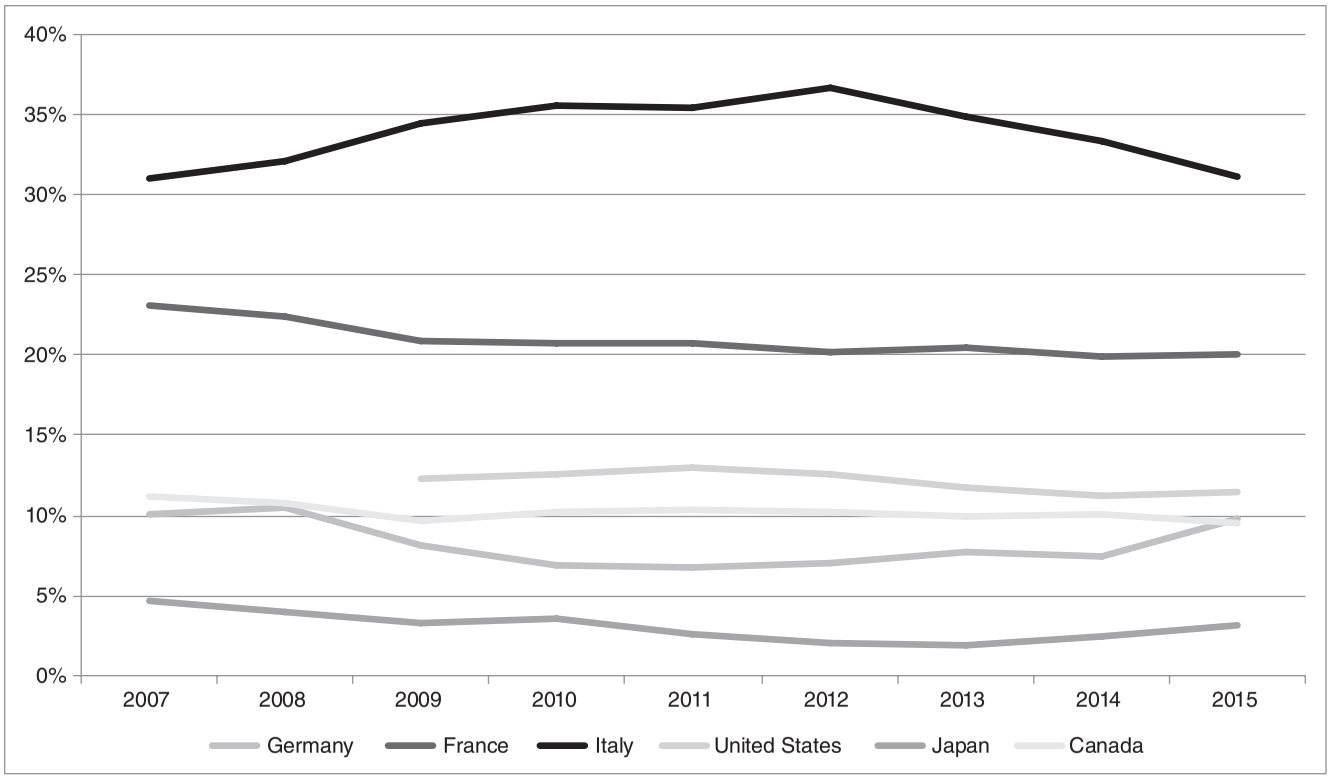


Figure 1.7 Trade credit in total assets in the service sector in the G7 countries

Note: Data for the United States are available starting from 2009.

Source: Data from Bach, Statistics Canada, the Statistics Bureau of Japan, and the U.S. Census Bureau, processed by the author.

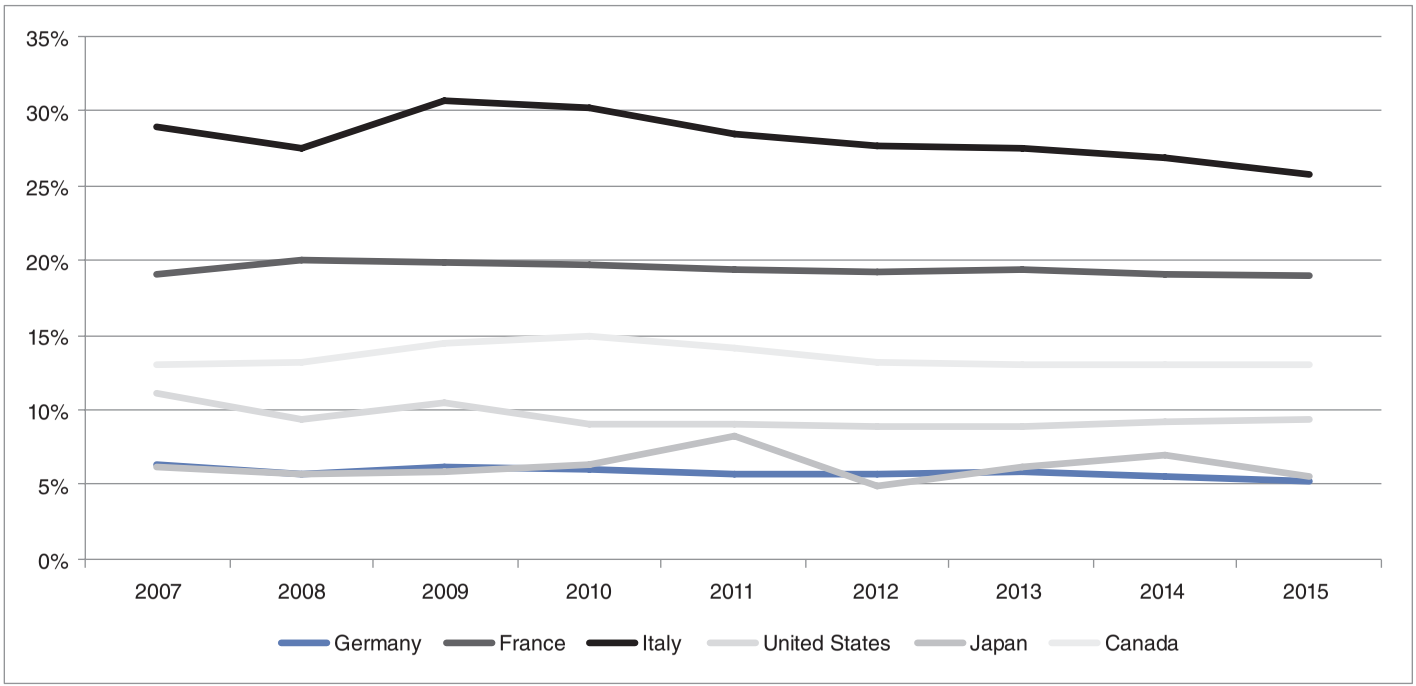


Figure 1.8 Trade credit in sales in the manufacturing sector in the G7 countries

Source: Data from Bach, Statistics Canada, the Statistics Bureau of Japan, and the U.S. Census Bureau, processed by the author.

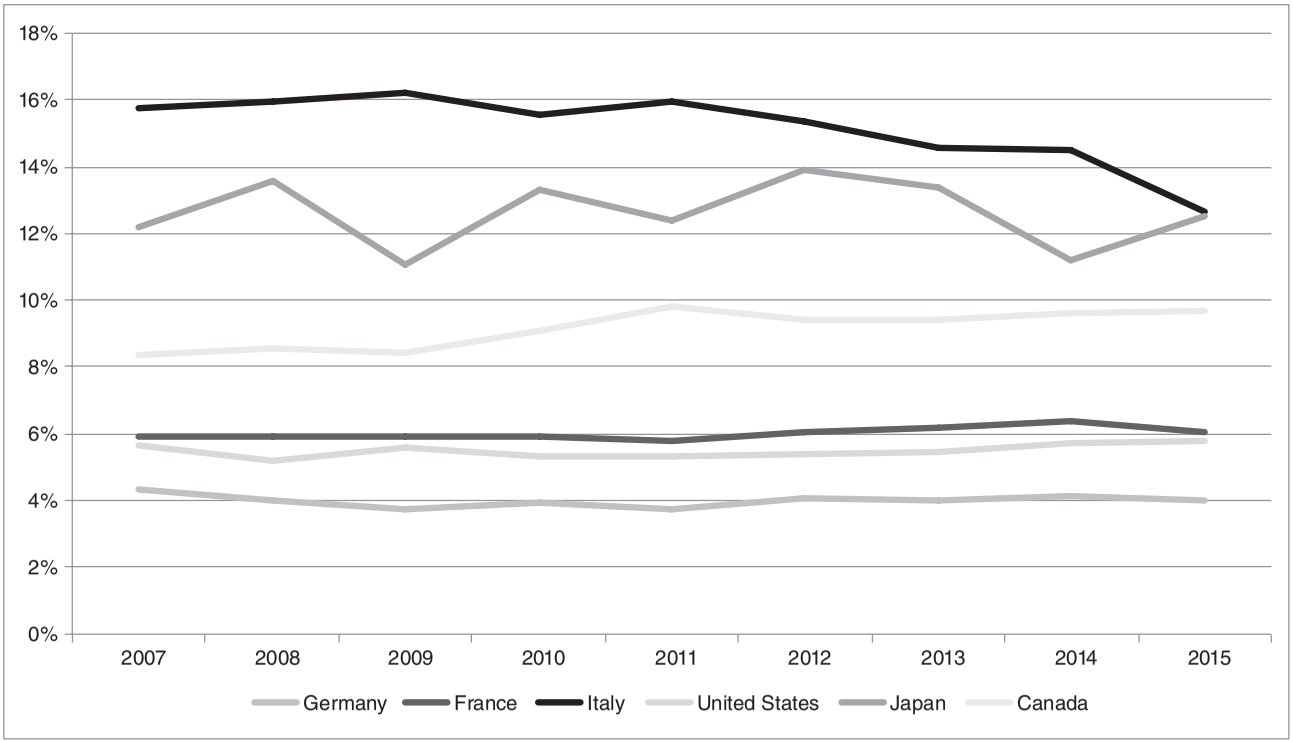


Figure 1.9 Trade credit in sales in the wholesale and retail trade sector in the G7 countries

Source: Data from Bach, Statistics Canada, the Statistics Bureau of Japan, and the U.S. Census Bureau, processed by the author.

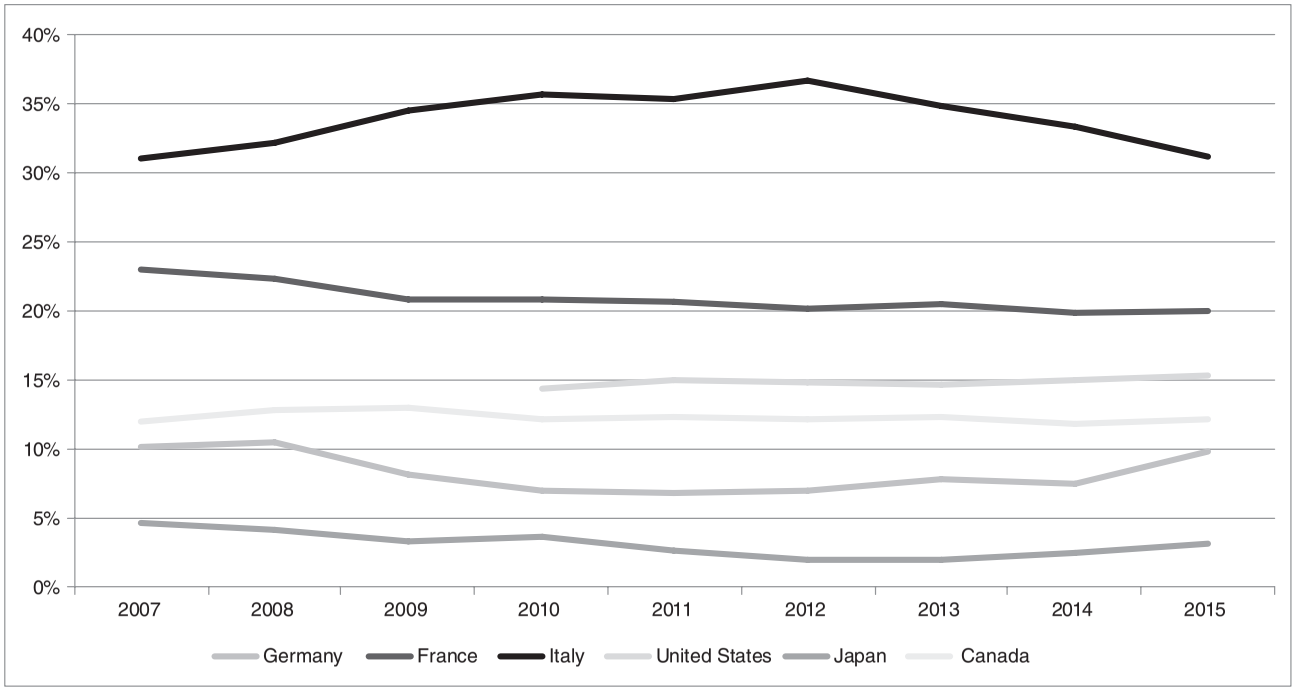


Figure 1.10 Trade credit in sales in the service sector in the G7 countries

Note: Data for the United States are available starting from 2009.

Source: Data from Bach, Statistics Canada, the Statistics Bureau of Japan, and the U.S. Census Bureau, processed by the author.

timeframe. France, Canada, and the United States are characterized by a stable trend, whereas Japan's and Germany's trends show modest growth for the previous years.

Segmentation by Firm Type

Cross-border analysis of the usage of trade credit by industry type has already shown that geographical proximity does not ensure similar dynamics. Inside a specific industry, the trade credit dynamics are affected by the type of firm. Available data for European small, medium-sized, and large enterprises[4] show that size can affect the contribution of trade credit. Overall, the trade credit for small firms appears somewhat rigid in the long run and shows a slight decrease for the past years (Figure 1.11). Within the time frame of analysis, since the global financial crisis, the gap between national patterns diminishes. The average gap between Italy and Germany exceeds 20 percent, with a much smaller gap between Italy and France.

Medium-sized firms exhibit the highest incidence of trade credit to total assets compared with firms of other sizes (Figure 1.12). Overall, the patterns of the relative gaps among countries are consistent with those of small firms: Even though France continues to rank second, the difference in the ratio of trade credit to total assets is characterized by a parallel downward shift. Therefore, medium-sized Italian firms have the highest proportion of trade credit to total assets.

A cyclical pattern of trade credit to total assets can be observed among large firms (Figure 1.13). Around the global financial crisis, a general reduction in trade credit is observed, especially for Italy and France. Overall, the ratio of trade credit to total assets for large firms is comparable with that of small firms for France and Germany and

[4]According to the Bach categorization methodology, size is defined as follows: small if the turnover is less than 10 million euros, medium if the turnover is equal to or greater than 10 million euros but less than 50 million euros, and large if the turnover is equal or greater than 50 million euros. See Bach, Methodology and Warnings, www.bach.banque-france.fr (6/1/2017).

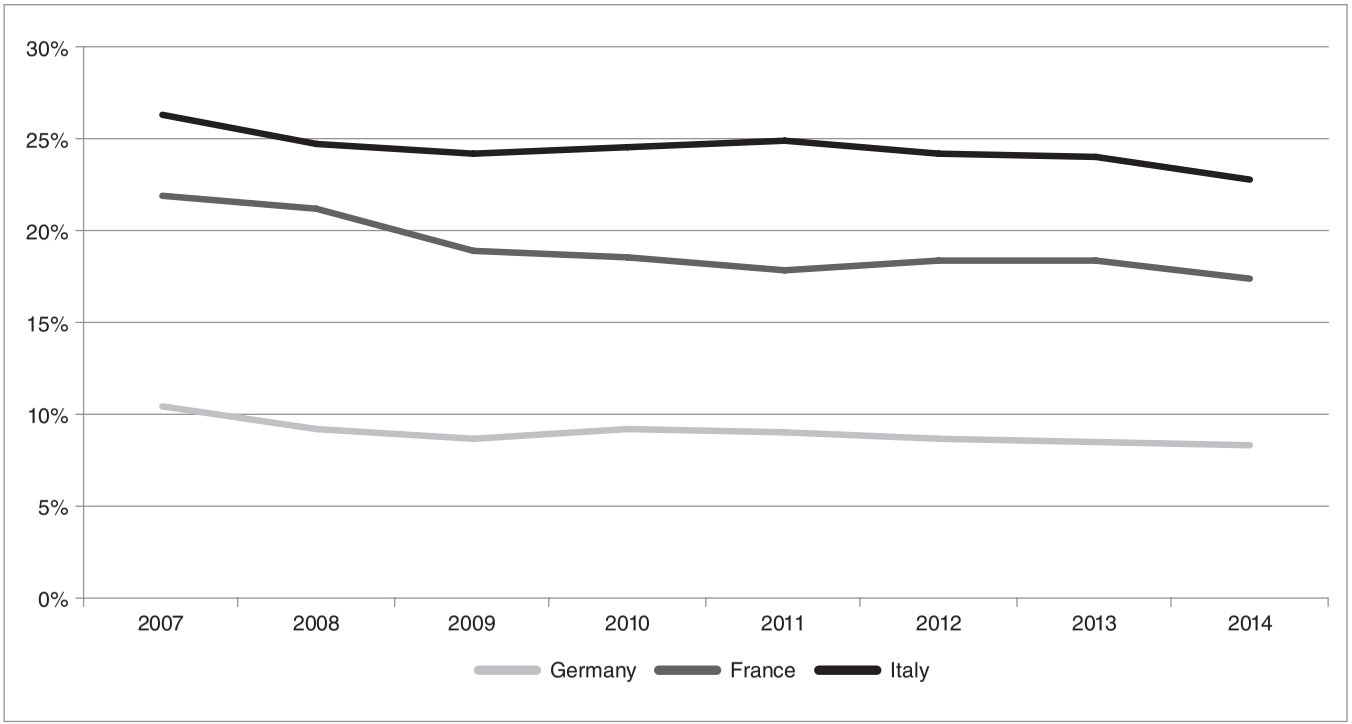


Figure 1.11 Trade credit in total assets for small firms

Source: Data from Bach, processed by the author.

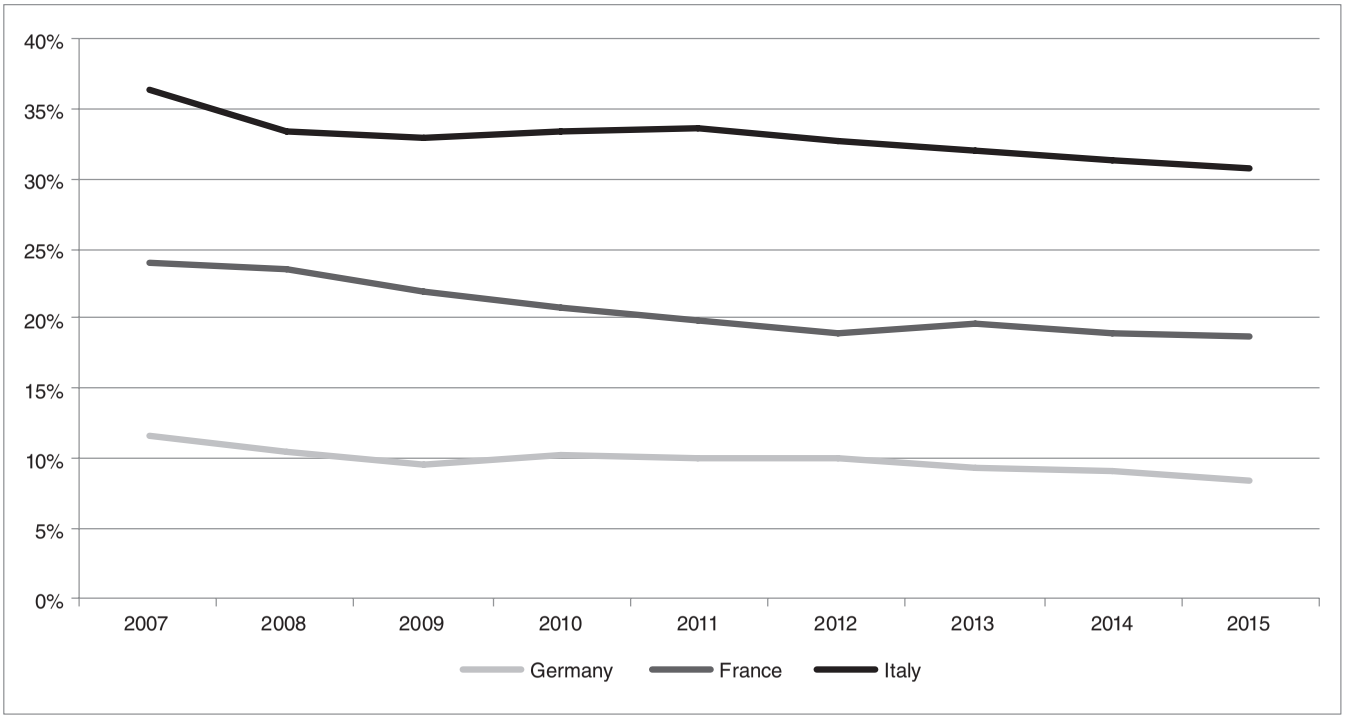


Figure 1.12 Trade credit in total assets for medium-sized firms

Source: Data from Bach, processed by the author.

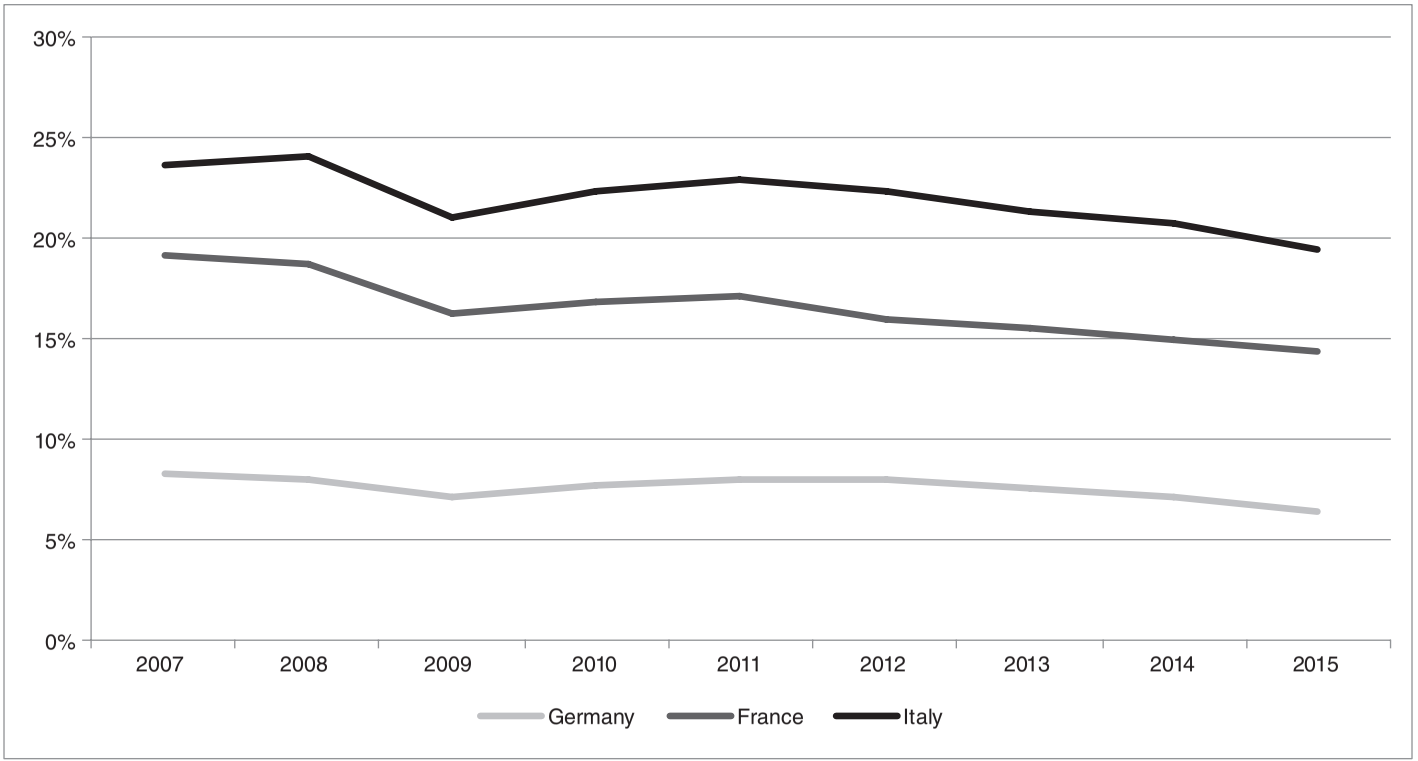


Figure 1.13 Trade credit in total assets for large firms

Source: Data from Bach, processed by the author.

larger in the case of medium-sized firms. National patterns, however, appear to be more correlated to each other than in the case of small firms.

An analysis of the support of delayed payments for sales shows a somewhat declining correlation between France and Germany (Figure 1.14). The more distinct pattern observed for Italy can be interpreted in light of the reduction of sales, particularly after 2008; nonetheless, the simultaneous decline of the ratio of trade credit to total assets prevents any increase in the average duration of encashment after 2013.

The support of trade credit to medium firms is comparable to the support of trade credit to small firms. Greater differences are observed for Italy, where, after an increase, a faster decrease has occurred, which can be explained by a rapid economic recovery characterized by lower incidence of trade credit.

The country affects the ability of trade credit to support sales to large firms. Whereas Germany has no detectable trend and France shows variability around 2008, Italy exhibits a growing trend correlated with that of other size categorizations (Figure 1.16).

Synthesis: Multidimensional Segmentation

The analysis in the previous section has shown that the usage of trade credit is affected by national, sectorial, and firm type characteristics; therefore, a synthesis can be obtained through a multidimensional approach.

Although Italy's top rank in the ratio of trade credit to total assets is confirmed, distinctive behaviors emerge. In the manufacturing sector, trade credit peaks between 2007 and 2009 for all the countries considered, consistent with the hypothesis that trade credit is positively associated with growth (Ferrando and Mulier 2013). The growth of trade credit to total assets is particularly relevant to small and medium-sized firms in all countries except Germany, whereas other countries are much more aligned with this aspect for large firms. Analysis of different countries

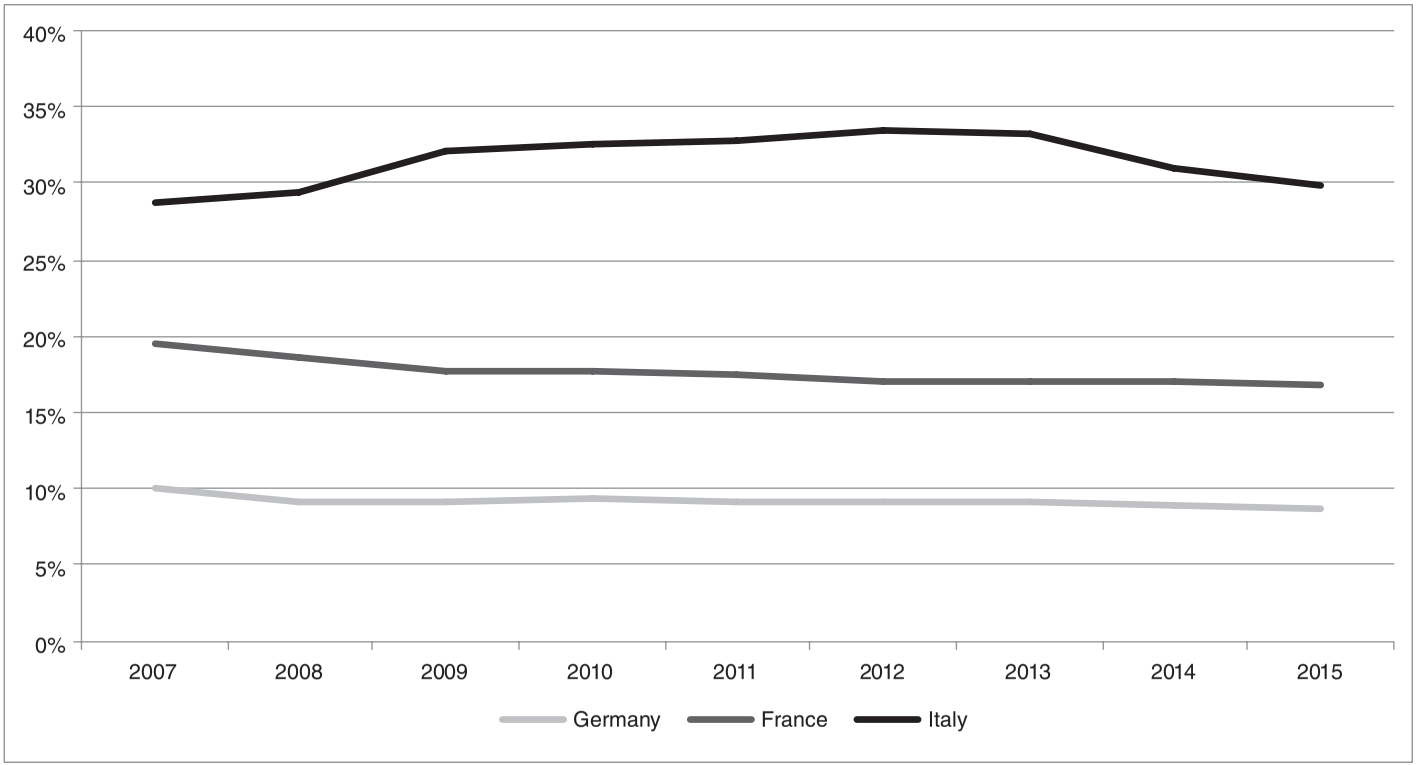


Figure 1.14 Trade credit in sales for small firms

Source: Data from Bach, processed by the author.

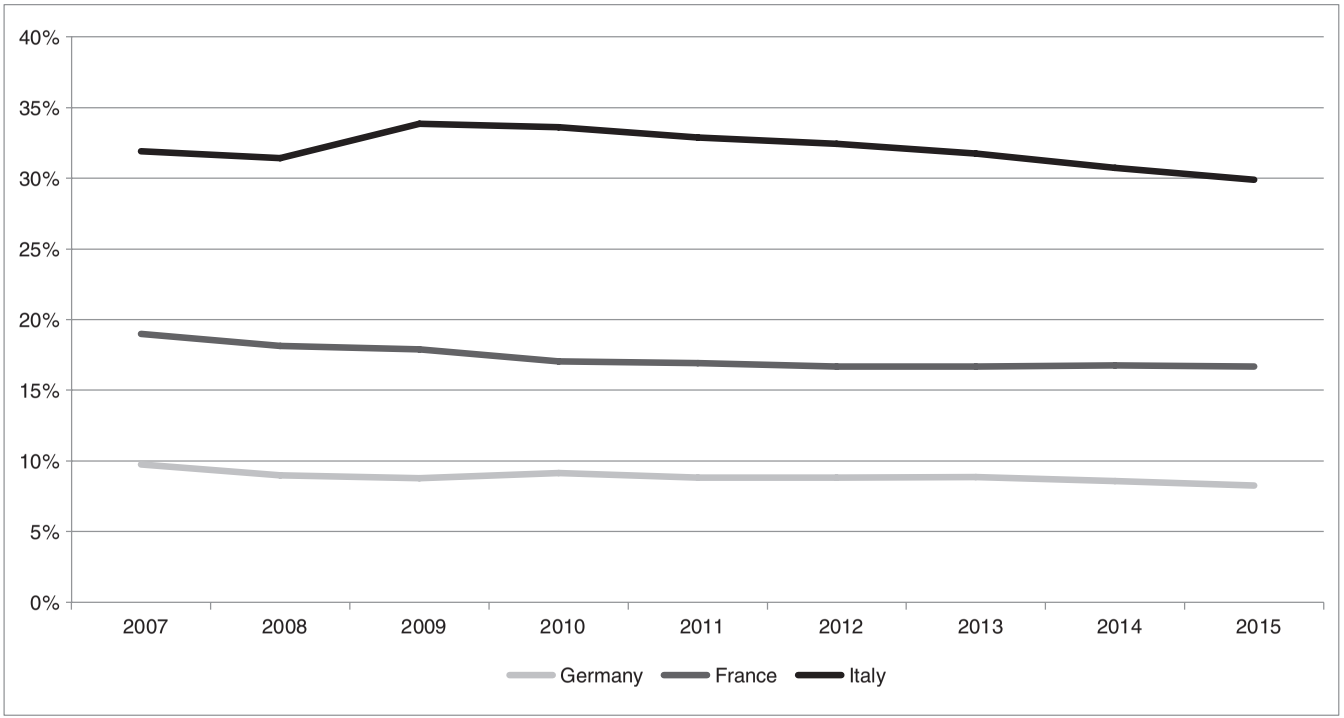


Figure 1.15 Trade credit in sales for medium-sized firms

Source: Data from Bach, processed by the author.

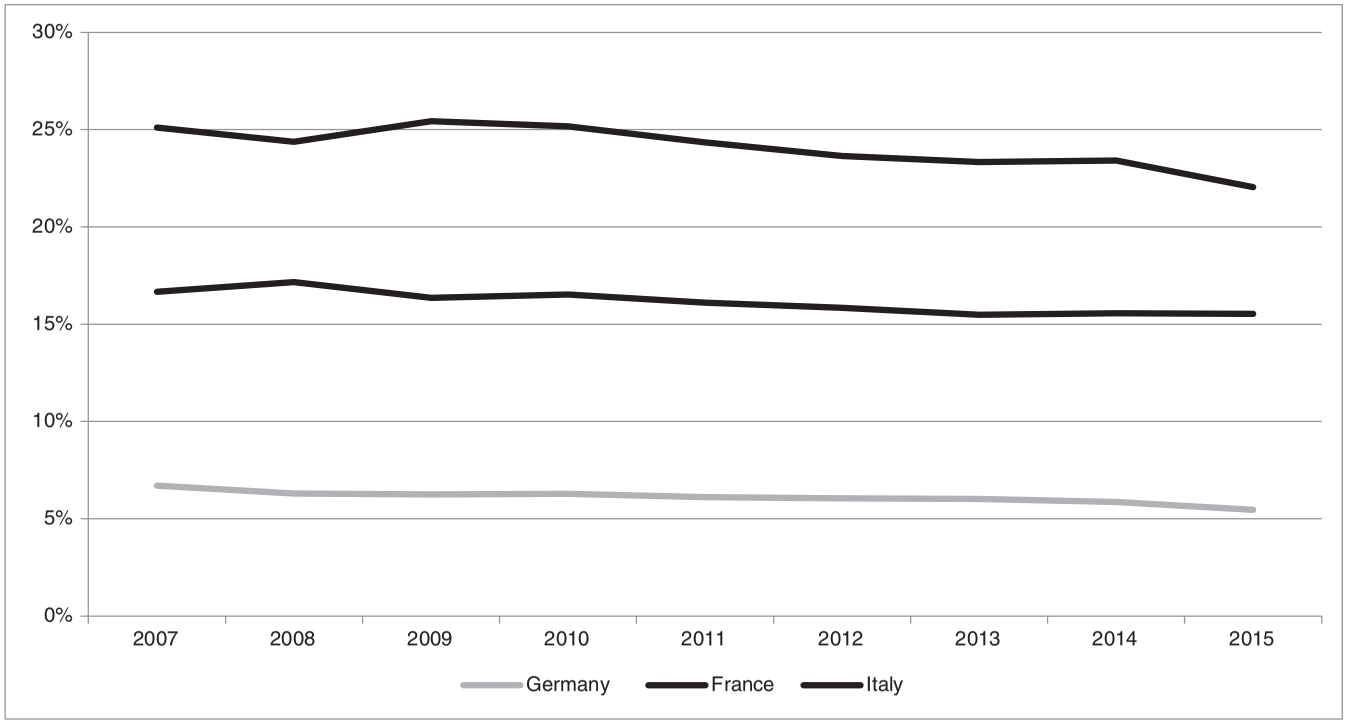


Figure 1.16 Trade credit in sales for large firms

Source: Data from Bach, processed by the author.

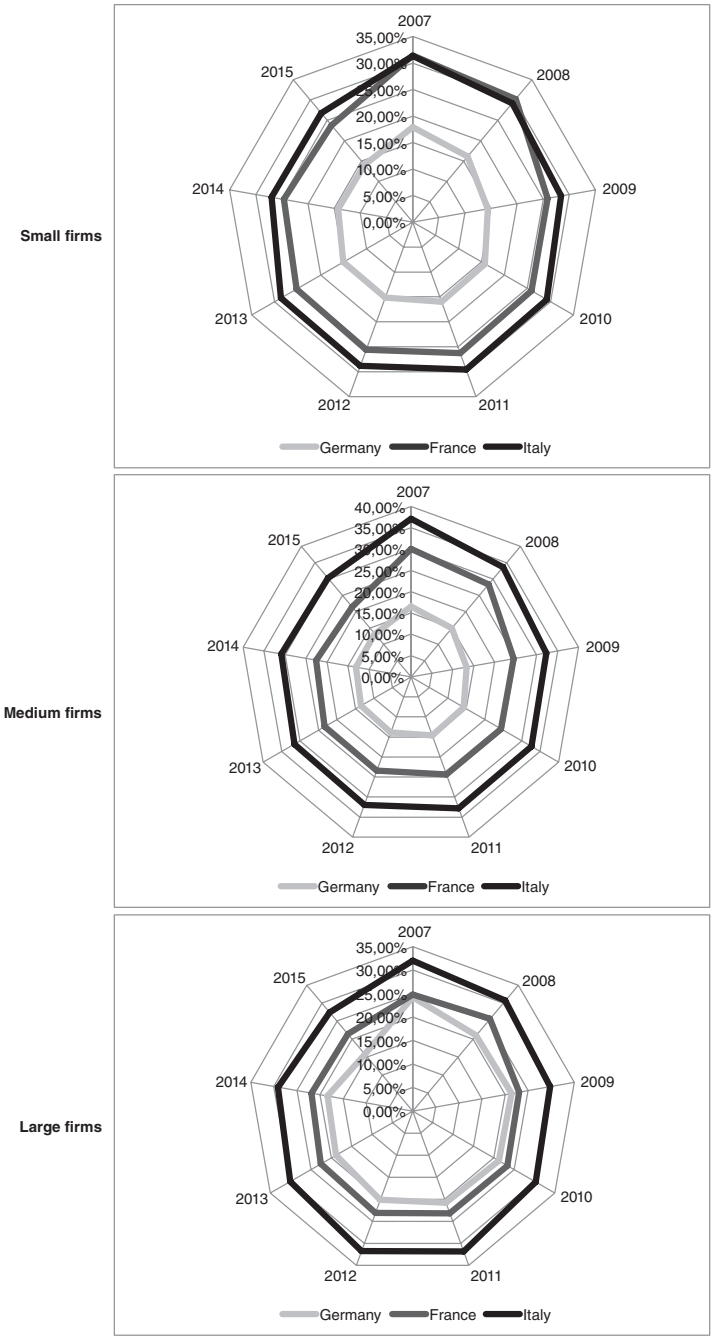


Figure 1.17 Trade credit in total assets in the manufacturing sector

Source: Data from Bach, processed by the author.

inside the dimensional clusters shows that small French firms are similar to small Italian firms, whereas large French firms are similar to large German firms.

Evidence for wholesale and retail trade (Figure 1.18) shows a weaker influence of the global financial crisis between 2007 and 2008 for small firms and an insignificant impact on medium-sized and large firms. The similarity between small French and Italian firms is confirmed, whereas medium-sized and large French and German firms appear largely similar, even though the variability of large German firms seems more pronounced.

The geographic variable is the most salient in the case of the service sector, with the distance between countries increasing with firm size (Figure 1.19). More specifically, trade credit exhibits a cyclical behavior for medium-sized and large firms in France and Germany, whereas a stable pattern prevails among firms in Italy.

The support of delayed payments for sales differs by sector, size, and country. In the manufacturing sector (Figure 1.20), although the relevance is comparable for small and medium-sized firms for all the sample countries, the support for large Italian and French firms is much greater than that for German firms. Moreover, the data show stability over time.

The support of delayed payments for sales in the wholesale and retail trade sectors is greater than in the manufacturing sector for small and medium-sized European firms (Figure 1.21). Nonetheless, a significant gap exists between countries, indirectly decreasing with firm size. In particular, the gaps separating Italy from France and Germany are some of the largest among various sectors for small and medium-sized firms. Last, modest variability arises only for small and medium-sized Italian firms.

The service sector shows intermediate levels of support for delayed payments for sales compared with other sectors (Figure 1.22). The trend appears stable for small firms, whereas medium-sized and large firms seem characterized by more obvious variability. Moreover, Germany has the highest ratio of trade credit to sales.

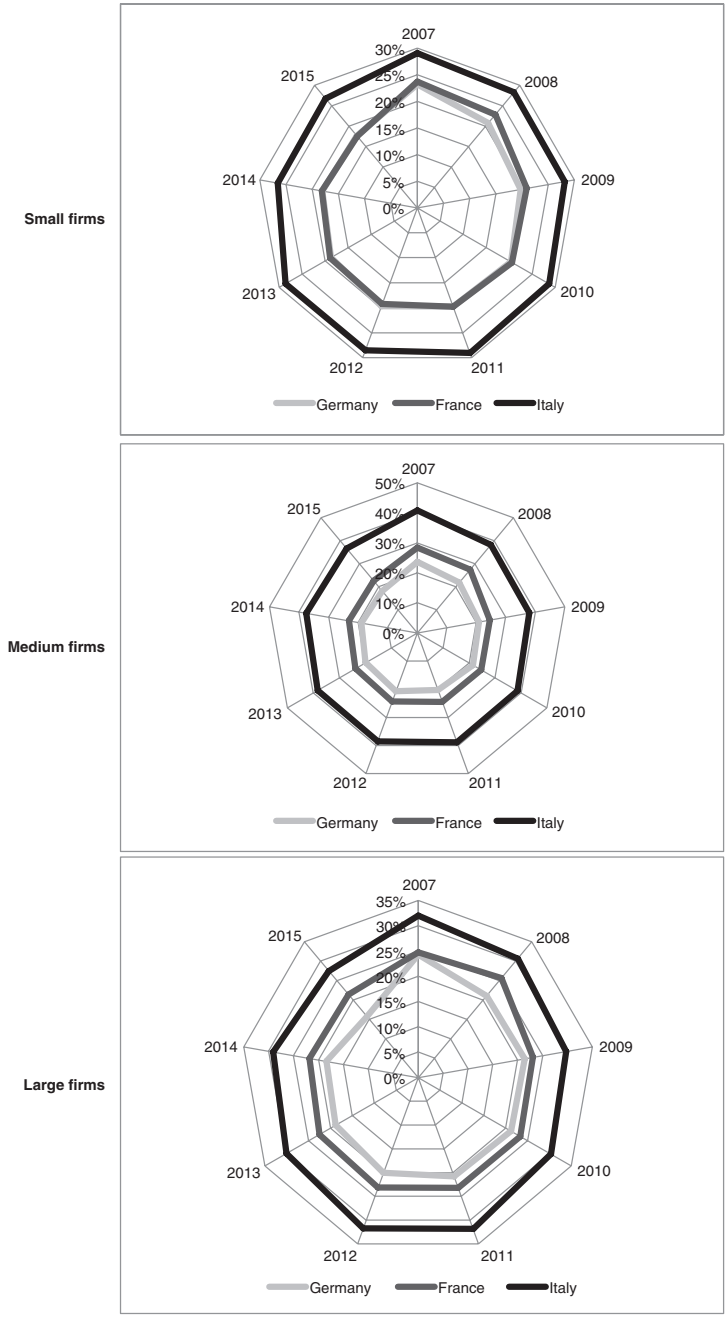


Figure 1.18 Trade credit in total assets in the wholesale and retail trade sectors

Source: Data from Bach, processed by the author.



Figure 1.19 Trade credit in total assets in the service sector

Source: Data from Bach, processed by the author.



Figure 1.20 Trade credit in sales in the manufacturing sector

Source: Data from Bach, processed by the author.

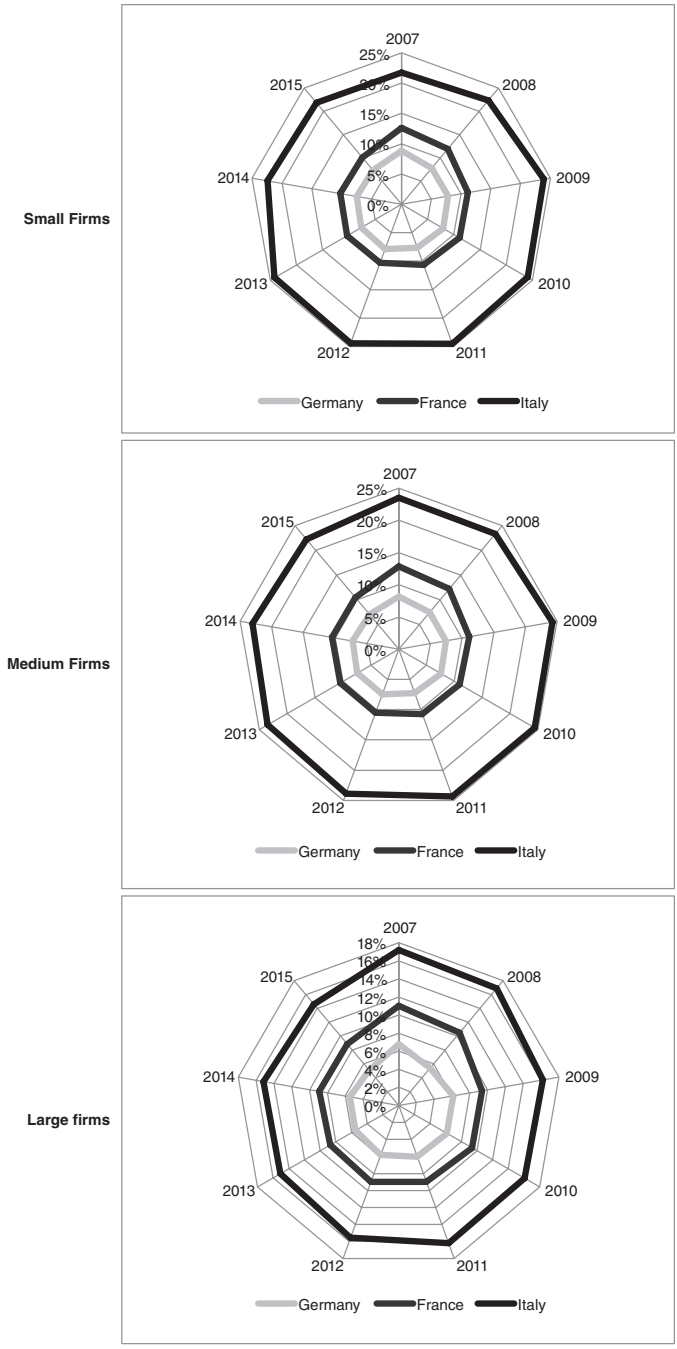


Figure 1.21 Trade credit in sales in the wholesale and retail trade sectors

Source: Data from Bach, processed by the author.

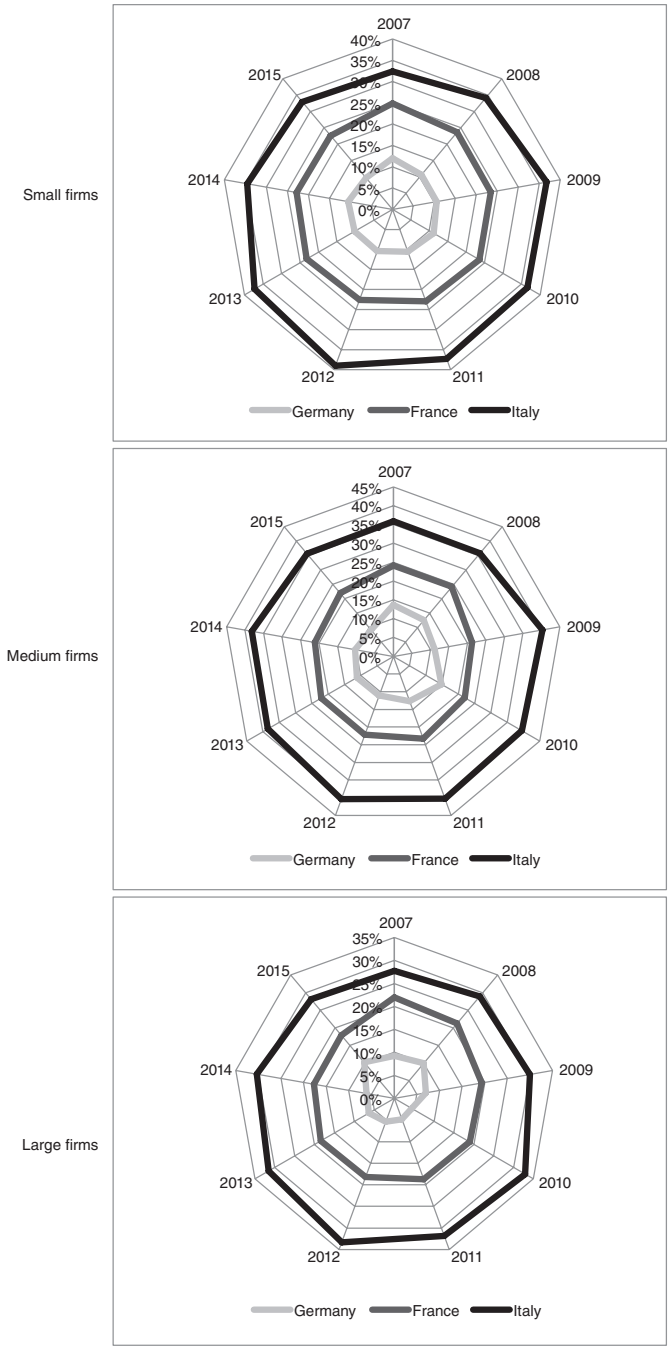


Figure 1.22 Trade credit in sales in the service sector

Source: Data from Bach, processed by the author.

Conclusions

Trade credit is used extensively in both international and domestic transactions. After a generalized reduction due to the global financial crisis, short-term credit insurance shows a current upward trend at the global level, driven by Europe and Central Asia. The role of trade credit in supporting development is confirmed by the growing relevance of trade credit in facilitating low- and lower-middle income countries in international trade. The relevance of trade credit in commercial transactions is even stronger for developed countries. After a cyclical pattern that emerged during the global financial crisis, individual patterns have emerged that exhibit greater stability and the ranking of countries appears unaffected over time. The incidence of trade credit to total assets is driven by European countries, with Italy ranked first, whereas Anglo-Saxon countries exhibit a weak incidence. Italy is again the country that most strongly supports trade credit for sales, but a distinction is also observed for some Anglo-Saxon countries. The analysis of aggregated industry and firm size data reveals greater differences than the analysis of geographic data. The manufacturing sector shows convergence of trade credit to total assets among the countries studied. Contrary to what was observed with other categorizations, the wholesale and retail trade sectors show Germany has the greatest trade credit to total assets, even though the terms applied appear very strict. Last, the service sector has the highest trade credit to total assets, even though support for sales is very limited. Segmentation by size shows that trade credit to total assets is greater for medium firms. The values for small and large firms appear comparable, even though small firms exhibit a somewhat rigid pattern and large firms' individual patterns are interrelated.

Finally, a multidimensional approach shows that the type of sector affects the influence of trade credit in total assets and in supporting sales. The extent of such an influence appears to vary depending on the country studied, even though this influence decreases corresponding to an increase in firm size. Larger firms are more comparable in terms of trade credit usage, whereas small and medium-sized firms' dynamics in trade credit usage are expected to be affected by local economic factors.

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Trade Credit and Financing Instruments

Lucia Gibilaro

Trade credit is extensively used in both domestic and international commercial transactions. Although it clearly supports growth, its significance is even greater for developed countries, where the market has recovered remarkably since the global financial crisis. The number and heterogeneity of motivations to trade credit justify the variability observed in the data on global trading, and the role of trade credit has become crucial in supply chain coordination.

A range of diverse trade credit finance solutions are available and include products and services offered by financial intermediaries and market products, highlighting a very interesting set of intermediate solutions that have emerged as a result of new technologies utilized in financial services. For financiers trade credit is an attractive option, but an in-depth evaluation of the possibility of losses forms the basis of a deep understating of numerous sources that can create credit risk (default and dilution risk). This book offers managers a complete analysis of the various facets of commercial credit and presents an analysis of the various types of markets, instruments, and risks associated with trade credit in supply chains across the globe.

Lucia Gibilaro is associate professor in economics of financial intermediaries at the University of Bergamo and visiting professor at the Athens University of Economics and Business. She obtained her master's in asset management and PhD in banking and finance from the University of Rome "Tor Vergata." She has been visiting scholar at the University of Essex. She is a member of the research center CISAlpino Institute of Comparative Studies in Europe at the University of Bergamo and she collaborates with the Real Estate Finance Laboratory at the University of Rome "Tor Vergata." She is the author of publications on asset-based lending, risk management, and fintech.

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