The importance of trade credit for corporate financing in Germany – evidence from financial statements statistics

For non-financial corporations in Germany, trade credit is one of the most important Instruments of external financing. In some cases this special corporate credit market is an alternative to, and in other cases it supplements, short-term bank lending.

The basic types of trade credit are payments on account and trade payables. In the form of payments on account, trade credit is based on payment practice which has evolved and which, in economic sectors that have order-based production, partly offsets the prefinancing burden and the increased economic risk borne by suppliers with long-term production processes. On the whole, however, this area of trade credit accounts for roughly 5% of total assets, which is only around half of what the corporate sector reports on the liabilities side as supplier credit. This latter source of financing is used in particular by enterprises with a high turnover of goods. Thus it represents an important part of the short-term external funds needed to finance current assets. However, in some cases it is also used to refinance the associated large accounts payable positions that arise for German enterprises in foreign business.

Based on special analyses of the Deutsche Bundesbank's financial statements statistics, the study presented in this article shows that the use of trade credit as a short-term financing instrument depends above all on sector-specific factors or financing requirements that result from the business model of the enterprises concerned. Through the redistribution of liquidity within the corporate sector, the resulting trade credit chains play an important part in safeguarding the flexibility and stability of corporate financing. Because trade credit is collateralised by goods, it is closely interlinked with the business cycle. Not least, it facilitates short-term start-up financing when working capital is needed at the beginning of a cyclical recovery phase.

In certain sectors, however, the amount of trade credit granted involves a long-term, non-cyclical exposure that can reach a considerable magnitude. The systematic control of the associated risks calls for a professional credit and liquidity management system on the creditor side.

The importance of trade credit in corporate financing

Trade credit as a component of the sales contract comprises …

Supplier credits and payments on account (buyer credits) are usually referred to by the generic term "trade credit". As the term suggests, the counterparties involved maintain both trade relations and credit relations. Trade credit is a short-term debt financing instrument that enterprises use in connection with the sale of products and the performance of services, making it a direct component of the sales contract entered into.

… payments on account and …

Where customers – upon concluding the sales contract but before delivery, or in the case of partial delivery of the goods or services – pay the purchase price in its entirety or in part as an advance payment or a payment on account,[1] in return for which payment they sometimes receive a discount, such payments constitute (from the seller's viewpoint) payments received on account or (from the buyer's viewpoint) payments made on account. This financing arrangement entails considerable advantages for the seller, who receives all or at least part of the financing for the sale from the customer.

… supplier credit

With supplier credit, on the other hand, the seller grants the buyer of its goods or services a deadline for payment, effectively granting the buyer credit for a limited period of time. This saves the buyer having to obtain funds some other way and eases its short-term financial plan. However, once the discount period expires, this arrangement usually entails a higher purchase price that is not reduced by the discount. On the other hand, buyers who opt not to use the deadline for payment and instead pay the invoice amount within a fixed, shorter period generally receive a price reduction in the amount of the agreed discount.[2] Thus, trade credit gives the buyer greater financing flexibility than short-term bank credit, which is often made available to enterprises as a current account credit that is tailored to their operational requirements.

Building up supplier credit chains

When the initial supplier credit is also offered to the subsequent buyer in the next value added step, a succession of new credit relationships is created, forming a chain which may reach an amount that is several times the initial loan. Provided this process is unbroken through the various stages of production and sales, without the granted supplier credits being repaid by sales proceeds, say, or by bank loans, the credit chain can continue or may overlap with others. The process is limited only by the discount period and by the relatively high interest rates charged if it is exceeded, which generally encourages punctual repayment.

Great importance for corporate financing …

… but few studies for Germany to date

Besides intra-group liabilities, supplier and customer credits are the most important source of external finance for non-financial corporations in Germany. They even rank first in terms of short-term external funding.[3] Whereas supplier credits have been at the heart of economic policy debate in the United States and France for a number of years,[4] they have so far attracted relatively little attention in Germany despite

1 These two financing instruments differ in that, with an advance payment, a repayment obligation exists in the event that the goods or services are not duly delivered; this is not the case with a payment on account. See K Küting, Gutachterliche Stellungnahme zur bilanziellen Einordnung von erhaltenen Anzahlungen in der Bauindustrie, Marl/Saarbrücken, 2005, pp 15ff.
2 According to surveys conducted by the credit insurer Atradius, roughly 50% of German enterprises grant discounts; this is well above the European average of 37%. However, only 15% of foreign and 26% of domestic customers take advantage of this offer. See Atradius Zahlungsmoralbarometer, Internationale Studie zum Zahlungsverhalten von Unternehmen, Kernergebnisse Herbst 2011, Breda 2011, pp 15-16.
3 See Deutsche Bundesbank, Long-term developments in corporate financing in Germany – evidence based on the financial accounts, Monthly Report, January 2012, pp 13-27.
4 In order to limit the structural disadvantage for small and medium-sized enterprises due to their having less access to supplier credits, in France there even exist statutory payment periods with penalties for delay. The maximum period was recently fixed at 60 calendar days under the Law to modernise the economy (LME, loi no 2008-776) at the beginning of 2009. In Germany, the Act to accelerate due payments (Gesetz zur Beschleunigung fälliger Zahlungen) of 30 March 2010 merely stipulates the point in time from which a debtor is overdue (30 days after the invoice is drawn up). Under the Directive on combating late payment in commercial transactions (Directive 2011/7/EU) of 16 February 2011, which must be transposed into national law by 2013, the term for payment is, as a general principle, limited to 60 days for enterprises in the European Union.

their outstanding importance for short-term corporate financing.

Trade credits from the supplier's and the buyer's perspective

Main source for covering short-term funding needs

Trade credit offers enterprises an alternative source of finance to, and in some cases also complements, the short-term bank loan. Above all, then, the use of these sales-related credits primarily depends on the extent to which they meet enterprises' specific financing needs or on the economic advantages such credits offer supplier and buyer compared with other traditional short-term corporate financing instruments.

Reducing the prefinancing burden and the purchasing risk

Payments received on account constitute a particularly important instrument for enterprises with long-term order-based production and the financing problems that entails. According to the contractual provisions governing the transfer of ownership set forth in the German Civil Code *(Bürgerliches Gesetzbuch),* a claim for payment is generally not created until the final acceptance of the ordered product or service by the customer. However, the prefinancing burden resulting from such provisions under the law of obligations and the attendant, heightened economic risk for the service provider can be offset, in part at least, by agreeing in the sales contract that the buyer will make payments on account of the order.[5] The customer usually has these payments guaranteed by an advance payment bond (guarantee issued by the supplier's bank) to protect itself against the supplier's insolvency.

Financing cost aspects

One key argument in favour of supplier credits is that this form of financing is initially less expensive than borrowing from a bank, because payment of the purchase price is deferred on an interest-free basis for the duration of the discount period. On the other hand, if the customer overshoots this relatively tight timeframe, the supplier credit usually turns into a rather expensive financing instrument because the effective interest rate that is actually charged when the customer forgoes the discount amounts to several times the current account interest rate normally charged. For example, with a deadline for payment of 30 days and a 2% discount for an eight-day discount period, the effective interest rate works out at roughly 40% per year. Even though creditors may, to an extent, tolerate the deadline being overshot, the resulting interest rates are still likely to be clearly in excess of those that are usually charged for current account credits in the commercial sector, and which according to the interest rate statistics of the Deutsche Bundesbank were between 5% and 7% per year over the last few years.

A comparison of financing cost would very likely produce the same results, even if the credit and default risks of the two financing instruments were assessed as being different or if there were differences in dunning and collection cost. Thus, supplier credits are particularly advantageous to business customers if they can be repeatedly revolved without compound interest effects, so that the formally agreed discount deadline *de facto* never comes into effect or – owing to tough competition in the sales market – a suitable discount has already been priced into the selling price and a longer cost-free payment period is granted.[6]

Overcoming information asymmetries

Supplier credit is also an option for enterprises seeking credit as a short-term financing solution when lending to companies is rationed by banks because of information asymmetries, for example because of high cost in and obstacles

5 See the statement of legislative intent to this effect accompanying the new section 632 a of the German Civil Code, under which payments on account have been included in the said legislation. O Palandt, Bürgerliches Gesetzbuch, Beck'sche Kurzkommentare, 71st edition, Munich 2012, p 976.
6 According to the most recent study on enterprises' payment behaviour conducted by the credit insurer Atradius, 44.2% of German companies surveyed made use of discount arrangements for sales on deferred terms. See Atradius Zahlungsmoralbarometer, Internationale Studie zum Zahlungsverhalten von Unternehmen, Kernergebnisse Deutschland, Frühjahr 2012, Breda 2012, p 13.

to procuring information about a potential customer's creditworthiness. Such adverse selection problems affecting the credit market have been observed in the United States, for example, in connection with particularly dynamic enterprises experiencing their first business growth phase, yet with only low capital ratios and cash flows. In such a case, supplier credit represents an important substitute for the short-term bank loan.[7] In the trade sector, which is characterised by a high turnover of goods, supplier credit is particularly attractive because the payment obligations can be paid in their entirety or in part from the proceeds from the goods purchased (pay-as-you-earn principle). Thus, fewer short-term bank loans are needed to finance current assets.

Supplier credit leads to flexibility and efficiency gains

Use of supplier credit is also an attractive financing instrument from the customer's viewpoint as it entails little effort and gives a great deal of flexibility. Financing provided by banks might call for lengthier negotiations. What is more, additional information and, in some cases, additional collateral would have to be furnished depending on the amount and life of the loan arrangement.[8] This – not inconsiderable – effort is not necessary when supplier credit is agreed, as it is usually part and parcel of the general business conditions and therefore a constituent part of the preformulated wording of the sales contract.

Means of promoting sales and …

Seen from the seller's perspective, supplier credits serve as a marketing instrument by allowing the buyer generous periods for payment, and thus stimulate or safeguard sales. This allows the seller to strengthen customer loyalty or establish new customer ties.

… disguising price discrimination

In addition, supplier credit gives the seller a variety of ways to hide price discrimination by granting more generous payment deadlines and discount arrangements. These aspects come to the fore when it is legally prohibited to openly grant price advantages,[9] or when openly giving individual customer groups preferential treatment could trigger a severe counterreaction on the part of the other buyers.

Information and collateral-related aspects

From the creditor's viewpoint, this form of short-term financing also offers particular advantages with regard to the ongoing monitoring of exposures. Looming sales and financing problems are reflected very early on by the actual order and payment behaviour of the buyer, and so provide indications of the risk of default. Even in the event of bankruptcy, the provider of supplier credit is in a better position than other providers of capital, as the liquidation of the former's claims ranks before the claims of all other creditors and enjoys far-reaching and systematic protection in that the goods – up to and including the finished product – are ring-fenced under reservation of ownership provisions. Thus, the value of the collateral in the form of the delivered goods and services is high, and the far-reaching consequences in the event of the buyer's refusal to pay have in themselves a certain preventive disciplining effect with regard to the buyer's payment behaviour.

Seller signals quality

Yet another argument in favour of supplier credit is that this instrument can also serve as an efficient means of overcoming the information asymetry that exists between supplier and buyer with regard to the quality of the products and services offered. If the supplier gives the buyer a payment deferral after providing the product, the supplier can largely dispense with furnishing detailed information on the quality of the product, as the buyer is able to gain an accurate impression of the quality prior to paying the invoice. By granting a period for

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7 See N Huyghebaert, On the Determinants and Dynamics of Trade Credit Use: Empirical Evidence from Business Start-ups, Journal of Business Finance & Accounting, Vol 33, January/March 2006, pp 307ff.
8 Even in the case of current account credits, the customer has to renegotiate the amount and the terms and conditions of the facility with its house bank from time to time.
9 Price discrimination resulting from abuse of market power is prohibited in Germany under competition law pursuant to section 19 (4) No 3 and section 20 (1) of the Act against Restraints on Competition (Gesetz gegen Wettbewerbsbeschränkungen).

payment, the seller signals to the buyer that he is buying a product that indeed complies with the agreed quality attributes.

Important parameter of working capital management

Finally, supplier credit also constitutes an important liquidity management parameter for enterprises. This is seen in particular in the concept of working capital management (WCM).[10] Amongst other things, WCM entails a targeted debtor management system under which companies set as tight payment deadlines as possible for their own customers and rigorously send out reminders in respect of deadlines that are not met. At the same time, they systematically take advantage of the payment deferrals that are granted by suppliers. This enables enterprises to reduce the cost of financing current assets and use the available financial resources for other operational purposes. The aim of this approach is to reduce the length of time capital is tied up in the company's current assets. The financial leeway thus obtained can be used, for example, to finance fixed assets, external growth and innovation.

Trade credit reflected in financial statements analysis

Widespread use of trade credit

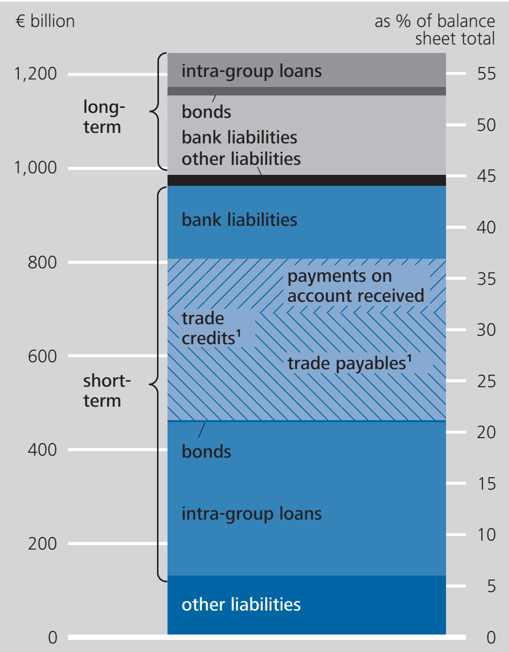
The extrapolated results for the years 2002 to 2009 of the Bundesbank's financial statements statistics show that trade credit – with an average of €345.2 billion for the observation period – is the second most important external financing instrument used by non-financial corporations in Germany after intergroup loans (€399.4 billion), and is the most important source of short-term external financing.[11] Measured in terms of the balance sheet total, trade credit reached a ratio of 15.8%. Long and short-term borrowing from banks is one percentage point lower. In contrast, bonds posted on the liabilities side of individual accounts, as the capital market's contribution to corporate financing, chalked up a volume of only €22.3 billion, which is equivalent to a share in the balance sheet total of only 1.0%. However, we should bear in mind when interpreting these figures that the Bundesbank's financial statements statistics do not cover all economic sectors and are based solely on individual financial statements of domestic enterprises. The latter factor means that the financing of groups is reflected in the reported results only to a limited extent. Within a group, bank loans are often taken out and bonds issued through foreign financing subsidiaries or parent companies, and then appear in the individual financial statements only partially as intra-group liabilities.

Concentration of payments received on account in sectors with long-term order-based production

Roughly one-third of trade credits reported on the liabilities side of annual financial statements comprise payments received on account (€116.9 billion); enterprises take up the remaining €228.3 billion in the form of trade payables to suppliers.[12] All in all, however, payments on account – unlike supplier credits – generate a net contribution to corporate financing, as the payments made on account are much lower in total than the payments received on account from the corporate sector. This finding is attributable to the fact that payments received on account are made not only by domestic enterprises but also by the government and by buyers abroad, for instance.

10 The aim of working capital management is to minimise net current assets while bearing in mind that there must be no short-term liquidity bottlenecks. Working capital is defined as liquid funds plus short-term receivables and inventories less trade payables and other short-term liabilities. See H J Klepzig, Working-Capital und Cash Flow, Finanzströme durch Prozessmanagement optimieren, 2nd edition, Wiesbaden, 2010, pp 18ff.
11 Given the strong cyclicality of trade credit, the following information does not relate to the financial statements statistics of a single year but to average figures for the years 2002 to 2009.
12 In the present study the total amount of supplier credits is understated due to the accounting standards of the German Commercial Code (Handelsgesetzbuch). Pursuant to section 265 (3) sentence 1 of the German Commercial Code, the group-related shares in trade payables and receivables must be stated in the intra-group claims and liabilities. Since the amount of the claims and liabilities that are reclassified under this provision is shown separately only in large-scale financial statements and the utilisation of financing sources shows substantial size-specific differences, it is not possible to make comprehensive and reliable corrections to this reclassification of supplier credits carried out under the above legal provision.

Structure of external financing of German non-financial corporations*



* Average of the years 2002 to 2009. Extrapolated results, manufacturing, mining and quarrying, construction, trade and transport (excluding railways) and business-related services. **1** Including liabilities on bills accepted and drawn.

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A breakdown of payments on account by economic sector demonstrates that they represent a special financing instrument that is commonly used in certain sectors with a prolonged production period and to-order fabrication. Totalling €36.2 billion and €20.6 billion respectively, payments received on account are predominantly focused on the construction sector and mechanical engineering; measured in terms of total assets, these sectors have a share of 29.0% and 13.9% respectively. Only business-related services likewise show a relatively large share of €14.3 billion (7.6%); this is likely due above all to the terms of payment agreed in connection with the production of software and similar firm-specific services. In the case of the corporate features "legal form" and "enterprise size", which are highly correlated with each other, there are very few differences. For example, the shares for payments made on account range from 0.6% for micro-enterprises to 2.0% for large enterprises. Medium-sized enterprises benefit most from payments on account carried on the liabilities side (7.1%), while the shares calculated for firms in the lowest size category (5.6%) and large enterprises (4.7%) were at a significantly lower level.

German industry's strong export focus accounts for high supplier receivables

The stock of supplier receivables, which as an average for the years 2002 to 2009 is just over €57 billion higher than the corresponding liabilities, is due primarily to German industry's strong focus on exports. This is because, particularly for deliveries abroad, it is usual to grant considerably longer payment periods than in Germany. To an extent, however, these high supplier receivables are also the result of overdue payments,[13] and so indicate that non-resident customers' payment behaviour is poorer (see also the box on pages 58 and 59).[14] This is probably due, amongst other things, to the lower status attributed to creditor protection in the legal systems of those countries. As the breakdown of supplier receivables by economic sector shows, they are concentrated on export-oriented sectors as well as on sectors with, for the most part, order-based production. The wholesale trade is at the forefront, accounting for 25.4% (€62.6 billion), followed by business-related services (18.3%, €34.2 billion), construction (16.7%, €20.9 billion) and mechanical engineering (14.0%, €20.7 billion).

Focus of use of supplier credits also in trade and construction

The volume of supplier liabilities in Germany is closely related to the financing needs as a result of trade receivables. This financing instrument is used, above all, by enterprises from the trade sector (wholesale trade €45.4 billion, retail trade €34.1 billion and trade of motor vehicles and repairs €11.8 billion) and the construction sector (€15.7 billion). This reflects the fact that commercial enterprises with their high turnover of goods specifically use trade credits to finance their stocks, and then settle their in-

13 See Deutsche Bundesbank, Enterprises' trade credit relations with non-residents, Monthly Report, October 1995, pp 75-83.
14 According to the surveys by Atradius, Spanish enterprises take an average of 87 days to effect domestic payments, Italian enterprises 54 days and French enterprises 27 days. The reference value for German enterprises is 21 days. See Atradius, op cit, p 17.

Average volume of trade credit between 2002 and 2009 by business sector, legal form and size category*

Broken down by	Payments made on account	Payments received on account	Trade receivables	Trade payables	Payments made on account	Payments received on account	Trade receivables	Trade payables
	€ billion				as % of balance sheet total			
Economic sector								
Manufacturing1	26.3	60.0	128.9	94.2	2.0	4.6	10.0	7.3
Manufacture of food products and beverages	1.2	0.0	13.0	10.0	1.4	0.1	15.2	11.7
Manufacture of textiles and textile products	0.1	0.0	2.6	1.6	0.9	0.3	15.9	10.0
Manufacture of wood and cork (excluding furniture production)	0.2	0.7	1.9	1.6	1.7	4.6	13.2	10.7
Publishing and printing	1.1	0.4	8.4	5.8	1.7	0.6	12.9	8.9
Manufacture of chemical products	3.7	1.9	13.0	7.8	1.8	0.9	6.2	3.7
Manufacture of rubber and plastic products	0.8	0.5	5.2	3.5	2.1	1.2	13.5	9.0
Manufacture of other non-metallic mineral products	0.6	0.7	2.8	2.2	1.8	2.1	8.5	6.6
Manufacture of basic metals, manufacture of fabricated metal products	2.8	5.0	16.8	12.0	2.3	4.1	13.9	9.9
Mechanical engineering	3.0	20.6	20.7	11.5	2.0	13.9	14.0	7.8
Electrical equipment	2.3	12.1	13.2	8.8	1.4	7.4	8.1	5.4
Manufacture of medical, precision and optical instruments	0.5	1.9	4.9	2.3	1.3	4.6	12.2	5.6
Construction	1.2	36.2	20.9	15.7	0.9	29.0	16.7	12.6
Retail trade in and repair of motor vehicles and motorcycles	0.3	0.3	10.6	11.8	0.5	0.5	15.2	16.8
Wholesale trade and commission trade	2.2	2.9	62.6	45.4	0.9	1.2	25.4	18.5
Retail trade (excluding trade in and repair of motor vehicles and motorcycles)	0.8	1.7	15.7	34.1	0.5	1.0	9.6	20.8
Transport (excluding railways)	2.9	1.5	12.8	9.9	2.8	1.4	12.5	9.6
Business-related services2	2.1	14.3	34.2	17.2	1.1	7.6	18.3	9.2
Legal form								
Corporations	26.5	74.7	166.7	125.2	1.9	5.3	11.8	8.9
Non-corporations	9.4	42.2	119.0	103.1	1.2	5.5	15.4	13.3
Enterprise size3								
Very small enterprises	1.6	15.4	46.1	39.6	0.6	5.6	16.9	14.5
Small and medium-sized enterprises	5.8	35.6	91.4	67.3	1.2	7.1	18.1	13.3
Large enterprises	28.4	65.9	148.2	121.4	2.0	4.7	10.5	8.6

* Extrapolated results, manufacturing sector, mining and quarrying, construction, trade and transport (excluding railways) as well as business-related services. **1** As well as mining and quarrying. **2** Computer and related activities, research and development as well as other business services (excluding holding companies). **3** According to the EU definition of small and medium-sized enterprises (SMEs), enterprises with a turnover of up to €2 million are considered micro-enterprises, enterprises with a turnover of €2 million up to €50 million are considered SMEs, and enterprises with a turnover of €50 million or more are considered large enterprises.

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voices with the sales proceeds that their stocks generate. In this way they are able to finance very large holdings of current assets with comparatively little own funds. Retailers in particular do not need to offer nearly as much supplier credit as the corresponding liabilities they are able to use. Thus, they benefit most from this form of corporate financing. In contrast, wholesale enterprises and providers of business-related services tend to be net creditors, as they (have to) grant their buyers generous payment periods while they themselves (are able to) take out less credit with their suppliers.

Small and medium-sized enterprises not disadvantaged

Finally, the extrapolated results show that small and medium-sized enterprises (SMEs) in Germany are not disadvantaged with regard to supplier credit.[15] Whereas mainly medium-sized German enterprises have the largest share of supplier receivables in relation to total assets (18.1%) – and not micro-enterprises (16.9%) – the latter have the highest supplier liability ratio in their annual financial statements. At 14.5%, their ratio is just over one percentage point above that for medium-sized enterprises. By

15 This contrasts with corresponding findings for France. See, for example, M Dietsch and É Kremp, Le crédit interentreprises bénéficie plus aux grandes entreprises qu'aux PME, Économie et Statistique, Vol 1998/314, pp 25-37.

The importance of trade credit in selected euro-area countries

The importance of trade credit in the manufacturing sectors in Germany, France, Italy and Spain is very heterogeneous. This is the result of an evaluation of the period from 2002 to 2010 of the BACH database[1] of the European Committee of Central Balance Sheet Data Offices (ECCBSO), which contains harmonised data on non-financial corporations in selected European Union countries. The smallest share of this financing instrument in relation to the balance sheet total is held by Germany – at around 6%. The trade credit ratio in the southern European countries is generally around three times higher, whereby Italy is clearly in the lead with well over 20%. With somewhat lower share values, France and Spain have attained a similar level. Moreover, it is worth noting that the economic downturn brought about by the financial and economic crisis has had a much greater effect on the financing structure in those three countries as a result of the weight of trade credit declining by around five percentage points compared with what was observed for German manufacturing corporations.

The greater importance attributed to trade credit in the southern European countries compared with Germany was initially assumed to be the result of the low availability of short-term bank loans.[2] However, this assumption is refuted by the fact that Italian financial corporations in particular record relatively high short-term bank liabilities and by the comparatively low short-term ratio of bank indebtedness of the respective German corporations. Instead, the strong deviations reflect structural differences in payment behaviour. According to a study by Creditreform, it is relatively commonplace in Italy and Spain for payment periods to be exceeded by more than 30 days; this holds true in around 25% of all cases.[3] In France, where a comparable value of 15% was established, the exceeding of deadlines is subject to statutory regulation, which, however, only takes effect once the threshold value of 60 days has been overshot. The higher the actual maturity of trade credit, the higher also *per se* the share of liabilities in the annual accounts. Alternatively, high trade credit ratios may also stem from taking up revolving short-term trade loans. However, this scenario would require an accelerated turnover of goods and strongly concentrated relationships with suppliers, which is a rare occurrence in the manufacturing sector.

The exceptional situation of German corporations can partly be explained by the relevant regulations of German property law, which – through its reservation of ownership provisions – gives trade credit providers direct access to the delivered goods as well as the finished products a preferential status when it comes to liquidating claims. The effects relating to the size of enterprises also come into play here. These effects are due, *inter alia*, to the fact that the non-extrapolated results of the BACH database in the case of German corporations are very strongly affected by the situation of large enterprises, which make considerably less use of trade credit and which – on the whole – carry substantially more weight than large enterprises in the other countries.[4]

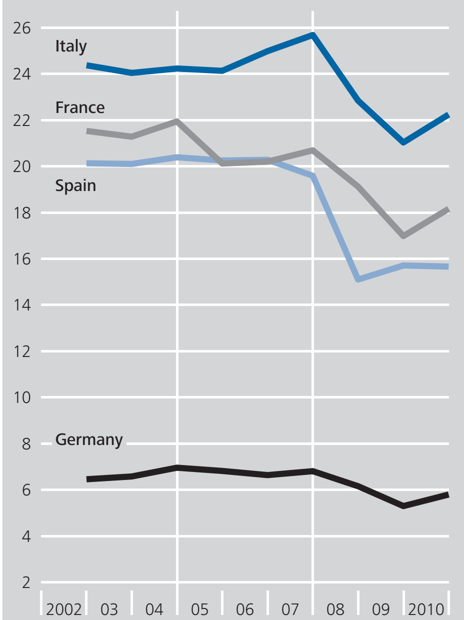
Furthermore, German data are comparatively understated, as German accounting law stipulates that trade payables and receivables as well as services within the group must be recorded as intra-group li-

1 The abbreviation BACH stands for Banque des Comptes Harmonisés.
2 See M A Petersen and R G Rajan, Trade Credit: Theories and Evidence, The Review of Financial Studies, Vol 10, Fall 1997, p 662.
3 See Verband der Vereine Creditreform e.V., Länder- und Exportrisiken in Europa; Jahr 2011/12; Neuss 2012, p 19.
4 As the bulk of medium-sized enterprises in Germany – unlike in the other countries – have the legal status of partnership or sole proprietorship, these enterprises are not taken into account in the BACH database. Moreover, German large enterprises are substantially larger than their foreign competitors in terms of single-entity financial statements, which means that the data provided by them influence the cumulated results to a much greater extent.

abilities; this means that they are more narrowly defined than in the other euro-area countries. Given that the additional information necessary for estimating the scale of the effect that these accounting principles produce can only be obtained from large German enterprises' detailed financial statements, an exact quantification is not possible. However, if a similar definition were used, it is likely that the data for Germany would exceed the corresponding values in the BACH database by a few percentage points.

Trade credit in selected euro-area countries*

as a percentage of the balance sheet total



Source: BACH database of the European Committee of Central Balance-Sheet Data Offices (ECCBSO). * Corporations in the manufacturing sector.

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comparison, large enterprises represent the group of firms with the smallest shares of supplier receivables and supplier liabilities; this finding is probably to be explained – in part, at least – by their special financial strength. Large enterprises usually generate relatively high income and cash flows, and are more likely to be interested in receiving discounts rather than long payment periods in view of their ample liquidity and their professional debtor management.

Empirical findings based on an evaluation of micro-data

Supplement to extrapolated results

In order to conduct more in-depth structural analyses of the use and provision of trade credit, use is made of anonymised micro-data from the Deutsche Bundesbank's data pool.[16] Here, the enterprises on which data are available for the observation period are grouped according to whether they report relatively high or relatively low supplier receivables and supplier liabilities in their balance sheets.[17] Because of the strong effect that individual large enterprises could potentially have, ratios for these categories are calculated not on the basis of weighted averages, but of median values which represent group-typical means.

Strong connection between supplier receivables and supplier liabilities

The findings of the evaluation of the micro-data illustrate that, to a considerable extent, the firms with the largest shares of trade receivables are at the same time those with large holdings of supplier liabilities. Moreover, this strong correlation of groups of enterprises defined according to their assets side and liabil-

16 For more on the data pool, see Deutsche Bundesbank, German enterprises' profitability and financing – an analysis based on a new dataset, Monthly Report, October 2005, pp 31-67.
17 The thresholds for this categorisation into the group with high and low supplier receivables and supplier liabilities respectively are set at 20% in the former case and at 10% in the latter. The thresholds are based on an analysis of the appropriate distribution functions from the point of view of a symmetric distribution.

Median values for balance sheet and income statement ratios of enterprises with low or high accounts payable to suppliers or receivables from suppliers as an average for the years 2002 to 2009*

Item	Enterprises with a ratio of receivables from suppliers[1] of …		Enterprises with a ratio of accounts payable to suppliers[1] of …	
	less than 20%	20% and more	less than 10%	10% and more
	as % of balance sheet total			
Tangible fixed assets	25.2	10.9	21.0	14.0
Inventories	23.0	23.3	19.9	26.3
Receivables	22.4	41.7	27.7	35.8
accounts payable	10.3	29.1	13.9	22.5
from affiliated companies	1.4	0.5	1.4	0.5
Cash and bank deposits	3.5	4.1	4.2	3.5
Equity capital	22.6	20.8	26.3	18.4
Reserves	9.0	9.1	10.7	7.6
Liabilities	63.2	65.6	56.4	70.3
vis-à-vis credit institutions	17.1	11.8	12.2	16.1
of which short-term	3.8	4.0	2.4	5.7
accounts payable	9.3	16.8	6.1	21.2
to affiliated companies	4.8	5.2	6.5	3.9
	as % of revenues[2]			
Material costs	56.4	64.9	51.5	67.8
Staff costs	21.0	17.0	24.2	15.3
Depreciation	2.6	1.3	2.6	1.4
Interest expenditure	1.0	0.6	0.9	0.7
Profit for the year	1.8	1.5	2.1	1.3
Cash flow	5.0	3.0	5.6	2.9
Working capital	14.4	13.7	19.2	10.7

* Results of a balanced sample of enterprises over the economic cycle from 2002 to 2009, with 20,853 enterprises. Manufacturing, mining and quarrying, electricity, gas and water supply, construction, trade, hotels and restaurants, transport and communication and business-related services (excluding holding companies). **1** Measured in terms of balance sheet total. **2** Sum of turnover and changes in stocks of finished goods.

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ities side is reflected in comparable balance sheet and income statement ratios. For example, enterprises with high trade receivables also have a much higher ratio of supplier liabilities (16.8%) compared with the benchmark group (9.3%). Similarly, enterprises which make greater use of supplier credit to finance their business operations have, on average, debtor portfolios stemming from trade receivables which are roughly two-thirds higher (22.5% as opposed to 13.9%). This relative symmetry on the assets and liabilities side of the enterprises concerned suggests that, in Germany, supplier credit primarily serves the function of compensating, at least in part, the financing needs as a result of the large portfolios of trade receivables.

Other balance sheet and income statement structures

Enterprises with relatively large supplier credit volumes on their balance sheets are characterised on the one hand by significantly less capital intensity and correspondingly lower depreciation of tangible fixed assets. On the other hand, however, they also have a tighter capital base and less production depth. This group of enterprises uses comparatively larger cash holdings and bank deposits to meet unforeseeable short-term liquidity needs.

Impact of production depth on investment behaviour

In the case of bank liabilities, enterprises which act to a greater extent as trade credit providers have a share of 11.8% (roughly one-third below the corresponding ratio for enterprises with relatively low supplier receivables), which is also reflected in a markedly lower interest expense ratio. However, the lower level of bank borrowing is primarily due to lower investment needs (which is seen in the considerably lower tangible fixed assets ratio) and, therefore, also in the lower demand for long-term investment credit on the part of trade credit providers. This is also revealed by the fact that there are no appreciable differences between the two groups with regard to short-term bank loans. To an extent, these group-specific differences in financing are also attributable to the fact that the substantial refinancing via supplier liabilities that arises for enterprises which provide corporate financing leads to a reduction in the demand for credit from this classic source of funding. Finally, it can be observed that, in the case of the lower margins that result from the lower production depth and from the comparatively high cost-of-materials ratio in relation to gross revenue (64.9% compared with 56.4%), the enterprises' earnings and cash flows are distinctly lower than for the group of enterprises that have only small trade receivables portfolios and whose production is significantly more capital intensive. All of these factors indicate that the supply of supplier credit hinges on product market aspects.

Relationship between supplier liabilities and liquidity needs

The findings of the study show that enterprises which make more use of supplier credit also have particularly high liquidity needs, are less integrated in intra-group financing systems and manage their working capital needs more systematically (working capital ratio 10.7% compared with 19.2%) than firms that avail themselves less of this source of financing. Supplier credit users' greater financing needs, which arise, in particular, in order to purchase current assets, are largely the result of low production depth and, correspondingly, of particularly high material cost. The consequence of the business model of these enterprises is also that they generate a significantly lower profit for the year (almost one percentage point lower) and a cash flow that is only just under half that generated by enterprises that make considerably less use of payment deadlines given by suppliers. Moreover, the less favourable earnings situation is reflected in an equity capital ratio that is clearly lower (-7.9 percentage points) and in a markedly lower ratio of provisions to total assets (-3.1 percentage points) for this group. Similarly, their interest expense ratio is, at ¼ percentage point, distinctly lower than the corresponding figure for enterprises with a low supplier liabilities ratio.

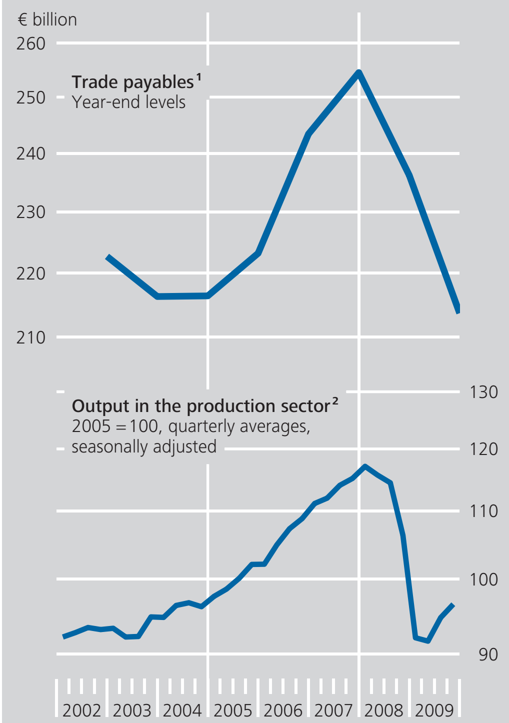
Development in trade credit over the business cycle

Procyclical pattern and …

Trade credit typically "moves" with economic activity; this is demonstrated by the direct relationship that exists between trade credit and sales. At the beginning of an economic upswing, suppliers have an opportunity to deliver to customers, on credit, the inventories that have accumulated in the meantime. In this way, creditors reduce their storage cost and debtors are able for the time being to make sparing use of their liquidity, which in this phase is often still under pressure. Thus, trade credit plays a part in financing the upswing, as it is through trade credit that short-term liquidity needs are covered at a time when banks have generally not yet adjusted their tightened credit conditions to the more upbeat economic situation. On the other hand, there is a risk in periods of recession or heightened economic uncertainty that this financing instrument may amplify a downward trend at a time when enterprises, under such circumstances, usually scale back the periods given for payment and are more rigorous in their debtor management as they prepare themselves as early as possible for incipient or imminent liquidity bottlenecks.

Trade payables over the business cycle

log scale



1 Including liabilities on bills accepted and drawn. **2** Manufacturing, mining and quarrying, construction.
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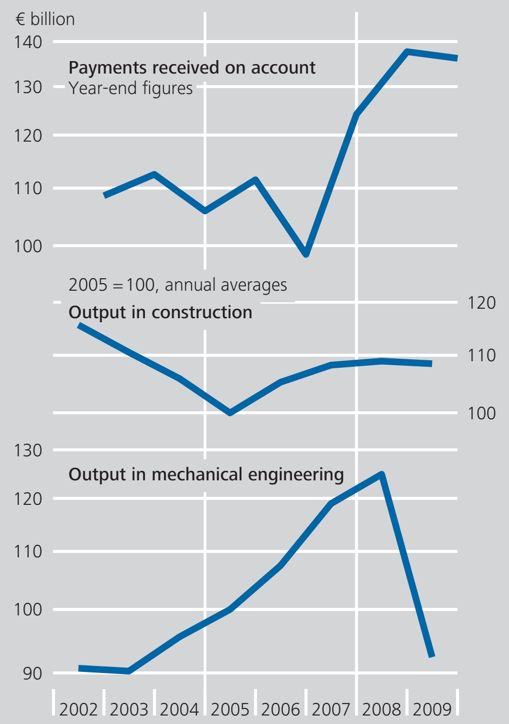
… part of the international economic relationships

Furthermore, an increase in supplier credits granted may also result in financial risks for, and the danger of contagion to, the international economy as a whole. Particularly when supplier credits are extended on a revolving, permanent basis, which is sometimes common practice in domestic and foreign trade, there is a risk that considerable amounts of residual debt may accumulate which is made available to customers as quasi permanent credit and which suppliers *de facto* have to refinance on a

Payments received on account over the business cycle

log scale



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long-term basis.[18] Not least, such sector-specific exposures in the form of large long-term loans reinforce international economic relationships and create a mechanism for transmitting worldwide financing shocks.[19]

Economic momentum of supplier liabilities

The extrapolated results from the Bundesbank's financial statements statistics show that supplier liabilities developed largely in synchrony with production-sector output momentum during the observation period. Between 2004 and 2007, they rose continuously by €38.1 billion. By contrast, in the last two reporting years they decreased by more than €40.8 billion and dropped below their initial level of 2002. The decline in trade credit witnessed in 2008 and 2009 in the wake of the financial and economic crisis is primarily attributable to deteriorating conditions for trade credit insurance with which suppliers protect themselves against the risk of their buyers defaulting. In view of the rising economic risks, trade credit insurers had reduced their coverage volumes and raised their retention amounts and risk premiums dramatically. Because this worsening of insurance policy conditions had a particularly negative impact on German exporters, the reduction in coverage volumes was mitigated by implementing a government top-up model under the "Business Fund Germany".[20] When economic activity picked up again in 2010, supplier credits increased markedly again at the current end, and in 2011 exceeded the 2007 peak on the balance sheets of DAX and MDAX-listed groups.

Payments received on account characterised by special sectoral business conditions

By contrast, the development of payments received on account is not driven solely by the general fluctuations in the level of economic activity in the production sector; instead, its time profile also reflects different movements specific to sectors for which this financing instrument is of great relevance (such as construction and mechanical engineering). Thus, the broad consistency in payments received on account in 2008 and 2009, years of economic downturn, can probably be explained by the business activity seen in the construction sector. Here, output remained relatively stable – unlike industrial output – due to the preceding sustained market consolidation process and the government's extensive fiscal stimulus programmes.[21]

Conclusion

Supplier and customer credits are the main sources of short-term debt financing for non-financial corporations in Germany. Their

18 See Verband der Vereine Creditreform e.V., Bundesbetriebsberatungsstelle für den deutschen Groß- und Außenhandel (BBG) (ed), Kredit- und Forderungsmanagement im Großhandel, Eine Herausforderung für Unternehmer, Neuss/Berlin 2007, p 6.
19 See W G Choi and Y Kim, Trade Credit and the Effect of Macro-Financial Shocks: Evidence from U.S. Panel Data, IMF Working Paper WP/03/127, June 2003, pp 5ff.
20 See Federal Ministry of Economics and Technology, latest meeting of the Steering Committee on Business Financing: key outcomes, press release of 1 September 2009.
21 See Deutsche Bundesbank, German enterprises' profitability and financing in 2009, Monthly Report, December 2010, pp 29-42.

use is determined not only by the cyclical patterns of the economy as a whole but also by sector-specific particularities and by financing practice that has evolved over time. Payments received on account constitute a financing instrument with which prefinancing needs stemming from long-term to-order fabrication or order-based production and, resulting from that, the producer's increased economic risk can in part be passed on to the buyer. Moreover, enterprises with large debtor portfolios resulting from trade receivables abroad also need to be able to refinance their higher financing requirements via inter-company loans at home. In addition, financing strategies in trade are based on the idea of covering the liquidity needs resulting from the purchase of the trade goods in whole or in part out of the proceeds generated by selling these goods. In Germany, trade credits show hardly any effects that are specific to size categories; certainly they are not associated with larger net financing needs specifically for SMEs.

The results of the present study illustrate that, in Germany, trade credits are a short-term financing instrument for enterprises that is geared to the specific liquidity needs of individual sectors. Thus, it substantially eases, in the short term, enterprises' financing burden as a result of certain business models, without the involvement of financial intermediaries or taking recourse to own funds that have already been earmarked under long-term planning. In offering an alternative to short-term bank loans as a means of bridging short-term liquidity bottlenecks, this special corporate loan market plays an important part in ensuring that corporate financing in Germany is more broadly based.

However, this source of financing also entails potential risks, notably the risk of substantial long-term credit exposures accumulating and contagion risks due to increased lending in the context of national and international trade relationships. Against this background it appears all the more important that, particularly when financing conditions are more difficult, enterprises systematically analyse and manage their debtor portfolios by applying a professional credit and liquidity management system on the basis of regular and up-to-date risk assessments. In so doing, they will be able to benefit from the advantages of trade credit on an ongoing basis and to keep potential risks arising from use of this financing instrument to a minimum.