

The Role of Factoring for Financing Small and Medium Enterprises

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Abstract:

Factoring is explicitly linked to the value of a supplier's accounts receivable and receivables are sold, rather than collateralized, and factored receivables are not part of the estate of a bankrupt firm. Therefore, factoring may allow a high-risk supplier to transfer its credit risk to higher quality buyers. Empirical tests find that factoring is larger in countries with greater economic development and growth and developed credit information bureaus. "Reverse factoring" may mitigate the problem of borrowers' informational opacity if only receivables from high-quality buyers are factored. We illustrate the case of the Nafin reverse factoring program in Mexico.

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1. Introduction

A challenge for many small businesses is access to financing. In particular, many firms find it difficult to finance their production cycle, since after goods are delivered most buyers demand 30 to 90 days to pay. For this duration, sellers issue an invoice, recorded for the buyer as an account payable and for the seller as an account receivable, which is an illiquid asset for the seller until payment is received. Factoring is a type of supplier financing in which firms sell their credit-worthy accounts receivable at a discount (generally equal to interest plus service fees) and receive immediate cash. Factoring is not a loan and there are no additional liabilities on the firm's balance sheet, although it provides working capital financing. In addition, factoring is often done "without recourse", meaning that the factor that purchases the receivables assumes the credit risk for the buyer's ability to pay. Hence, factoring is a comprehensive financial service that includes credit protection, accounts receivable bookkeeping, collection services and financing.

Factoring is used in developed and developing countries around the world. In 2004, total worldwide factoring volume was over US\$ 860 billion, an impressive growth rate of 88% since 1998. In some developed economies such as the United States, its importance as a primary source of working capital finance tends to be concentrated in selected industries. In other developed economies such as Italy, however, its importance as a primary source of working capital appears to be much more widespread.

The global pattern of factoring suggests that it may have an advantage compared to other types of lending, such as loans collateralized by fixed assets, under certain conditions. Factoring appears to be a powerful tool in providing financing to high-risk

informationally opaque sellers. Its key virtue is that underwriting in factoring is based on the risk of the accounts receivable themselves rather than the risk of the seller. For example, factoring may be particularly well suited for financing receivables from large or foreign firms when those receivables are obligations of buyers who are more creditworthy than the seller itself.

Factoring may also be particularly attractive in financial systems with weak commercial laws and enforcement. Like traditional forms of commercial lending, factoring provides small and medium enterprises (SMEs) with working capital financing. However, unlike traditional forms of working capital financing, factoring involves the outright purchase of the accounts receivable by the factor, rather than the collateralization of a loan. The virtue of factoring in a weak business environment is that the factored receivables are removed from the bankruptcy estate of the seller and become the property of the factor.

However, factoring may still be hampered by weak contract enforcement institutions and other tax, legal, and regulatory impediments. Weaker governance structures may also create additional barriers to the collection of receivables in developing countries. For instance, it might be more difficult to collect receivables from state-owned companies (i.e. where state-owned companies are the buyers) than from other companies. Factors may also face difficulties collecting receivables from multinationals and foreign buyers.

Empirical tests confirm these hypotheses. Using a sample of factoring turnover as a percentage of GDP for 48 countries around the world, we find that creditor rights are not significant predictors of factoring. However, we find that access to historical credit

information, which is necessary to access the credit risk of factoring transactions and enforce factoring arrangements, does matter. We also find weak evidence that factoring is relatively larger in countries with weak contract enforcement, which suggests that factoring may substitute for collateralized lending. We conclude with a discussion of the Nafin factoring program in Mexico, which is an example of “reverse factoring”, a factoring technology that has succeed in a weak business environment.

2. The Mechanics of Factoring

In factoring, the underlying assets are the seller’s accounts receivable, which are purchased by the factor at a discount. The remaining balance is paid to the seller when the receivables are paid to the factor, less interest and service fees. For example, a factor might offer sellers financing up to 70% of the value of an account receivable and pay the remaining 30% – less interest and service fees – when payment is received from the buyer. The advance rate will be determined in part by historical payment patterns, which may vary by country and firm.¹

In general, financing is linked on a formula basis to the value of the underlying assets, e.g., the amount of available financing is continuously updated to equal a percentage, known as the “advance rate”, of available receivables. The advance rate is typically fixed over time based on historical dilution experience, e.g. experience with respect to return items, advertising allowances, discounts, and other credit memos and adjustments. However, the factor may continuously adjust the accept/reject decision on specific receivables or specific buyers.

¹ For instance, in the U.S. it is not uncommon for factors to advance up to 90% of the value of the accounts receivable.

Factoring can be done either on a “non-recourse” or “recourse” basis against the factor’s client (the sellers). In non-recourse factoring, the lender not only assumes title to the accounts, but also assumes most of the default risk because the factor does not have recourse against the supplier if the accounts default. Under recourse factoring the factor has a claim (i.e., recourse) against the seller for any account payment deficiency. Therefore, losses occur only if the underlying accounts default and the seller cannot make up the deficiency. In developed countries it appears that factoring is more frequently done on a non-recourse basis. In Italy, for example, 69% of all factoring is done on a non-recourse basis (Muschella 2003). Similarly, a study of publicly traded firms in the U.S. found that 73% of firms factored their receivables on a non-recourse basis, but that both sellers with poorer quality receivables and sellers who, themselves, were higher quality were more likely to factor with recourse (Sopranzetti 1998). Since in emerging markets it is often problematic to assess the default risk of the underlying accounts, typically factoring is done on a recourse basis so that the factor can collect from the seller in the case that the buyer defaults. For instance, a survey of factors in eight EU-accession countries finds that most factoring in the region is done with recourse (Bakker, Klapper and Udell, 2004).

An important feature of the factoring relationship is that a factor will typically advance less than 100% of the face value of the receivable even though it takes ownership of the entire receivable. The difference between this advance amount and the invoice amount (adjusted for any netting effects such as sales rebates) creates a reserve held by the factor. This reserve will be used to cover any deficiencies in the payment of the related invoice as well as all credit memos and adjustments (e.g. returned items,

advertising allowances, discounts, etc.). Thus, even in non-recourse factoring there is risk sharing between the factor and the client in the form of this reserve account.

Factoring can also be done on either a notification or non-notification basis. Notification means that the buyers are notified that their accounts (i.e., their payables) have been sold to a factor. Under notification factoring, the buyers typically furnish the factor with delivery receipts, an assignment of the accounts and duplicate invoices prepared in a form that indicates clearly to the supplier that their account has been purchased by the factor.

Factoring can be viewed as a bundle of activities. In addition to the financing component, factors typically provide two other complementary services to their clients: credit services and collection services. The credit services involve assessing the creditworthiness of the seller's customers whose accounts the factor will purchase. Factors typically base this assessment on a combination of their own proprietary data and publicly available data on account payment performance. The collection services involve the activities associated with collecting delinquent accounts and minimizing the losses associated with these accounts. This includes notifying a buyer that an account is delinquent (i.e., past due) and pursuing collection through the judicial system. Factoring allows SMEs to effectively outsource their credit and collection functions to their factor. This represents another important distinction between factors and traditional commercial lenders.

These credit and collection services are often especially important for receivables from buyers located overseas. For example, "export" or "cross-border" factoring, which is the sale of foreign receivables, can facilitate and reduce the risk of international sales

by collecting foreign accounts receivables. The seller's factor will typically contact a factor in the buyer's home country (via Factor Chain International, a worldwide association of factoring companies) who will do a credit check on the buyer. If the buyer is approved, the seller's factor will pay the seller a percentage of the face value of the receivable, and the factor in the buyer's country, for a fee, will take on the responsibility of collecting the amount due from the buyer. Since the foreign factor is required to do a credit check on the foreign customer before agreeing to purchase the receivable, the approval of a factoring arrangement also sends an important signal to the seller before entering a business relationship. The seller can also improve its own risk management, by reducing its credit and exchange rate risks. This can facilitate the expansion of sales to overseas markets. However, the role of export factoring in both developed and developing countries is relatively small: less than 10% of factoring in developing countries is international, versus about 20% in developed countries (Factor Chain International, 2005). One reason is that exporters often rely on other products to facilitate foreign sales, such as foreign credit insurance and letters of credit.²

3. The Benefits and Challenges to Factoring in Emerging Markets

Factoring is quite distinct from traditional forms of commercial lending where credit is primarily underwritten based on the creditworthiness of the seller rather than the value of the seller's underlying assets. In a traditional lending relationship, the lender looks to collateral only as a secondary source of repayment. The primary source of repayment is the seller itself and its viability as an ongoing entity. In the case of

² See Bakker, Klapper, and Udell (2004) for additional information.

factoring, the seller's viability and creditworthiness, though not irrelevant, are only of secondary underwriting importance.

In some countries, borrowers can use receivables as collateral for loans. The difference is that the lender secures the working capital assets as collateral, rather than taking legal ownership of the assets. Therefore, this type of financing requires good secured lending laws, electronic collateral registries, and quick and efficient judicial systems, which are often unavailable in developing countries. However, factoring only requires the legal environment to sell, or assign, accounts receivables and depends relatively less on good collateral laws or efficient judicial systems than traditional lending products.

Factoring is used in both developed and developing countries. For instance, as shown in Table 2 the average ratio of factoring to GDP is 1.01% in middle-income countries, versus an average ratio of credit to the private sector to GDP of 55.67%. This compares to an average ratio of factoring to GDP is 2.56% in high-income countries, versus an average ratio of credit to the private sector to GDP of 104.05%. Although absolute factoring turnover (and relative to GDP) is smaller in emerging markets than in developed countries, factoring might play a relatively more important role for SMEs and new firms in emerging markets that often have difficulty accessing bank financing.³

Evidence in previous literature finds that trade credit is used more in countries with greater barriers to SME financing. For example, a study by Demirguc-Kunt and Maksimovic (2001) finds that in 39 countries around the world, trade credit use is higher relative to bank credit in countries with weak legal environments, which make bank

³ Furthermore, in high-income countries "credit to the private sector" is likely to include a higher share of consumer and mortgage financing than in middle-income countries.

contracts more difficult to write. Fisman and Love (2003) highlight the impact of inter-firm financing by showing that industries with higher dependence on trade credit financing exhibit higher rates of growth in countries with relatively weak financial institutions. Van Horen (2004) studies the use of trade credit in 39 countries and finds that trade credit is used as a competitive tool, particularly for small and young firms. Fisman and Raturi (2004) find that competition encourages trade credit provision in five African countries. McMillan and Woodruff (1999) study the use of trade credit in Vietnam and find that small firms are more likely to both grant and receive trade credit than large firms. This evidence suggests that small firms in emerging markets generally provide trade credit and hold illiquid accounts receivable on their balance sheets. In addition, firms in developed countries often refuse to pay on receipt to firms in emerging markets since they want time to confirm the quality of the goods and know that it could be very difficult to receive a refund from firms in countries with slow judicial systems.

The challenge faced by many SMEs in emerging markets is how to convert their accounts receivable to creditworthy customers into working capital financing. A bank loan secured by accounts receivable, which is the primary source of SME financing in the U.S., is often unavailable in emerging markets. First, it requires the lender to be able to file a lien against all business assets of the firm. For example, in the US the Uniform Commercial Code (UCC) Section 9 allows banks to secure “all current and future inventory, receivables, and cash flow” of a firm. Furthermore, this type of financing requires sophisticated technology and comprehensive credit information on firms. For instance, receivable lenders in the U.S and U.K. generally depend on “electronic ledgers”, which allow firms to input all receivable information on-line along with their

customers' Dunn & Bradstreet (D&B) ID numbers. The electronic ledger automatically receives the D&B rating for each customer, which is a credit score calculated by D&B based on the firms' current and expected future performance, and the receivables are instantaneously accepted or rejected as collateral. In the case of approval, the seller's credit line is automatically increased to reflect the new receivables. However, most developing countries do not have laws allowing lenders to secure "intangible/ floating" assets and do not have judicial systems that are sufficiently quick and efficient to enforce such contracts. Furthermore, most emerging markets do not have the technological infrastructure or access to commercial credit information necessary to allow this type of automated credit approval.

There are also a number of additional tax, legal, and regulatory challenges to factoring in many developing countries. For instance, the tax treatment of factoring transactions often makes factoring prohibitively expensive. For example, some countries that allow interest payments to banks to be tax deductible do not apply the same deduction to the interest on factoring arrangements, VAT taxes may be charged on the entire transaction (not just the service fee), and stamp taxes may be applied to each factored receivables. Factoring companies that do not take deposits are sometimes subject to burdensome and costly prudential regulation. In addition, capital controls may prevent non-banks from holding foreign currency accounts for cross-border assignments.

The legal and judicial environment may also play a critical role in determining the success of factoring. A key legal issue is whether a financial system's commercial law recognizes factoring as a sale and purchase. If it does, then creditor rights and enforcement of loan contracts diminish in importance for factoring because factors are

not creditors. That is, if a firm becomes bankrupt, its factored receivables would not be part of the bankruptcy estate because they are the property of the factor, not the property of the bankrupt firm. However, creditor rights and contract enforcement are not entirely irrelevant to factors, even in non-recourse factoring arrangements, since they describe the environment under which the factor engages in its collection activities, which might affect the expected costs and efficiency of factoring.

Another legal issue is whether a country has a Factoring Act or a reference in the law (or civil code), which legally recognizes factoring as a financial service. This recognition serves multiple purposes. It serves to clarify the nature of the transaction itself. For example, a Factoring Act explicitly dictates how judges must rule towards factors in the case of default of sellers or customers. It also tends to legitimize the factoring industry. For instance, in a sample of Central European countries, factoring (as a percentage of GDP) is higher in countries with Factoring Acts, although the development of such Acts may in part be in response to the development of, and pressures from, domestic factors (Bakker, Klapper, and Udell, 2004). However, the indication is that a supportive legal and regulatory environment encourages the factoring industry to grow.

A weak information infrastructure may also be problematic for factors. The general lack of data on payment performance, such as the kind of information that is collected by public or private credit bureaus or by factors themselves, can discourage factoring. Since the credit risk of the transaction is the aggregate credit risk of all the supplier's customers, the cost and time required to collect information on many customers may discourage factoring in countries with weak credit information.

Finally, an advantage to factoring is that it's generally linked on a formula basis to the value of the underlying assets, which allows quick credit approval and disbursement. However, this depends on a good technology infrastructure and supporting electronic security laws that allow the electronic sale and transfer of electronic securities (accounts receivable). Furthermore, there must be a supportive regulatory environment for electronic security, so that factors and sellers are assured that their transactions are confidential and secure. The success of electronic factoring programs depend on a technological and legal environment that facilitates safe and easy electronic transactions.

4. The Advantage of “Reverse Factoring”

In ordinary factoring, a small firm sells its complete portfolio of receivables, from multiple buyers, to a single factor. Many factors will only purchase complete portfolios of receivables in order to diversify their risk to any one seller. In fact, many factors require sellers to have a minimum number of customers in order to reduce the exposure of the factor to one buyer – and to the seller's ability to repay from receipts from other buyers – in the case that a buyer defaults. However, this diversified portfolio approach requires factors to collect credit information and calculate the credit risk for many buyers.

Ordinary factoring has in general not been profitable in emerging markets. First, if good historical credit information is unavailable, then the factor takes on a large credit risk. For instance, in many emerging markets, the credit information bureau is incomplete (i.e. may not include small firms) or non-bank lenders, such as factors, are prohibited from joining. Second, fraud is a big problem in this industry – bogus receivables, non-existing customers, etc. – and a weak legal environment and non-

electronic business registries and credit bureaus make it more difficult to identify these problems. An alternative often used in emerging markets is for the factor to buy receivables “with recourse”, which means that the seller is accountable in the case that a buyer does not pay its invoice, and that the seller of the receivables retains the credit risk. However, this may not successfully reduce the factor’s exposure to the credit risk of the seller’s customers, since in the case of a customer’s default, the seller may not have sufficient capital reserves to repay the factor.

One solution to these barriers to factoring is the technology often referred to as “Reverse Factoring”. In this case, the lender purchases accounts receivables only from specific informationally transparent, high-quality buyers. The factor only needs to collect credit information and calculate the credit risk for selected buyers, such as large, internationally accredited firms. Like traditional factoring, which allows a supplier to transfer the credit risk of default from itself to its customers, the main advantage of reverse factoring is that the credit risk is equal to the default risk of the high-quality customer, and not the risky SME. This arrangement allows creditors in developing countries to factor “without recourse” and provides low-risk financing to high-risk suppliers.

Reverse factoring may be particularly beneficial for SMEs for a number of reasons. First, as previously discussed, ordinary factoring requires comprehensive credit information on all the seller’s customers, which may be particularly difficult and costly to determine for SMEs in countries with weak credit information systems. Second, reverse factoring makes it possible for firms to factor without recourse, which allows SMEs to transfer their credit risk to the factor.

Another advantage of reverse factoring is that it provides benefits to lenders and buyers as well. In many countries factoring is offered by banks. In this case, factoring enables lenders to develop relationships with small firms (with high quality customers) without taking on additional risk. This may provide cross-selling opportunities and allows the lender to build a credit history on the small firm that may lead to additional lending (for fixed assets, for example).

The large buyers may also benefit: by engineering a reverse factoring arrangement with a lender and providing its customers with working capital financing, the buyer may be able to negotiate better terms with its suppliers. For example, buyers may be able to extend the terms of their accounts payable from 30 to 60 days. In addition, the buyer benefits from outsourcing its own payables management (e.g. the buyer can send a payment to one lender rather than many small suppliers). Many buyers favor this arrangement to self-financing receivables, such as making early payments at a discount, since it might be difficult in countries with weak legal environments to receive back payments in the case that goods are damaged and returned.

5. The Determinants of Factoring

In this section we test what country-level characteristics are associated with a greater use of factoring. We use a 10-year panel dataset on total factoring turnover from Factor Chain International (2005) for 48 countries from 1993 to 2003. The data include 25 high-income and 23 middle-income countries. Since some countries did not start offering factoring services (or collecting aggregate measures) until after 1994, we use an unbalanced panel of 479 observations. Complete definitions of all variables are shown in

Table 1 and summary statistics, by country, are shown in Tables 2 and 3. We calculate our dependent variable as the ratio of total factoring turnover to GDP. The average factoring ratio for the countries in our sample is 1.81%.

As shown in Table 2, factoring is starting to emerge as a major source of financing in developed and developing economies. In 2003, factoring as a percentage of GDP was on average 1.81%, including an average of 1.01% in middle-income countries and 2.56% in high-income countries. Factoring is particularly important in a number of high-income countries; for example, total factoring turnover as a percentage of GDP was over 6% in Italy, the United Kingdom, and Portugal. Although the absolute and relative size of factoring turnover is still small in many developing countries, recent growth rates suggest that it is growing in importance. For instance, the three-year growth rate of factoring turnover was 1.09% in middle-income countries versus 0.50% in high-income countries. For example, although factoring turnover as a percentage of GDP was smallest in China, India, and Romania, these same three countries also experienced growth rates of over 100%.⁴

We test the hypothesis that there is a relation between factoring and local macroeconomic and business environment variables. As discussed in the previous section, ordinary factoring requires comprehensive credit information on all buyers and a legal environment that supports the sale of accounts receivables and the enforcement of factoring contracts. We also expect greater factoring turnover in countries with higher levels of economic development and economic activity. The relation between factoring and measures of bank credit is less clear: On the one hand, factoring services may be provided as a complement to banking services in countries with overall financial

⁴ Overall, 11 emerging markets had 3-year growth rates between 2000 and 2003 of over 100%.

development, while on the other hand, factoring may substitute for bank financing in countries with less developed banking sectors.

To test these hypotheses, we include as our explanatory variables measures of macroeconomic development and the strength of the business environment. First, we include the 1-year lagged value of logged real GDP per capita ($LGDP_{t-1}$) as a broad measure of development. Next, we include the 1-year lagged value of the 1-year growth rate of GDP as an indicator of economic growth ($GDPG1_{t-1}$). Finally, we include the 1-year lagged value of the ratio of credit to the private sector to GDP as a measure of credit availability (DC_GDP_{t-1}). As shown in Table 4, these macroeconomic indicators are highly correlated. Therefore, we try alternative specifications and find that our results are robust to the exclusion of the ratio of credit to the private sector to GDP.

Our next set of explanatory variables includes indicators of the business and legal environment. First, we include the “Credit information index” (CreditInfo) from the World Bank’s Doing Business Indicators, which measures the scope, access and quality of credit information available through either public or private bureaus (a higher number indicates a better credit information environment). Ordinary factoring (the purchasing of receivables from all buyers) requires quick and comprehensive credit information on a large number of buyers. We therefore expect factoring to be larger in countries with a better credit information infrastructure. In general, more developed financial systems have greater information sharing: the average credit information index is 3.9 for middle-income countries versus 4.9 in high-income countries.

Next, we include “Creditor Rights” (CreditorRts), which is an index aggregating four indicators of creditor rights from Djankov, McLiesh, and Shleifer, 2005 (a higher

number indicates better creditor rights). This measure captures the quality of country-level laws, but does not indicate the efficacy of their enforcement. The average index for middle-income countries is 3.9 versus an average in high-income countries of 4.4. We also include from the World Bank's Doing Business Indicators the "Cost of enforcing contracts as a % of debt" (Enforce_Debt), which measures the official costs of going through court procedures as a percentage of the debt value (a higher value indicates a weaker contract environment). Middle-income countries appear to have much more costly contract environments, with an average relative cost of 22.04% versus 11.28% in high-income countries. It is difficult to predict the sign of these two variables, since on the one hand, factoring can substitute for collateralized lending in countries with weak collateral laws and contract enforcement (since the receivables are sold, rather than collateralized), but on the other hand, factoring requires strong creditor rights for the factor to collect from buyers in the case of default. As shown in Table 4, these two measures are positively, but insignificantly, related, which suggests that differences may exist within countries between the quality of laws and official enforcement costs.

Our regression results are shown in Table 5. In column 1 we include country fixed effects and in all columns (except column 6) we include year fixed effects. Given that our business environment variables are constant over time, in column 6 we use country averages and test a cross-section of data. Since the legal and business environment variables are highly correlated (as shown in Table 4), we introduce our variables separately as well as in one regression model.

For all models we find that factoring is significantly larger in countries with greater economic development, as measured by GDP per capita. When we exclude

country dummies, the 1-year growth of GDP is significant, which suggests that factoring is larger when the economy is growing and sales are greater. It might be the case that more firms use factoring for working capital financing when their stock of receivables and number of customers increases.

Columns 3 to 6 show that factoring is more important in countries with better availability of credit information. This complements the findings in previous studies that the ratio of private credit to GDP is higher and financing obstacles are lower in countries with better information sharing (Djankov, et al., 2005 and Love and Mylenko, 2003, respectively). Our results suggest that access to credit information increases not only the provision of bank credit, but greater access to financing from non-bank sources as well.

We find weak evidence that factoring is larger in countries with weaker contract enforcement, which is consistent with our hypothesis that factoring may be a substitute for lending in countries where it is more difficult to write a debt contract, enforce collateral, and collect in the case of default. The advantage of factoring in this environment is that it involves the sale of receivables, which makes the factor the owner of future payments from buyers, rather than a creditor of the supplier. This critical difference between factoring and bank lending may also explain why we do not find a relation between creditor rights and factoring, although the relation between these variables and private credit has been found significant in previous studies (La Porta, et al, 1997).

To summarize, our results find that ordinary factoring is an important source of financing in countries with better availability of credit information and weaker contract enforcement. Access to credit information and judicial efficiency is a challenge,

however, in many developing countries. In the next section we discuss an example of how “reverse” factoring is used in an emerging market to overcome these barriers to factoring and succeed in a weak business environments.

6. The Nafin Factoring Program in Mexico

As discussed in the previous section, ordinary factoring requires lenders to have timely and comprehensive credit information and suppliers to have sophisticated technology and management information systems (MIS). However, reverse factoring only requires complete credit information on one or more creditworthy firms. There are potentially advantages for all participants: For the factor, who benefits from low information costs and credit risk; for the (high-risk) seller, who benefits from access to short-term, working capital financing; and for the (creditworthy) buyer, who benefits from the ability to outsource its receivable management and negotiate better terms with its suppliers.

A successful example of reverse factoring in a developing country is the case of the Nacional Financiera (Nafin) development bank in Mexico, which created an internet-based market infrastructure to facilitate on-line factoring services to SME suppliers. The program is called the “Cadenas Productivas” (“Productive Chains”) program and works by creating “Chains” between “Big Buyers” and small suppliers. The Big Buyers are large, creditworthy firms that are low credit risk. The suppliers are typically small, risky firms who generally cannot access any other financing from the formal banking sector. The program allows small suppliers to use their receivables from Big Buyers to receive working capital financing, effectively transferring their credit risk to their high-quality customers to access more and cheaper financing. The role of Nafin is only to coordinate

on-line factoring services and not to factor receivables directly. The services provided by Nafin are to operate and promote the electronic factoring platform, encourage the participation of large buyers, and educate SMEs on how to take advantage of the program.⁵

Nafin was created by the Mexican government in 1934 as a state-owned development bank. When a new government was elected in 2000, Nafin was given new management and direction with the goal to use technology to help provide microenterprise and SME loans and to complement bank lending with greater training and technical assistance. Nafin is primarily a second-tier development bank: About 90% of lending is done through refinanced bank loans and about 10% is made directly to sellers (primarily public projects). About 80% of the second-tier business is currently the refinancing of banks that participate in the factoring program. In Dec 2000, Nafin reported assets of \$23.9 billion and a deficit of \$429 million. In Dec 2003, Nafin reported assets of \$26.75 billion and a surplus of 13.23 million. Factoring has helped contribute to the turn-around in Nafin's balance sheet. Nafin does not currently receive any direct government subsidies, but is able to cover its own costs with the interest that lenders pay for its refinancing capital.⁶ However, it is important to note that Nafin loans are not necessary for the factoring platform to work. For instance, Nafin could alternatively charge banks a service fee for the use of the platform.

About 99% of registered Mexican firms in the formal economy – about 600,000 firms – are classified as small and micro enterprises. SMEs comprise 64% of employment

⁵ Nafin offers on-line and attendance courses on accounting standards, how to apply for credit, business ethics, marketing, and strategy. SMEs are also offered discounts at affiliated university classes. About 70% of SMEs participated in some form of training.

⁶ However, as a state-owned institution, Nafin receives an implicit government guarantee, which may reduce its public funding costs, which comprised about 70% of its total external financing in 2003.

and 42% of GDP. In 2004, almost 80% of small firms in Mexico received no bank credit and instead depended for financing on family savings and other personal funds (Banco de Mexico, 2004). The goal of Nafin was to target this segment of small firms with banking services.

Nafin has succeeded in providing access to financial services to Mexican SMEs. As of mid-2004, Nafin had established Productive Chains with 190 Big Buyers (about 45% in the private sector) and more than 70,000 small and medium firms. About 20 domestic lenders are participating, including banks and independent finance companies, which have extended over US\$ 9 billion in financing since the program's inception in September 2001. Nafin has brokered over 1.2 million transactions, about 98% by SMEs. In 2004, Nafin brokered over 60% of factoring turnover in Mexico.

The Nafin program offers a number of products. The main product offered is factoring services, as shown in Figure 1. Nafin requires that all factoring services it brokers are offered without additional collateral or service fees, at a maximum interest rate of seven percentage points above the bank rate (five percentage points, on average), which is about eight percentage points below commercial bank rates. All factoring is also done without recourse, which lets small firms increase their cash holdings and improve their balance sheets. The sale of receivables from the supplier to the factor and the transfer of funds from the factor to the supplier are done electronically. Participating SMEs must be registered with Nafin and have an account with a bank that has a relationship with the supplier's big buyer. Following a factoring transaction, funds are transferred directly to the supplier's bank account, and the factor becomes the creditor

(e.g. the buyer repays the bank directly). The factor collects the loan amount directly from the buyer (in 30 to 90 days).

Nafin maintains an internet site with a dedicated page for each Big Buyer. Suppliers are grouped in “chains” to big buyers to whom they have a business relationship. Nafin also plays a critical role in handling the sale and delivery of electronic documents. The suppliers and Nafin sign a pre-agreement allowing the electronic sale and transfer of receivables. Additional contracts between the factors and buyers and Nafin define their obligations, such as the requirement for buyers to remit factored receivables to the banks directly.

Once a supplier delivers its goods and an invoice to the buyer, the buyer posts on its Nafin webpage a “documentos negociables” (“negotiable documents”) equal to the amount that Nafin should factor. Next, the supplier uses the internet to access its buyer’s Nafin webpage and clicks its receivable. Any factor that has a relationship with the buyer and the supplier and is willing to factor the receivable will appear on the next screen, along with a quote for the interest rate at which it’s willing to factor this specific receivable. To factor its receivable, the supplier clicks on a shown factor and the amount of its negotiable document less interest is transferred to its bank account. When the invoice is due, the buyer pays the factor directly.

Even though the buyers are high quality, a remaining risk to the factor is in the case of returns – if the buyer is unsatisfied with the quality of the goods or services received, they generally have the right to return the goods for a full refund within a certain number of days. Nafin and the buyers help factors reduce their losses in two ways: First, buyers must “invite” sellers to join their chain and participate in the

program. Buyers generally require sellers to have a relationship of a minimum length and performance record before participating. Second, in the case of returns, the factor receives future receivable payments directly from the buyer and the buyer adjusts the amount of the negotiable documents on future receivable payments posted on the Nafin website by the amount of the receivables due to returns.

A unique feature of the Nafin service is that over 98% of all services are provided electronically, which reduces time and labor costs and improves security. This includes payments from factors to suppliers and from buyers to factors, as well as the purchase and delivery of electronic documents. The electronic platform also allows all commercial banks and SMEs to participate in the program, which gives, via the internet, both national reach to regional banks and access by rural firms to money-center banks. In addition, it allows multiple lenders to electronically compete to factor suppliers' receivables. The Nafin factoring program is in part profitable and successful because it uses an electronic platform for cheaper and quicker transactions. All transactions are completed within 3 hours and money is credited to suppliers account by the close of business. This provides immediate liquidity to suppliers. The Nafin factoring program is also less expensive than ordinary commercial factoring because Nafin pays the costs associated with operating the electronic factoring platform and all legal work, such as document transfers and preparing documents.

The Nafin electronic infrastructure depends in part on supporting electronic security laws. For example, in May 2000, the "Law of Conservation of Electronic Documents" was passed giving data messages the same legal validity as written documents, which is necessary for electronic factoring. In April 2003, the "Electronic

Signature Law” was enacted, which allows secure transactions substituting electronic signatures for written signatures, which permits the receiver of a digital document to verify with certainty the identity of the sender. In January 2004, modifications to the Federation Fiscal code included amendments necessary for electronic factoring, including digital certification. These laws allow secure and legally binding factoring transactions.⁷

The second product, “Contract Financing”, is shown in Figure 2. This product provides financing that allow creditors to buy raw materials to complete new orders and is an example of how factoring can be extended to provide pre-delivery financing. This product provides financing to suppliers of up to 50% of confirmed contract orders from Big Buyers with Nafin supply chains, with no fees or collateral, and a fixed rate (generally seven percentage points above the bank rate). Suppliers permitted to use this product must be recommended by a Buyer, based on a strong performance history (e.g. no returns or late deliveries) and a stable average balance of receivables over time. Suppliers that receive contract financing must sign a contract with Nafin stipulating that the supplier will factor its receivables to Nafin when its goods are delivered and the buyer posts a negotiable document to its Nafin website. Nafin factors the negotiable document and takes as payment the amount of the negotiable document equal to the outstanding line of credit plus interest. The remainder is paid by Nafin to the supplier, less the interest paid on factoring that is equal to the lower factoring interest rate of the bank rate + 5%.

Nafin introduced the contract financing program in 2004 and as of June 2005, provides the financing directly (as a first-tier loan) to small suppliers and holds the future receivables until the buyer remits. However, it is the intent of Nafin to develop a track-

⁷ Similarly, the Philippine government passed the E-commerce Act in 2000, which allows for the use of digital signatures and ensures the legal enforceability of electronic documents, in part to promote a similar “reverse factoring” program at the Development Bank of the Philippines (Glaessner and Kantur, 2004).

record of profitability and low defaults rates with this program so that private lenders will participate (with the option of available Nafin second-tier financing).

The Nafin program offers benefits to sellers, buyers, and factors. For small suppliers, the Nafin factoring program reduces borrowing and transaction costs. First, factoring offers working capital financing at favorable rates. Factoring provides instant liquidity, which allows businesses to grow with funds that were previously tied up in receivables. In addition, all interest charges are tax deductible. The Nafin program also has advantages over ordinary factoring products. Since reverse factoring transfers the credit risk of the loan to the suppliers' high-quality buyers, factors can offer factoring without recourse to SMEs, even those without credit histories. This allows SMEs to increase their cash stock – and improve their balance sheets – without taking on additional debt. In addition, Nafin charges no commissions (to the seller) and offers capped interest rates. The competitive structure, which allows lenders to compete for suppliers' receivables, allows firms to pick their own lender. Another advantage to small suppliers is that factoring reduces transaction costs. Previously, many rural SMEs needed to travel to customers in the city to present bills, collect payments, and pay suppliers. By factoring its receivables, the supplier eliminates its collection costs by effectively outsourcing its receivable management.

For large buyers, the benefit is that the factor manages their accounts payable payments and the buyer often develops stronger relationships with its suppliers. For instance, buyers decrease their administrative and processing costs by effectively outsourcing their payment department, e.g. the buyer writes one check to a factor rather than to multiples of suppliers. By providing its suppliers with working capital financing,

buyers can also improve their reputation and relationship with suppliers. For example, buyers can often negotiate better terms with suppliers, such as to extend payment terms from 30 to 60 or 90 days. Participating in the Nafin program can also help the development of suppliers and the growth of the SME sector, which can lead to increases in competition and improvements in the quality of goods.

For the factors, which are mostly banks, factoring is a way to develop new relationships with suppliers – banks can use factoring to build a credit history on firms, including information on their cash, accounts receivable and inventory turnover, and cross-sell other products such as credit cards, truck financing, payroll, etc. In addition, because reverse factoring only includes high quality receivables, banks can increase their operations without increasing their risk.

Although it is important to note that the benefits to SMEs of the Nafin factoring program do not depend on Nafin financing, banks also have incentive to participate in the Nafin program because Nafin provides low-cost second-tier financing. Most banks refinance their factoring activities with Nafin, in which case the bank earns the spread between what the suppliers pay and the Nafin rates. Some large and foreign banks with cheaper sources of funding use their own funds and pay Nafin from 42 to 100 basis points commission. However, about 99.6% of factoring is done with Nafin financing. The Nafin E-platform also reduces transaction costs by eliminating the need to physically move documents, which is a large expense in off-line factoring.

Another advantage is that for regulatory purposes, banks can use lower risk weights on factored transactions; e.g. if the factoring is done without recourse, banks can use the risk of the buyer rather than the higher risk of the supplier. This is an important

reason that banks will lend to small and risky customers only in factoring arrangements. In addition, an advantage of the Nafin platform is that it prevents fraud, which is systemic in the factoring business in the U.S. and other developed countries. Since the buyer enters the receivables (not the customers), the seller cannot submit fraudulent receivables. Since the bank is paid directly by the buyer, suppliers cannot embezzle the proceeds.

In the future, Nafin can also play a role to securitize receivables. For example, a security backed by Walmart receivables might be an attractive security, equal to the credit risk of Walmart. Nafin could play an important coordination role bundling receivables of one large buyer across lenders, since no one lender has a large enough portfolio to securitize independently. Nafin is also committed to working toward the development of capital markets in order for small and midsize non-bank (non-deposit taking) financial intermediaries to participate. For example, independent leasing and factoring companies generally raise capital on the public debt and equity markets (e.g. in the U.S. NBFIs are the largest issuers of commercial paper). This would also reduce the dependence of factors on Nafin second-tier financing.

There are a number of lessons to be learned from the Nafin program. The Mexican economy has improved the past few years, as the result of macro stability and the continuing recovery of the banking sector from the 1995 “Tequila” crisis. However, factoring remains the cheapest form of financing for small suppliers in Mexico and most suppliers that participate in the Nafin program have no other sources of formal financing. The Nafin program spotlights the role of factoring as an important source of working capital financing.

The success of the Nafin program also highlights how the use of electronic channels can cut costs and provide greater SME services. The Nafin factoring program is used as a model in Mexico for the automation of other government agencies and service providers. Advances in technology can reduce the costs of lending that can allow banks to lend at lower margins, which make borrowing feasible for small firms. On-line banking services also allow lenders to penetrate rural areas without banks and provide incentive for firms in the informal sector to register and take advantage of financing opportunities. The effectiveness of the Nafin Electronic Signature and Security laws in Mexico could be a model for other developing countries. Factoring is an ideal source of financing in countries with small, risky suppliers and large and foreign buyers. However, successful factoring programs require government support in setting up a legal and regulatory environment that allows a secure and electronic sale of receivables.

7. Conclusion

Around the world, factoring is a growing source of external financing for large corporations and SMEs. What is unique about factoring is that the credit provided by a lender is explicitly linked on a formula basis to the value of a supplier's accounts receivable and is less dependent on the supplier's overall creditworthiness. Therefore, factoring may allow high-risk suppliers to transfer their credit risk to their high-quality buyers. Factoring may be particularly useful in countries with weak contract enforcement, inefficient bankruptcy systems, and imperfect records of upholding seniority claims, because receivables factored without recourse are not part of the estate of a bankrupt SME. Reverse factoring might also mitigate the problem of sellers'

informational opacity in business environments with poor credit information infrastructures if only receivables from high-quality buyers are factored.

Empirical tests show the importance of economic development and growth for the provision of factoring services. In addition, our tests highlight the importance of good credit information for the success of factoring. We also find weak evidence that factoring is larger in countries with weak contract enforcement. For instance, because ordinary factoring requires historical credit information on a large number of buyers, its success depends on access to quick and comprehensive credit information.

Our paper also suggests “reverse factoring” as an alternative factoring technology in countries with poor credit information. An example of reverse factoring is the Nafin factoring program, which highlights how the use of electronic channels can cut costs and provide greater SME services in emerging markets. By creating “chains” of small suppliers and big buyers, Nafin can help coordinate low-cost factoring without recourse, which is an important source of financing and improves the balance sheet of small firms. The success of the Nafin program depends in part on the legal and regulatory support offered in Electronic Signature and Security laws that should be a model for other developing countries.

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Table 1: Descriptions of the Variables

Variable Name	Description	Mean
Fact_GDP _t	Total factoring turnover as a percentage of nominal GDP. <u>Source</u> : Factor Chain International (factoring turnover) and World Bank (GDP).	1.68
LGDPPC _{t-1}	GDP per capita, lagged 1 year. <u>Source</u> : World Bank.	8.99
GDP_G1 _{t-1}	1-Year growth rate of GDP, lagged 1 year (percent). <u>Source</u> : World Bank.	3.46
DC_GDP _{t-1}	Domestic credit to the private sector as a percentage of GDP, lagged 1 year. <u>Source</u> : World Bank.	74.94
CreditorRts	An index aggregating four creditor rights: restrictions on reorganization, no automatic stay on assets, if secured creditors are paid first, and if management does not stay during reorganization. <u>Source</u> : Djankov, McLiesh, and Shleifer, 2005.	1.96
CreditInfo	“Credit information index”, which measures the scope, access and quality of credit information available through either public or private bureaus. <u>Source</u> : Doing Business Indicators.	4.18
Enforce_Debt	“Cost of enforcing contracts as a % of Debt”, which measures the official cost of going through court procedures for debt recovery, as a percentage of the debt value. <u>Source</u> : Doing Business Indicators.	17.35

Table 2: Average Factoring Turnover By Country, 1994-2003 (in Millions of EUR)

See Table 1 for variable definitions.

Countries	Factoring Turnover (millions Euro)	Factoring as a Percentage of GDP (Fact_GDP)	3-Yr Growth Rate of Factoring Turnover (2000 to 2003)
Argentina	675.60	0.25%	-95.92%
Australia	5,690.80	1.37%	87.38%
Austria	2,111.30	1.00%	28.88%
Belgium	6,938.10	2.75%	43.75%
Brazil	8,662.10	1.54%	0.23%
Canada	2,425.50	0.37%	40.12%
Chile	2,247.80	3.19%	32.08%
China	630.80	0.05%	1,145.28%
Costa Rica	124.90	0.78%	-28.29%
Czech Republic	876.10	1.43%	87.06%
Denmark	3,733.70	2.16%	37.53%
Finland	5,826.10	4.52%	23.56%
France	48,650.60	3.35%	39.56%
Germany	21,936.50	1.04%	49.39%
Greece	1,238.20	0.93%	145.33%
Hong Kong	1,772.00	1.10%	35.42%
Hungary	359.70	0.62%	231.98%
India	549.30	0.11%	243.62%
Indonesia	762.30	0.36%	-66.67%
Ireland	5,332.70	5.48%	36.15%
Israel	190.40	0.18%	-58.70%
Italy	89,005.90	7.56%	20.46%
Japan	44,423.20	1.01%	3.55%
Malaysia	1,247.10	1.39%	22.74%
Mexico	5,073.30	1.09%	-9.84%
Morocco	111.70	0.31%	255.56%
Netherlands	16,812.40	4.19%	10.06%
New Zealand	213.70	0.36%	163.00%
Norway	5,066.90	3.05%	53.73%
Oman	14.00	0.08%	-66.67%
Panama	101.83	0.83%	-27.27%
Poland	1,220.70	0.66%	23.74%
Portugal	7,103.20	6.12%	35.42%
Romania	66.00	0.15%	275.00%
Singapore	2,151.40	2.49%	15.95%
Slovakia	188.60	0.83%	140.00%
Slovenia	48.10	0.22%	161.54%
South Africa	4467.90	3.40%	-1.44%
South Korea	10,849.30	2.34%	-66.96%
Spain	16,072.40	2.52%	92.24%
Sweden	8,050.40	3.21%	-11.05%
Switzerland	1,227.20	0.46%	16.46%
Taiwan	3,718.40	0.82%	338.36%
Thailand	1,136.40	0.83%	12.38%
Tunisia	120.17	0.56%	250.00%
Turkey	3,634.20	1.94%	-16.59%
United Kingdom	99,825.00	6.96%	29.89%
USA	77,722.10	0.86%	-21.09%
Average middle-income countries	1,876.87	1.01%	109.30%
Average high-income countries	19,089.52	2.56%	50.01%
Average (total)	10,841.79	1.81%	78.12%

Table 3: Average Macroeconomic, Legal and Business Environment Variables, By Country

See Table 1 for variable definitions.

Country	LGDPCC _{t-1}	GDP_G1 _{t-1}	DC_GDP _{t-1}	CreditorRts	CreditInfo	Enforce_Debt
Argentina	8.97	0.11	21.27	1	6	15
Australia	10.01	3.83	78.93	3	5	14.4
Austria	10.36	2.19	100.3	3	5	9.8
Belgium	10.28	2.31	77.43	2	6	6.2
Brazil	8.41	2.7	37.36	1	6	15.5
Canada	9.97	3.59	80.82	1	5	12
Chile	8.52	4.81	60.75	2	6	10.4
China	6.58	8.88	110.94	2	3	25.5
Costa Rica	8.2	4.18	19.22	1	5	41.2
Czech Republic	8.57	2.21	62.27	3	5	9.6
Denmark	10.51	2.8	69.31	3	4	6.6
Finland	10.26	3.79	58.06	1	4	7.2
France	10.26	2.27	85.81	0	3	11.7
Germany	10.35	1.54	113.61	3	6	10.5
Greece	9.42	3.25	43.45	1	4	12.7
Hong Kong	10.08	3.35	157.86	4	4	12.9
Hungary	8.51	3.54	27.51	1	3	8.1
India	6.06	5.98	26.16	2	0	43.1
Indonesia	6.95	3.11	40.09	2	3	126.5
Ireland	10.05	8.57	88.27	1	5	21.1
Israel	9.72	3.78	78.88	3	4	22.1
Italy	9.91	1.89	66.65	2	6	17.6
Japan	10.69	1.19	194.44	2	6	8.6
Malaysia	8.42	5.35	141.9	3	6	20.2
Mexico	8.16	2.89	23.39	0	6	20
Morocco	7.22	3.53	50.76	1	2	17.7
Netherlands	10.28	2.85	118.52	3	5	17
New Zealand	9.76	3.36	105.35	4	5	4.8
Norway	10.52	3.39	77.47	2	5	4.2
Oman	8.68	3.66	36.4	0	0	10
Panama	8.09	3.25	87.25	4	5	37
Poland	8.26	5.07	23.58	1	4	8.7
Portugal	9.38	2.99	104.75	1	5	17.5
Romania	7.33	1.47	8.96	1	3	12.4
Singapore	10.15	5.78	114.45	3	4	9
Slovakia	8.31	4.3	46.09	2	3	15
Slovenia	9.27	4.07	32.32	3	3	16.3
South Africa	8.29	2.87	126.68	3	5	11.5
South Korea	9.44	5.8	79.38	3	5	5.4
Spain	9.7	3.22	88.85	2	6	14.1
Sweden	10.32	3.06	92.31	1	4	5.9
Switzerland	10.72	1.23	166.01	1	5	5.2
Taiwan	9.55	4.84	.	2	5	7.7
Thailand	7.95	3.22	130.66	2	5	13.4
Tunisia	7.73	4.46	66.48	0	2	12
Turkey	7.97	2.5	20.93	2	4	12.5
United Kingdom	9.95	2.88	124.34	4	6	15.7
USA	10.3	3.31	211.25	1	6	7.5
Average middle-income countries	8.08	3.82	55.67	1.7	3.9	22.04
Average high-income countries	10.10	3.25	104.05	2.1	4.9	11.28
Average (total)	9.13	3.53	80.37	1.9	4.4	16.44

Table 4: Correlation Matrix

See Table 1 for complete variable definitions. P-values are shown in parentheses. Asterisks, *, **, and ***, indicate significance at the 10%, 5%, and 1% level, respectively.

	LGDP _{t-1}	GDP_G1 _{t-1}	DC_GDP _{t-1}	CreditorRts	CreditInfo
GDP_G1 _{t-1}	-0.0877* 0.0657				
DC_GDP _{t-1}	0.5516*** 0.0000	-0.0825* 0.0909			
CreditorRts	0.1967*** 0.0005	0.0117 0.8054	0.3304*** 0.0000		
CreditInfo	0.5128*** 0.0000	-0.1204*** 0.0123	0.4269*** 0.0000	0.2795*** 0.0000	
Enforce_Debt	-0.4783*** 0.0000	0.0400 0.2646	-0.2305*** 0.0000	0.0280 0.5452	-0.2152*** 0.0000

Table 5: The Determinants of Factoring

See Table 1 for complete variable definitions. The dependent variable is the ratio of total factoring turnover to GDP. T-statistics are shown in parentheses. Asterisks, *, **, and ***, indicate significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
LGDPPC _{t-1}	0.60*** (2.64)	0.72*** (10.13)	0.52*** (6.28)	0.73*** (7.75)	0.63*** (7.63)	0.63*** (2.48)
GDP_G1 _{t-1}	0.02 (1.63)	0.05* (2.10)	0.07*** (2.70)	0.05** (2.16)	0.64*** (2.85)	0.29** (1.99)
DC_GDP _{t-1}	-0.01 (-0.55)	-0.00 (-0.27)	-0.02 (-1.24)	-0.00 (-0.17)	-0.00 (-0.79)	-0.00 (-0.65)
CreditorRts		0.04 (0.34)			-0.03 (-0.27)	-0.07 (-0.24)
CreditInfo			0.33*** (5.44)		0.34*** (5.56)	0.39*** (2.61)
Enforce_Debt				0.01* (1.90)	0.01* (1.64)	0.01 (0.83)
Constant	-2.59*** (-3.33)	-4.58*** (-7.48)	-4.38*** (-7.35)	-5.02*** (-6.89)	-4.29*** (-6.91)	-6.22*** (-3.01)
Country dummies	Yes	No	No	No	No	No
Year dummies	Yes	Yes	Yes	Yes	Yes	No
Observations	413	456	404	404	404	46
Adj. R-Sq.	0.88	0.18	0.21	0.18	0.21	0.30

Figure 2: The Nafin Purchase Order Agreement

