Supply chain finance[1]

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Trade finance, or supply chain finance, exists because suppliers want or need to be paid quicker than their customers want to pay them. An intermediary, call it a 'bank', introduces financing into the relationship – the bank pays the supplier now, at a discount, and collects from the customer later. In this note I examine supply chain finance – 'factoring' and its current manifestation, 'reverse factoring' – to see what its economic role is and why it has become controversial.

I show that modern tech-enabled reverse factoring platforms can bring efficiencies to the continuing challenge of getting cash to small companies. But I suggest that as a solution it is a second best – better would be an economic culture where large customers paid small suppliers early. In an age when many companies espouse 'purposeful business', early payment would be an easy way to demonstrate that at negligible cost.

In fact, the enormous growth in SCF of late has come from customers themselves using reverse factoring platforms to borrow money on the back of the credit relationship. Because of a major flaw in the current accounting rules, that borrowing gets reported in the customer's financial statements as better working capital management and as improved operating cash flow, rather than simply as borrowing. That flaw in the accounting rules is in urgent need of fixing.

Factoring and reverse factoring

The Mesopotamians pioneered factoring and it was used by the Romans, and by traders throughout the medieval period. In those days there was often a great distance in space and time between the despatch and delivery of goods, hence the need for trade finance. Rather than distance, the role of factoring now is to arbitrage differences in size and power between suppliers and customers.

If a supplier is a large corporate, perhaps with a strong market franchise, it can presumably look after itself when it negotiates credit terms with its customer. But if a large customer is dealing with a small supplier – perhaps an SME, cash-constrained and operating in a competitive market – the risk is that the customer uses use its power in the relationship to postpone payment and starve the supplier of needed cash. The evidence suggests that predatory behaviour of that sort is the norm, especially during economic downturns. Factoring gives the supplier access to liquidity in that situation.

In traditional factoring or invoice discounting, a supplier that needed cash sold some of its receivables to a finance house, which was typically the trade finance division of its bank. 'Reverse factoring' is so called because it is initiated by the customer rather than by the supplier. The customer collaborates with an intermediary to offer a payment platform, probably online, that its suppliers are then invited to join and that enables them to choose when they are paid.

[1] This is a draft paper, so please do not quote it without reference to the author. But your thoughts and comments will be very welcome, to chigson@london.edu.

That intermediary may again be a bank, using its banking skills to price the credit risk, and using its balance sheet to finance the arrangement and to buffer the risks. But if the intermediary lacks the balance sheet of a large commercial bank it may use a *distributed* model and outsource some of the component activities. It may partner with a fintech to provide the payment platform. It partners with an investment institution to provide the finance and who, in turn, securitises the receivables for sale to outside investors. It partners with an insurance company to underwrite the credit risk in the receivables, so they can be marketed as low risk investments.

The distributed model appears to be the model used by Greenshill Capital, the eponymous finance house founded 10 years earlier by a young Australian banker, Lex Greenshill, and that failed in March 2021. Greenshill's big idea was supply chain finance and his company grew very rapidly to become one of the world's larger arrangers of reverse factoring, diversifying into other financial products along the way.

The Greenshill failure is not the subject of this paper. But suffice to say that, compared to a commercial bank with a strong balance sheet supplying SCF, the 'distributed' model requires a very high level of discipline, coordination and communication if it is to be resilient. Otherwise, as the world had discovered in 2008, outside investors and insurers may easily misprice the underlying risk in asset-backed securities. Greenshill failed in late 2020/early 2021 after some of its partner insurers and investment institutions withdrew from the relationship.

When *should* customers pay suppliers?

When a sale of $100 takes place, the supplier records an asset, a 'trade receivable' or 'accounts receivable' of $100, and the customer records a liability, a 'trade payable' of $100. This is a zero-sum game. If you added everyone's balance-sheets together the trade receivables and trade payables would cancel out. This is obvious, but it needs to be front of mind when thinking about the economics of SCF.

When customers take longer to pay suppliers they conserve cash and, assuming borrowing is everyone's marginal source of finance, all other things equal they need to borrow less. Suppliers experience exactly the reverse. They receive less cash, so their borrowing must increase by the same amount as the customers' borrowing falls. In terms of the quantum of borrowing this is again a zero sum.

It is in everyone's interests for the party who has a comparative advantage in borrowing, to do the borrowing. If the customer is larger than the supplier and has a lower cost of capital, it sounds like the customer should pay the supplier as early as possible, and the supplier should be happy to adjust the price to reflect that. In practice the opposite happens. With a difference in size comes a difference in power. The large corporate is tempted to postpone payment, simply because it can.

Economic history has consistently shown that in economic downturns this gets worse. An early example is the work of Edward Davis and Keith Yeomans (*Company Finance and the Capital Market*, Cambridge University Press, 1976) who looked at credit markets in the late 1960s. That was a period of severe credit rationing, when governments were worried about the finances of SMEs. Davis and Yeomans thought that if companies were 'munificent', or simply wanted to protect their supply chains, the strong should shift liquidity to the weak by paying them earlier. They observed the opposite –

during the tough economic conditions of the late 1960s most large firms exploited their power by paying later.

In economic welfare terms, the postponement of payment by customers is extremely detrimental, but has little benefit. Over recent history many large companies have enjoyed historically low costs of borrowing and of equity finance. If a company's weighted average cost of capital were 4% – which is not unrealistic at the moment – their financial benefit from postponing payment by three months is 1% of the selling price. In many settings this would have a negligible impact on margins, and it can anyhow be recovered from the customer through a small adjustment to the selling price. Otherwise, in this zero-sum game, the SME has to resort to much more costly bridge finance or traditional factoring.

The impact of reverse factoring on the supplier

Reverse factoring should resolve this problem because it effectively allows the supplier to borrow at the customer's cost of capital. A company's cost of borrowing reflects the probability that it will default on the loan, and the amount the lender expects to recover if the company does default – the so-called 'loss given default' or LGD. Even if an SME's probability of default is relatively high, if the borrowing is secured on assets, and if the secured assets are short-term receivables from a customer that has a low probability of default, then the LGD is negligible. Effectively the SME's cost of the borrowing is now a look-through to the customer's cost of borrowing.

Consistent with this, the *Supply Chain Finance Review*, published by the Australian small-business ombudsman Kate Carnell in March 2020, estimated financing costs for traditional factoring at 12% to 30% per annum, but supply chain financing at 2% to 7%.

So reverse factoring *should* be relatively cheap finance because it is a loan secured on a short-term receivable from a larger company with, typically, a higher credit rating. But this begs the question why traditional factoring was so costly, because the same logic applies there. Perhaps the costs of traditional factoring that were quoted by commentators were an average across receivables from customers with widely differing credit ratings. Perhaps traditional factoring, being often supplied by the company's own bank, was a somewhat inefficient and uncompetitive corner of the financial markets.

So there are efficiency and cost arguments for reverse factoring. Reverse factoring helps suppliers to be paid earlier and it introduces low-cost secured debt financing into the credit relationship. The online platform and the direct involvement of the customer simplifies and speeds up invoice approval and processing. For these reasons, after the 2008 financial crisis the UK Government actively promoted the use of SCF in public procurement projects to support the financial health of SMEs and of supply chains.

Nonetheless, SCF arrangements might disadvantage smaller firms if the process puts the supplier under pressure to accept a payment discount just in order to get paid on normal terms. Or it may be that the technology itself enables other processes, such as so-called 'dynamic discounting', that put pressure on smaller firms in their dealing with larger and more powerful customers.

Carnell reports that, during Covid, some large businesses had shortened payment terms to the supply chain while some had lengthened it, saying, *it is equally disappointing to see retail groups owned by prominent Australians … increase their payment times to as much as six months during this time of crisis. … Unfortunately since the onset of the COVID-19 crisis, blowouts in payment times have increased.*

But Carnell is even-handed about supply chain financing, saying, *[these] products, where used appropriately to offer faster payments than 30 days, can be a good option for small businesses wishing to speed up their cash conversion cycle. It is important, however, that these products are offered as a true choice, and always in addition to appropriate payment times (30 days or less). Small businesses also need to be clear about the ability for firms to collect data on them and manipulate the platforms to their detriment, as highlighted in this report. It is essential that these products are never used to manufacture compliance with voluntary or mandated payment codes.*

Evidence on the growth in reverse factoring

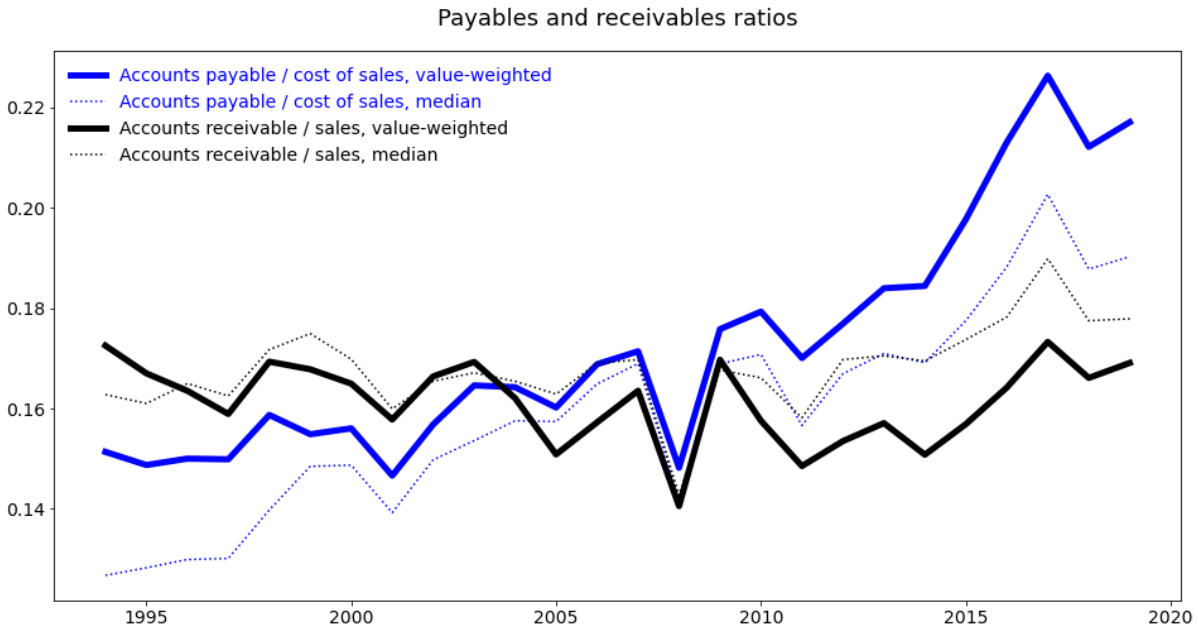
Since the 2008 financial crisis it seems that postponement of the settlement of trade payables may have become endemic rather than cyclical. Discussion with companies suggests there is a continuing corporate preoccupation with working capital management and cash conversion. The economic data are consistent with this and are striking.

The chart below uses financial data collected by the author on the largest 12,000 listed industrial companies globally. It plots the ratio of accounts payable to the cost of goods sold, aggregated annually from 1994 to 2019. There is a noticeable upward shift in this ratio since 2008, to around 22% in recent years against 16% before. In terms of 'days payment outstanding', DPOs, a ratio of 22% equates to customers taking 80 days pay (= 22% x 365) against around 60 days before.

The chart also plots the ratio of accounts receivable to sales for the same global economy. Since one company's payable is another company's receivable, in a simple world, the payable and receivable series might be expected to mirror one another. In the years before 2008, they broadly did. But since 2008 the two series have diverged markedly. This is consistent with there now being three in this marriage - the third party being an undisclosed financial intermediary.

The main series divide the *aggregate* payables and receivables by the *aggregate* cost of goods sold and sales respectively. Thus these are value-weighted annual averages and the data is dominated by larger companies. The chart also reports the *median* individual company ratio in each year. The comparison of median and value-weighted is very informative. In all years, large companies take more credit and give less credit than the median company, and the divergence in the series since 2008 is largely driven by large companies.

Of course there will not be a perfect correspondence between suppliers and customers in this data – for example, some suppliers and customers will be unlisted companies and individuals – and there may be other factors at play in the data. So we cannot be sure that what we are observing is solely the effect of supply chain financing. But the data is highly suggestive, and it is consistent with informal evidence from elsewhere.



Chris Higson and Afa Boran research, Compustat dataset. We aggregate the financial statements, translated to $US, for the largest 12,000 listed companies globally, each year from 1994 to 2019. Disclosure of 'cost of goods sold' is used as the search criterion to exclude non-relevant sectors such as financials and investment companies. The universe is the population of global listed equities, excluding Japan where we found no evidence of the divergence in payables and receivables.

If suppliers are still getting paid in a timely way and on normal terms, why is the increased use of supply chain finance by customers problematic? Because the debt in the reverse factoring relationship is not visible to outsiders, users of balance sheets and cash flow statements are unable to correctly assess the financial leverage of the customer. In turn, this may encourage excessive borrowing through the SCF channel.

The effect of the accounting rules

It is likely that, to a large extent, the observed growth in supply chain finance has been accounting-driven. This reflects a flaw in existing accounting rules.

Suppose SmallCo sells $100 of components each month to LargeCo, and customary industry payment terms are one month. LargeCo offers to help SmallCo factor the receivable. SmallCo just wanted LargeCo to pay on time but, given the balance of power in the relationship, it goes along with the arrangement. Now, an intermediary pays SmallCo $100 after one month. But LargeCo then takes 6 months to pay the intermediary, so on average has an outstanding payable of $600 due to the intermediary. The accounting issue is whether the extended credit that a customer takes should be accounted for as a trade payable or as borrowing since, effectively, LargeCo is now borrowing from the intermediary.

Reverse factoring arrangements are not explicitly covered by an accounting standard. US GAAP says that proper classification of trade payable arrangements depends on the 'facts and circumstances' and reflects the substance of the arrangements. The customer should continue to classify the liability as a trade payable only if the presence of the intermediary does not change the nature, amount, and timing of the customer's payables from what is customary, or provide any direct economic benefit. When customers use supply chain finance to lengthen the payment period, this is clearly not the case.

However GAAP leaves it to the judgement of the company and its auditors as to how reverse factoring is accounted for. Overwhelmingly, companies are 'judging' they should report reverse factoring as trade credit not borrowing. Moreover, most companies are not even disclosing that they are using reverse factoring.

UBS reported that less than 3% of the companies in its coverage universe publicly disclosed the use of reverse factoring even though other evidence suggested that perhaps 40% were actually using reverse factoring. Moody's have reported that fewer than 5% of the non-financial companies in its global ratings universe disclosed reverse factoring in their financial statements, while a survey by PwC survey found that 49% of respondees were using reverse factoring and another 37% were actively considering it.

Classifying reverse factoring as an operating liability rather than a financial liability is extremely misleading in two principal ways.

- It conceals borrowing on the balance sheet, leading observers to underestimate the company's leverage.
- The cash inflow from additional reverse factoring borrowing is classified as an operating cash flow in the cash flow statement.

The case of Carillion plc, a large UK construction and service businesses conglomerate which failed in January 2018, perfectly demonstrates how distortive this is.

Carillion

Carillion plc was a large UK construction and service conglomerate that went bankrupt in January 2018. In the years leading up to the failure, Carillion carefully curated certain financial indicators, in particular 'net debt' and 'cash conversion'. Carillion reported a very healthy balance between equity and net debt. At the end of each of the ten years to 2016, equity averaged £800m, while net debt averaged £110m.

But Carillion was an energetic user of reverse factoring. In 2012 Carillion announced that from now on it would pay its suppliers after 120 days. But if they wanted the cash earlier, say after 45 days, Carillion had arranged with a bank to pay them earlier and Carillion would cover the fee for this. Essentially, Carillion was borrowing from the bank to bridge the gap in paying creditors, but this was recorded in Carillion's balance sheet as 'other creditors' of £761m in 2016.

Since Carillion's pension deficit was £811m by 2016, Carillion's debt-like financing liabilities in 2016 were actually (689 + 811 + 761 = approximately) £2.26bn in total. Over recent years, Carillion's customers had taken longer and longer to pay – by 2016, receivables were 38% of sales. But Carillion was taking even longer to pay its suppliers – by 2016, including reverse factoring, payables were around 50% of sales, or six months.

In order to detect overstated income analysts focus on 'cash conversion', which is the ratio of operating cash flow to operating profit. The idea is that the higher the cash conversion ratio, the truer the profit. For example, if companies are inflating their revenues, the overstated revenues get booked as increased receivables, which are deducted in calculating operating cash flow. Uncommonly and, at first glance, virtuously, Carillion therefore made 'cash conversion' a central part of its narrative. Top management based their bonuses on the cash conversion ratio.

But what did cash conversion actually mean at Carillion? This was where reverse factoring worked its magic. Apparently, Carillion included the increase in the reverse factoring creditor – essentially a financing cash flow – as an operating cash flow in the calculation of cash conversion. In 2016, Carillion reported operating profit of £145m and operating cash flow of £115m, which is a decent cash

conversion ratio of (115/145 =) 0.8. But that operating cash flow was increased by the £200m increase in 'other creditors' during the year. Without that, operating cash flow was £-85m.

Reverse factoring as 'off-balance sheet financing'

The borrowing in reverse factoring arrangements is often referred to as 'off-balance sheet financing'. In fact, reverse factoring is very much *on* the balance sheet, but the comparison with operating leasing, which is the classic off-balance sheet financing arrangement, is very informative.

If the right to use an asset was acquired by writing an operating lease, the asset was deemed *not* to be owned by the company using it, so the accounting rules said that it stayed off the balance sheet. The value of the plant and buildings kept off the balance sheets of companies in this way was estimated to run into $trillions. After a debate that lasted decades, GAAP – US GAAP and IFRS – finally required operating-leased assets and the corresponding borrowing to be recognised in balance sheets from 2019. We are now just seeing the results of that.

In fact, throughout, companies were required to provide some footnote disclosures of their expenditures on operating leasing. It was universal practice by financial analysts to use that data to make, albeit crude, estimates of the amount of missing borrowing. As a result, operating leasing was already largely 'in the price' and if the aim of using operating leasing was to flatter the borrowing number, there was probably not much point.

Reverse factoring borrowing is *on* the balance sheet but is classified as trade payables or perhaps 'other payables'. So reverse factoring borrowing is hiding in plain sight. However, analysts are currently completely blindsided by reverse factoring because, unlike with operating leasing, companies are not required to disclose – in a footnote, or anywhere else – how much reverse factoring they have written, or even whether they are using it at all. So the suspicion is that reverse factoring is not 'in the price', and this leads to the sort of calamity we saw with Carillion.

The trillion dollar question with leasing was how much of the operating leasing that companies were doing would have happened if it had not been for the favourable accounting treatment? The same question applies to reverse factoring. How much of the dramatic growth in reverse factoring that we are seeing is contingent on the accounting concealment?

Operating lease liabilities are straightforward to measure so, technically, the accounting problem was easy to solve. What had been lacking was the will to do it, by the GAAP authorities. With reverse factoring, the issue is one of classification, and the classification puzzle may be harder to answer than the operating lease measurement question.

Going back to LargeCo, it had a running balance of $600 owing to a financial intermediary. This is a made-up example in which I *asserted* that customary payment terms were one month in this industry, so that without reverse factoring LargeCo would have had a trade payable of $100 to SmallCo. So one solution, in fact the most commonly proposed solution, would be to split the $600 and for LargeCo to report: Trade payable, $100; Borrowing, $500. But that depended on knowing the customary payment terms in the industry; something that may be open to dispute.

A lot of financial analysis practice, and economic theory, relies on drawing a bright line between financial borrowing and operating liabilities in order to measure a company's 'net debt'. If GAAP decides that in the case of reverse factoring this distinction is too hard to submit to accounting bright lines, and decides to rely on footnote disclosures instead, then GAAP will just pass the parcel to the analysts and credit-rating agencies, who have been leading the demands for disclosure of the terms

and quantum of these arrangements. How analysts, provided with these disclosures, would then use them will be interesting to see. I suspect that they will use them to attempt to convert the customer's payables into binary, financial debt/operating liability components.

Assessment

In this note, I explained the economics of supply chain finance and showed that both factoring and reverse factoring should bring relatively cheap finance to supplier companies. That is because the lending is fully secured on what are frequently low-risk assets – short-term receivables from larger firms. So, in that sense, the claim that modern SCF brings efficiency to the payment process is justified. But it raises two bigger questions.

The real puzzle – or perhaps this is a lament – is that large firms do not simply pay their suppliers quicker and thus avoid the need for SCF altogether. In earlier times, trade finance was bridging real gulfs in space and time between suppliers and customers. Nowadays, often, the role of SCF is to make a bridge between the supplier who needs to be paid early and the customer who simply wants to pay later. This is often not a real distance that is being bridged; it is a cultural one – with a difference in size comes a difference in power and the large corporate postpones payment simply because it can.

Given the inherent imbalance in economic power, smaller suppliers are always vulnerable to predatory behaviour by larger customers, through the credit relationship and in other ways. Since the 2008 financial crisis the cost of capital for large companies has been extraordinarily low so that the economic cost to them of paying suppliers early is currently negligible. To pay suppliers early would be one of the easiest 'purposeful', socially responsible, actions those companies could take.

For some years now there has been an active debate in many countries about the need to ensure prompt payment on reasonable terms for smaller companies. Amongst other initiatives, this led to the EU Late Payment Directive, in 2011. There have been mixed reports about the effects of this – some people argue that the maximum became the norm, so that early-paying Member States, and companies known to be 'good payers', extended their payment terms! Overall, its effect in changing the payment culture and in helping small businesses get fair payment terms with damaging the relationship with their customer, must have been positive. The directive has helped create a level playing field around payment practices.

The second issue is the effect of a flawed accounting around SCF. Because of the way it is accounted for, or rather, not accounted for, many customers have used SCF to take on significant undisclosed financial debt. This argues for an urgent reform to the accounting rules and their enforcement.