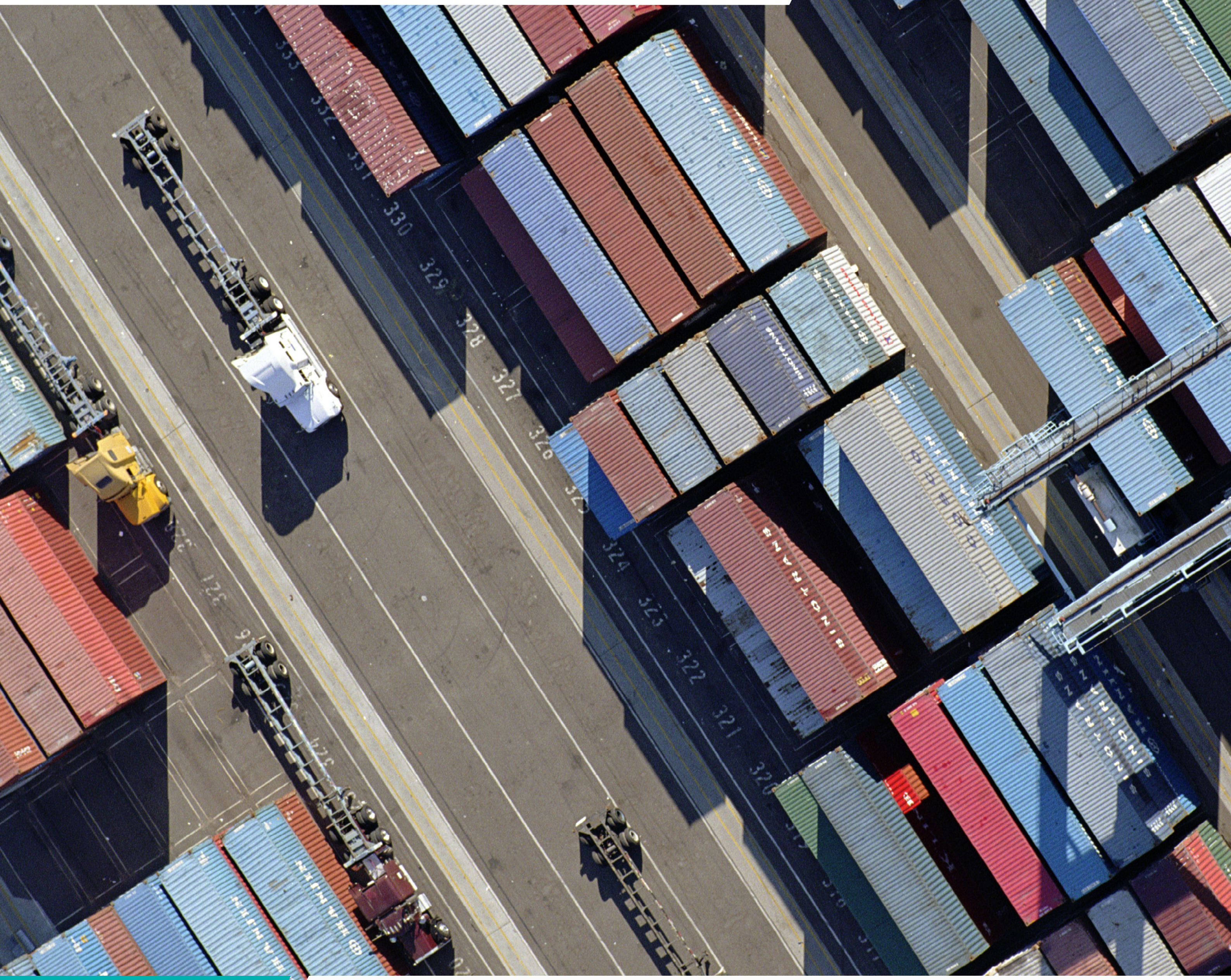
“Invoicing and payment processes in global container shipping: ready for disruption?”

White paper | May 2018

Produced with support from Mastercard



Drewry
Supply Chain Advisors

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Terminology

BAF:	Bunker Adjustment Factor
BCO:	Beneficial Cargo Owner
BL:	Bill of Lading
EDI:	Electronic Data Interchange
FFW:	Freight Forwarder
Incoterm:	International Commerce Terms
NVOCC:	Non-Vessel-Owning Common Carrier
teu:	twenty-foot equivalent units
THC:	Terminal Handling Charges

1 Executive Summary

The container liner shipping industry carries about 60% of the goods (by value) that are moved internationally by sea. To do so, container shipping lines (carriers) deploy about 5,100 containerships worldwide and provide approximately 400 scheduled liner services, most of which sail weekly.

Drewry estimates that the global container shipping industry generated transport revenues of $166 billion globally in 2017, managing the flows of 207 million twenty-foot equivalent units (teu) of ocean containers and requiring around **1.26 billion freight invoices** to be issued, verified, paid and reconciled.

In this white paper we will examine current invoicing and payment processes and compare them with an ideal global container liner shipping industry with frictionless invoice reconciliation, settlement and immediate payments. We estimate that the cost of today's process inefficiencies and lack of trust represent $34.4 billion annually.

INDUSTRY ISSUE	COST DRIVER	ANNUAL COST
Low level of automation	Cost of credit	$1.6 bn
	Transaction cost	$30.7 bn
Lack of trust	'Cash Against Documents'	
	Cost of bad debt	$2.1 bn

Source: Drewry Supply Chain Advisors

The impact of the costs and inefficiencies on each stakeholder diminishes as the stakeholder gets larger in size:

- Smaller stakeholders tend to be more reliant on spot markets where more of the processes are manual, freight rates and supplier bases are most volatile and most of the invoice errors occur.
- Larger stakeholders tend to rely more on long-term contracts which allow for IT solutions to be developed that, after the initial setup cost, provide for nearly frictionless freight invoicing, checking and settlement processes.

Regardless of the size of the stakeholder, the prevailing inefficiencies in invoicing and reconciliation processes pose a significant market opportunity for technological disruptors, provided they address the underlying industry issues by:

- Offering simplified and/or automated invoicing and payment practices.
- Creating sufficient guarantees so that market participants can drop the antiquated practice of 'Cash Against Documents'.

2 Key issues in invoicing and reconciliation

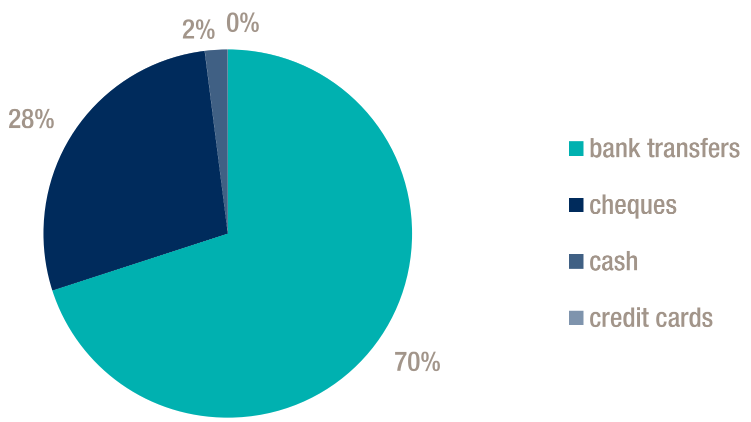
2.1 Low levels of automation

Among shippers and forwarders the level of automation of invoice reconciliation and settlement is very low, particularly among small and medium sized players. For shipping lines invoicing is largely a manual activity, except for a few large BCO setups where self-billing and/or EDI solutions are in place.

The most used payment methods in global container shipping are bank transfers and cheques. Credit card payments are rare. There are established automated solutions for domestic freight payments in the US but, for ocean freight payments, they are almost non-existent.

The use of payment platforms, where customers can apply for credit, is spreading but is still in its infancy. Examples are: PayCargo.com, payanybiz.com, US Bank and Elavon, Cass, Data2logistics, Veem, and some 30 finance providers and banks delivering financial services on the GT Nexus platform.

Share of payment methods in global container trade (% of revenue)



Source: Drewry Supply Chain Advisors

- **The shipper's perspective:**

For small and medium shippers, reconciliation between bookings and invoices is partly or fully manual and time-consuming. For many it is a costly manual process made more onerous as a result of invoicing errors. Checking freight invoices for spot shipments and printing cheques may take between **2 and 15 minutes per invoice**. This time increases dramatically in case the invoice is incorrect. Smaller shippers who play the spot market experience much higher **invoice error rates (up to 30%)** than larger shippers working on annual contracts (between 2% and 5%). Additionally, invoices from forwarders tend to be much more accurate (95-98%) than from shipping lines, amongst others, because of more standardised pricing structures and lower freight rate volatility.

For medium/large shippers, **automated reconciliation or self-invoicing can decimate the process cost of invoice reconciliation.** For medium sized shippers, receiving and settling freight invoices via EDI (Electronic Data Interchange) can be much more efficient than manual reconciliation but has a setup time of about three months. Once EDI connections with shipping lines are set up, shippers can receive invoices automatically after a vessel's departure, can reconcile at the push of a button, and periodically execute consolidated payments. However, most shippers do not achieve EDI ratios above 85% on account of various vendor and overseas counterparty issues. Self-billing, whereby the shipper periodically sends a pro-forma invoice to the supplier who then invoices that amount, can equally decimate the process cost when compared to a largely manual process.

- **The forwarder's perspective:**

For well-organised small forwarders with rate databases, reconciliation takes about **three minutes per carrier invoice.** Forwarders with credit facilities can bundle several shipments into one single payment and process payments, for example, once every week or 14 days. That would take about 20 minutes per payment and is a manual process.

Medium sized forwarders who use EDI with their suppliers can reconcile invoices much more quickly using automation.

Large forwarders will often centralise their global payments in one location. They negotiate up to 30-45 days credit from carriers and group different bookings onto a single payment, for example, once per week.

For destination charges (mostly Terminal Handling Charges (THCs), documentation fees and inland haulage charges), carriers usually do not grant credit. These charges must be paid before the carrier releases the cargo (Cash Against Documents). This imposes courier costs of about $30 per BL and $25 per cheque in the US. Charges per transaction are about 20% lower in Europe, 33% lower in China and 70% lower in North-South routes and can partly be avoided by using online BL printing services that carriers usually offer for free.

- **The shipping line's perspective:**

For carriers, the key pain point is the **manual reconciliation of their invoices when they are disputed by customers.** A lot of shippers use third-party auditors to check carrier invoices and reject the invoices when they do not match. The carrier's target for invoice accuracy tends to be between 92% and 95%. The most frequent causes of invoice disputes are: BL fees, demurrage and detention, freight rates and fuel surcharges (BAF or Bunker Adjustment Factor).

Level of time required, cost and automation by type and size of company

	SMALL/MEDIUM	LARGE
Shipper	Process: manual reconciliation of carrier bookings and invoices Time spent: 2 to 15 minutes, if the invoice is correct	Process: automated reconciliation or self-invoicing are very efficient Time spent: minimal, once the setup investment is made
Forwarder	Process: mainly manual reconciliation of carrier bookings and invoices Time spent: about 3 minutes per carrier invoice; 20 minutes for bundled payment Occasionally automated reconciliation of shipper bookings and invoices	Process: centralised payment process to the carriers For automated bookings from shippers (about 60% of the total), reconciliation is done automatically using the forwarder's internal system For manual bookings from customers (about 40% of total bookings), the reconciliation process remains cumbersome
Carrier	Invoicing errors and invoice disputes make reconciliation time-consuming	

Source: Drewry Supply Chain Advisors

2.2 Antiquated practice: 'Cash Against Documents' payment arrangements

'Cash Against Documents', the standard payment arrangement for new commercial relationships and for destination charges, increasingly looks like an antiquated way to manage the question of trust and payment risk in container shipping.

- **Understanding 'Cash Against Documents' payment arrangements**

The Incoterm may stipulate which party is responsible for paying the maritime transport but, for shipping lines, obtaining payment, in particular for 'collect' charges, i.e. charges that are payable by the consignee, is a major concern. Shipping lines are in a vulnerable position vis-à-vis those charges, firstly, because the shipping line may not know the consignee party when accepting the booking and, second, because collect charges are only due after the ocean transport service has been provided.

To cater for this situation shipping lines contractually have a right ('lien') to the cargo, giving them the right to sell cargo to recover any unpaid invoices. However, to avoid this situation from occurring, they prefer to get paid while they have the cargo in their possession. This is why 'Cash Against Documents' payment arrangements are the norm for all new customers. 'Cash Against Documents' means that the shipping line requires payment of origin charges before releasing the BL and of destination charges before releasing the cargo. Whilst shipping lines might grant credit terms to existing customers for origin charges, the same is usually not true for destination charges.

Forwarders also apply 'Cash Against Documents' payment arrangements for any new or untrusted shipper but tend to be more generous in their credit arrangements towards their trusted customers than shipping lines. Our research has shown that shipping lines have on average around 25 days of trade receivables days outstanding while large forwarders have 50 days or more.

- **The case against 'Cash Against Documents'**

The 'Cash Against Documents' payment arrangements cause extensive manual verification of 'hard copy' payment and shipping documents and are responsible for a substantial part of the **$30bn in transaction cost inefficiencies** that we identified.

The underlying industry issue which causes 'Cash Against Documents' payment arrangements is the lack of trust between providers and their customers in the context of global and ever changing trading arrangements. As justified as this concern may have been historically, in modern times this can be addressed: third party financial services organisations have started offering innovative technological solutions whereby they provide **payment guarantees at a much lower cost** that the current process inefficiency.

Adopting such technological solutions would have a positive impact on the cost structure for providers (shipping lines and freight forwarders alike) and their end customers by unlocking opportunities for removing manual interventions in the payments process flow and the costly courier charges that are involved with exchanging 'hard copy' payment and shipping documents.

2.3 Managing risk for new and unknown customers

Bankruptcies and bad debt have a different impact depending which part of the supply chain is affected. In general this affects smaller companies more than larger ones. Bad debt represents 0.5% of revenue for large sipping lines, increasing to 1% for small ones. Amongst forwarders, this ranges between 0.2% for large forwarders up to 2-3% for small and medium sized ones.

- **Cost of shipper bankruptcies**

Risk assessment of shipper bankruptcies on providers

Customer	Provider	
	Forwarder	**Shipping line**
Shipper	Big issue for small forwarders	Low

Source: Drewry Supply Chain Advisors

- o **To shipping lines**

If shippers go bankrupt the risk exists that they might not pay freight to shipping lines. According to a top three shipping line, the cost of bad debt (from shippers and forwarders) is about 0.5% of revenue, although some of this 'bad debt' is linked to disputed invoices.

What shipping lines do about it:

- Shipping lines give small shippers and small forwarders either no or little credit.
- For many shippers without shipping line credit, the cargo is delivered only after receipt of payment. Exporters generally pay the shipping line before the cargo is delivered to the consignee.
- Large shipping lines check a shipper's credit worthiness (e.g. with Dun & Bradstreet) and may not do business with them if they do not meet their criteria.
- If the shipper goes bankrupt, the shipping line has a right of 'lien' contractually and can sell off the cargo to recover the unpaid payment of the shipper.

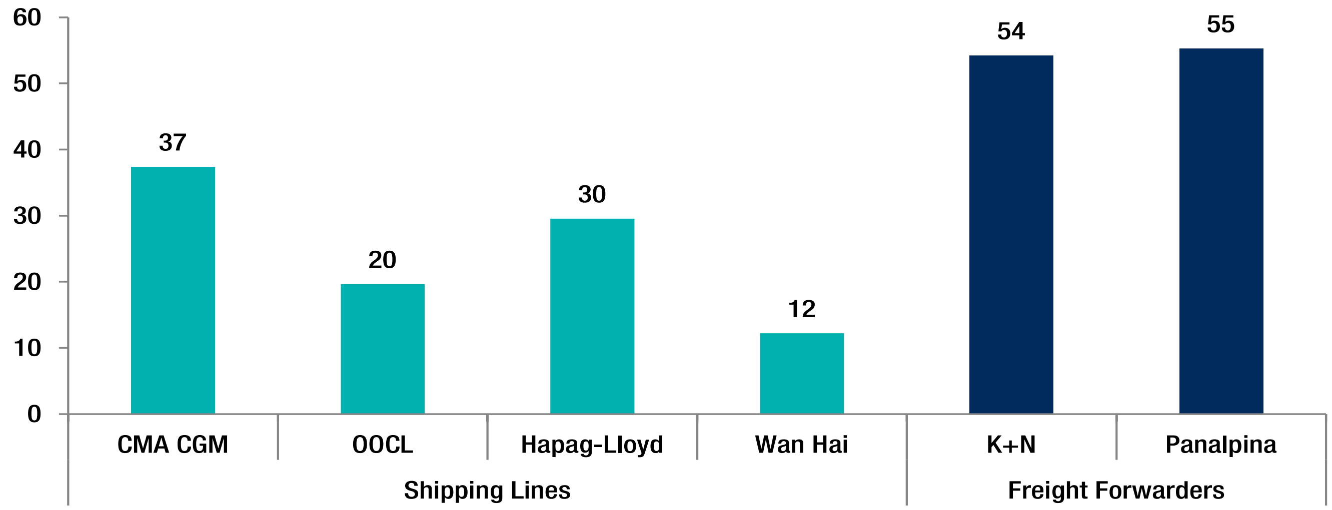
  - **To forwarders**

Forwarders risk not getting paid when a shipper client goes bankrupt. Some small forwarders spend 2-3% of receivables on insuring against bad debt. Medium forwarders appear to have a lower cost of bad debt and bankruptcies **(estimated loss of revenue of up to 2%)**. Large forwarders have a low cost of bad debt about 0.2% according to two major forwarders. Large shippers (who tend to be financially strong) tend to use large forwarders (or shipping lines direct), whereas smaller shippers tend to use small forwarders.

What forwarders do about it:

- Credit checking and onboarding new customers is quite important for forwarders and can be expensive (for a new customer it can take a small forwarder five to seven man-days of work to call their vendors and credit check them).
- Forwarders request one-off customers to pay upfront (no credit).
- Large forwarders check industry directories (e.g. Dun & Bradstreet) for creditworthiness.
- All forwarders monitor receivables and late payments closely.
- Some forwarders take insurance against bad debt.

Trade receivables (days outstanding) for a selection of Shipping Lines and Freight Forwarders, based on 2015 balance sheets



Source: Drewry Supply Chain Advisors

- **Cost of shipping line bankruptcies**

Risk assessment of shipping line bankruptcies on customers

Provider	Customer	
	Forwarder	**Shipper**
Shipping line	Rare but potentially big impact for all forwarders	Big impact but rare, partially mitigated by forwarders

Source: Drewry Supply Chain Advisors

Shipping line bankruptcies are rare. Roughly one large shipping line goes bankrupt every 20 years and one small shipping line every five to ten years. When a shipping line goes bankrupt (such as Hanjin Shipping in 2016), the impact on shippers and forwarders can be very severe: usually one of them will have to pay a second time for ocean freight or spend money to correct problems (re-stuffing of containers). Sometimes forwarders can recharge the additional costs to the shipper although this can be commercially difficult.

- **to forwarders**

The Hanjin bankruptcy, being the latest example of a large shipping line bankruptcy, had widely varying impact: one large forwarder stated that it cost several millions of dollars, a smaller forwarder mentioned losing about 10% of their annual revenue as they were unable to recover extra costs from their customers. Other more fortunate forwarders said that the bankruptcy did not cost them anything, except the need to find alternative shipping lines and to negotiate new contracts.

What forwarders do about it:

- Forwarders are more careful selecting which shipping lines they use; some prefer larger shipping lines.
- Forwarders include terms and conditions in their customer contracts that limit their liability in case of shipping lines not performing, even though customers may resent having to ‘pay twice’.
- Some forwarders and shippers have cargo insurance which covers the risk of goods abandoned by bankrupt shipping lines.

- **to shippers**

For shippers, bankruptcies of shipping lines can have severe cost implications. Shippers may have to pay a second time for the ocean freight or spend money on extra terminal charges, cargo transloading, air freight and road freight. There can also be huge operational and commercial problems if goods do not arrive at destination as planned, such as dissatisfied customers, lack of inventory and lost sales.

What shippers do about it:

- Shippers increasingly run credit ratings on their shipping lines (e.g. the Drewry “Z score”).
- Shippers follow the trade news and avoid shipping lines reported to be ‘struggling’.
- Some forwarders and shippers have cargo insurance which covers the risk of goods abandoned by bankrupt shipping lines.

- **Cost of forwarder bankruptcies**

Risk assessment of forwarder bankruptcies on customers and providers

Customer	Provider	
	Forwarder	**Shipping line**
Forwarder	n/a	Low
Shipper	Low	n/a

Source: Drewry Supply Chain Advisors

- o **to shippers**

For shippers, bankruptcies of forwarders are quite rare and are not seen as a risk. In recent years, shippers have not experienced any large forwarder bankruptcies or associated costs. The cost of forwarder bankruptcies associated to shippers is relatively low and is primarily linked to having to pay the freight twice.

What shippers do about it:

- Shippers generally do not take measures against the risk of forwarder bankruptcies.
- One medium sized shipper said that it requires a bank guarantee from every forwarder. However, this is an expensive solution and certainly not the norm in the industry.

- o **to shipping lines**

If a forwarder goes bankrupt they might not pay freight to shipping lines. For large shipping lines, the cost of bad debt (from shippers and forwarders) is about 0.5% of revenue; for smaller shipping lines it is around 1%. As a note of caution, these amounts include some 'bad debt' which relates to disputed invoices.

What shipping lines do about it:

- Large shipping lines check with industry directories, such as Dun & Bradstreet, that the forwarder is creditworthy and do not do business with them if they do not meet their criteria.
- Shipping lines give small forwarders either no or little credit.
- 'Cash Against Documents' practices applied to forwarders without credit, limit risk to shipping lines.
- If a forwarder goes bankrupt, shipping lines contractually have the right to sell cargo to recover unpaid payments.

3 Key numbers regarding payment and credit practices in global container shipping

1. Transaction cost for payments and reconciliation	**$30.7 bn**
a. Number of freight-related invoices issued	2.16 billion
b. Estimated cost per transaction of couriers and cheques for payment in the US (incl. labour)	$51 per payment
c. Estimated cost per transaction of freight payment platforms (excl. labour)	$2
d. Estimated time of checking invoices for small and large shippers	Small shippers: between 2 and 15 minutes per invoice (longer in case of invoice errors)
	Large shippers (EDI/Self Billing): between 2 and 15 minutes for 10 invoices
2. Cost of bad debt	**$2.1 bn**
a. Cost of bad debt for shipping lines	0.6% of sales (equivalent to $1.0bn)
b. Cost of bad debt for forwarders and NVOCCs	1.3% of sales (equivalent to $1.1bn)
3. Cost of credit	**$1.6 bn**
c. Average amount of receivables for a shipping line	25 days
d. Average amount of receivables for a forwarder or NVOCC	50 days
e. Estimated average number of credit days (if any) obtained by small and large shippers	Small shippers: 10 days
	Large shippers: 40 days

Source: Drewry Supply Chain Advisors

4 Conclusions and Recommendations

What the market needs - opportunities for disruptors

This white paper has identified widespread inefficiencies, large costs and pain points linked to current processes, lack of automation and inconsistencies in data across the maritime transport chain. In particular, we estimate that the total cost of invoicing and payment processes to the industry players (shipping lines, forwarders and NVOCC, and shippers) amounts to $34.4 billion a year and that smaller players are most affected by these inefficiencies.

There must be a better way and, in Drewry's opinion, new technologies aimed at resolving some of these problems will form part of the solution.

In order to address these pain points we believe that technological solutions are required that:

- **Support the simplification and/or automation of invoicing and payment practices,** especially for small and medium sized shippers and forwarders.
- **Create trust or provide payment guarantees between stakeholders** so that 'Cash Against Documents' practices are no longer required.

- **Streamline and solidify the end-to-end workflows** of quotation requests, quotations, booking requests, booking confirmations, fulfilment of the transport service as booked, in alignment with invoicing and payments across the transport chain without errors and re-work.

Types of solutions needed

In Drewry's opinion, large players within the container shipping industry can push to simplify and standardise some of these complex processes, but new entrants also have a unique opportunity to develop common platforms or technology-based services which shipping lines or forwarders cannot provide on their own.

Some of the types of solutions which seem within reach or under development are:

- **Online marketplaces** should simplify and automate invoicing and streamline and solidify the workflows of booking requests and booking confirmations for spot shipments.
- **Technology-driven providers** should provide platforms to reconcile bookings, invoices and payments automatically, linking all stakeholders. To reduce the number of disputes this should include not only the sea freight but also audits and payment of surcharges, detention and demurrage.
    - The automated reconciliation and payment can be a key benefit for checking ancillaries, surcharges, inland haulage, D&D, Invoices/PO references match based on near real time shipment tracking and cargo monitoring. Indeed part of the issue with invoice auditing lies in these additional amounts which may be cumbersome to check and labour intensive.
    - Pre-requisite: Efficient procurement practice and tariff management.
- **Financial or insurance companies** or other companies working for shippers or NVOCCs should provide automated payment guarantees to the providers and create trust that removes the need for 'Cash Against Documents'. They could also provide cheaper and, ideally, automated forms of payments for shippers (linked to a system where the price has already been authorised at the time of booking or before booking).
- **Financial firms** could collect the freight payment from many small shippers more efficiently and then settle with providers, reducing the cost of collecting payables and bypassing complex payment processes.
- A **centralised shipping capacity platform** operated jointly by shipping lines or by an independent party (similar to the airline capacity platforms) and updated in real time, could provide full access and real-time bookings to customers to all ships, avoiding ghost bookings or roll-overs. Pricing would probably still need to be determined by the provider (shipping lines or forwarder) and subject to rules agreed directly between the customer and the provider.
- Financial companies or rate audit firms working for the shipper or NVOCC should increasingly provide instant payment to the providers, reducing long or late settlement to (often) financially stretched providers.

There will be other technology solutions which Drewry has not envisaged and which innovative start-ups will bring to the market, but the space for disruption in the booking, freight invoicing and freight payment practices is, at present, wide open.

About Drewry Research

Drewry Maritime Research is the research arm of global shipping consultancy Drewry. The company has over 40 years' experience in the maritime sector and employs more than 90 specialists across its offices in London, Delhi, Singapore and Shanghai.

Our market research is renowned for its quality and is trusted by industry leaders around the world to deliver impartial, robust analysis and balanced opinion. This independence, alongside our sector knowledge and expertise, sets our research apart and gives clients the rich market insight they need to make informed business decisions.

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