Trade Working Capital Viewpoints

Navigating global uncertainty: *Perspectives on the evolving mobility industry's supply chain*

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Treasury and Trade Solutions

Foreword

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The mobility industry is in the midst of massive transformation as legacy auto manufacturers reinvent themselves alongside new market entrants reimagining mobility.

The implications for global trade are far reaching as new buyer-supplier relationships form while existing relationships begin to fade. As corporates in the mobility sector train their sights on the future, it remains imperative they remain focused on working capital.

— **Andrew Betts**
Global Head of TTS Trade Sales
& Client Management, Citi

The Current Mobility Landscape

Since the first hybrid electric vehicle was released in Japan in 1997[1], electric vehicles (EVs) have continued to grow in prominence in markets throughout the world. Transformation in the mobility industry isn't just concentrated on drivetrains. Autonomous technologies, connected car capabilities leveraging vehicle-to-everything (V2X) communications, and new materials promise to reshape mobility as a whole.

EVs still only represent a small fraction of the cars on the road today; estimates place the share of EVs on the road in the United States at around 1%.[2] However, the landscape is changing with 1 in 7 cars sold in the world are now electric[3] as manufacturers and consumers increasingly embrace EVs. Internal combustion engine (ICE) powered vehicles still have a role to play in the future as the scale and infrastructure needed for an EV future remains to be fully realized by countries around the world.

Working Capital for *Automotive Original Equipment Manufacturers* (OEMs)

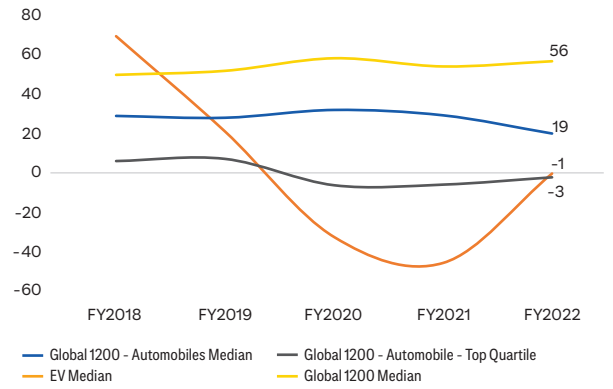
Historically, automotive OEMs businesses have been designed to run with efficiency in mind, utilizing just-in-time inventory models. Additionally, completed vehicles can be sold quickly to dealers meaning that completed vehicles are off the OEM's balance sheet before it is ever sold to the end customer. Median days inventory outstanding (DIO) for the top quartile of automotive OEMs was 43 days for FY2022 compared to 83 days for the broader S&P Global 1200, highlighting just how efficient automotive OEMs are at managing inventory in comparison to other industries. Despite efficient inventory management practices, many are still dealing with a shortage of inventory on lots, particularly in the fleet vehicle market. Top performing OEMs manage a near zero or negative cash conversion cycle (CCC). While data is limited for EV OEMs, their negative CCC is indicative of the limited inventory within the sector and customer's willingness to preorder vehicles.

[1] Department of Energy, The History of the Electric Car, 2014

[2] Car and Driver, Electric Cars' Turning Point May Be Happening as U.S. Sales Numbers Start Climb, 2022

[3] World Economic Forum, 1 in 7 cars sold globally now is electric, 2023

Figure 1. Cash Conversion Cycle



Note: Charts are for illustrative purposes only, and subject to change.
Source: S&P Capital IQ, Citi Services

Figure 2. Days Sales Outstanding

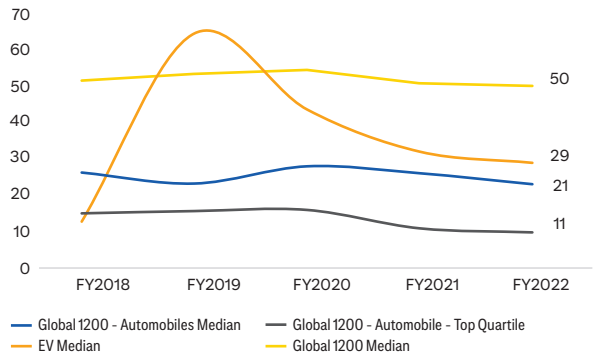


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Figure 3. Days Inventory Outstanding

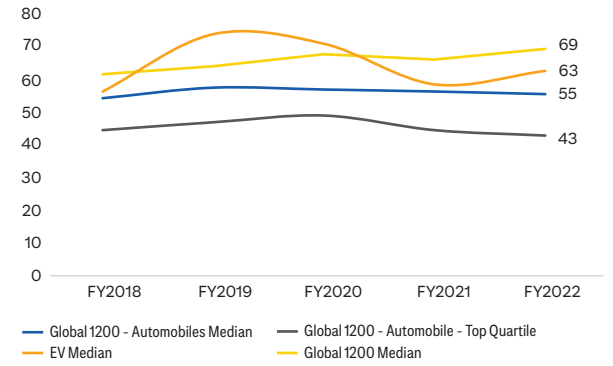

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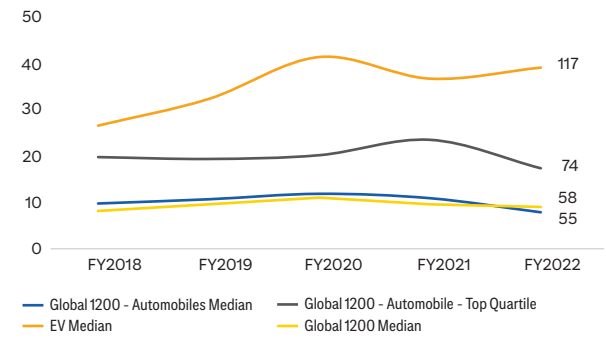
Figure 4. Days Payable Outstanding



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While the obvious shift from internal combustion engine vehicles to EV vehicles is in the spotlight, a secondary fundamental shift is occurring behind the scenes as well. Original equipment manufacturers, long reliant on the traditional B2B dealership model, have begun to pivot towards a B2C, direct-to-consumer model. In the new strategy, dealerships adopt an agency model, helping facilitate customer orders and maintaining vehicles. For OEMs, the change in model will increase inventory on balance sheet due to the pivot from selling to dealerships on relatively short payment terms, to keeping the vehicle on balance sheet until final delivery to the customer. OEM's will need to optimize working capital in other areas to support this new business model.

For a growing EV manufacturer, accessing working capital financing was crucial for them to be able to continue their growth trajectory.

Specifically, the EV OEM needed a solution to help fill the working capital gap caused by paying suppliers ahead of collecting proceeds from customer sales under a direct-to-consumer model.

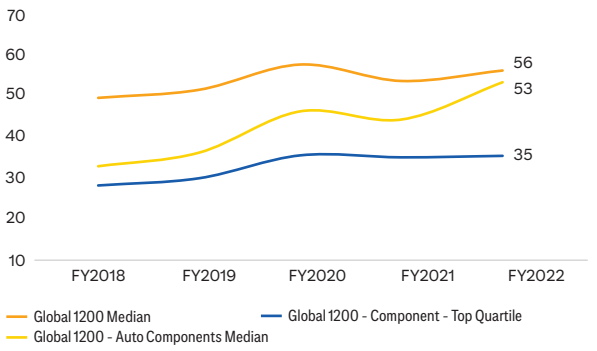
Given the size of the facility needed by the EV OEM, a syndicated trade loan was the right solution to satisfy their working capital needs. And since this OEM is focused on manufacturing EVs, it was important that the trade loan be structured as a sustainable loan.

The syndicated sustainable trade loan provided to the EV OEM fulfilled their working capital needs and provided the flexibility needed to support their ambitious growth plan. Additionally, the loan allowed them to cover the full cash conversion cycle during their growth phase.

Working Capital for *Automotive Component Suppliers*

Similar to OEMs, automotive component suppliers enjoy relatively efficient cash conversion cycles in comparison to the Global 1200 median. However, whereas the median OEM CCC has improved over the last five years by 10 days, the median cash conversion cycle for component suppliers has increased by 20 days, from 33 days to 53 days. One potential explanation for the uptick in CCC is that suppliers have built up and are maintaining inventory, having moved to "just-in-case" inventory in the wake of vast global supply chain disruption. Simultaneously, OEMs "just-in-time" approach to inventory management likely means component suppliers carry the burden of excess inventory on their balance sheets. While median DIO increased by eight days from 61 to 69 days for S&P Global 1200 constituents, DIO for suppliers increased by 17 days from 44 to 61 over the same period.

Figure 1. Cash Conversion Cycle



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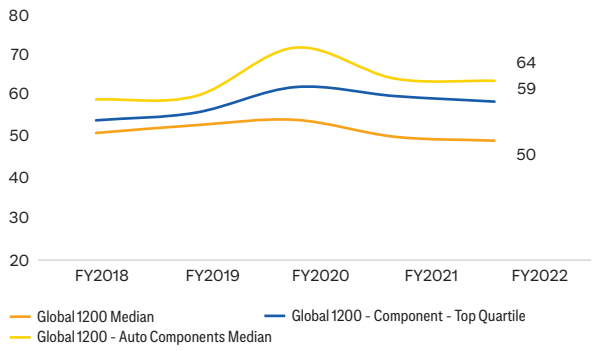

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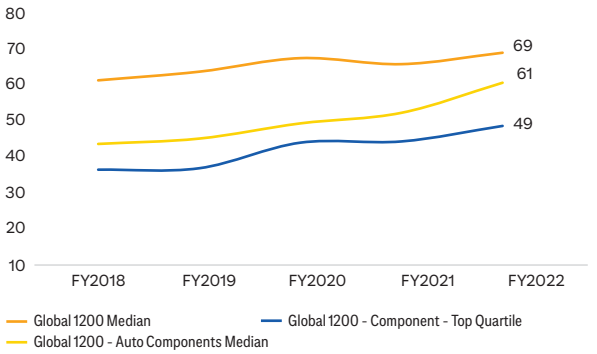

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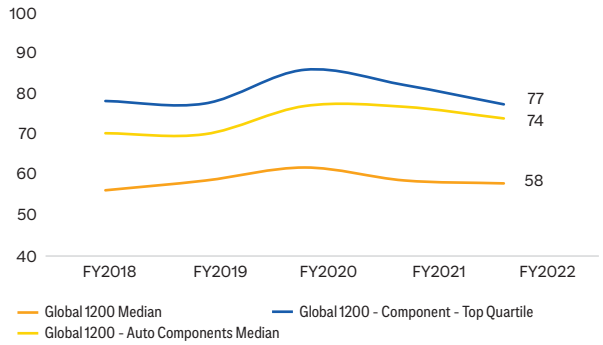

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Automotive suppliers find themselves in position where they need to be able to innovate in order to keep pace with a mobility industry that's undergoing significant change. Components suppliers have an enormous need to spend on R&D and other forms of innovation in order to position themselves as suppliers for the cars of tomorrow. Sound working capital management is crucial when undertaking any such efforts. Released trapped liquidity can be used to invest in bringing new capabilities online and can help a company more efficiently navigate disruptions of a market cycle.

For a large, European **tier-1 automotive supplier** with interests in the design, production and sale of components, when it came to aligning their payment terms with the market and release working capital, adopting a **global supply chain finance** solution was crucial, as it allowed them to achieve their goals without negatively impacting their suppliers. Given the corporate's expansive global footprint, it was important that they find a "globally consistent" solution that could be implemented across 16 markets and 70 legal entities **to help their suppliers fund their own working capital needs** while standardizing their own payment terms.

While the automotive supplier was focused on single bank solution, it was important that their relationship banks be able to participate in the program funding to provide resilience and diversified funding. Additionally, the corporate needed a supply chain finance solution that was able to support their suppliers in both Organisation for Economic Co-operation and Development (OECD) and non-OECD markets.

Citi was able to help the large automotive supplier establish a supply chain finance solution on a single IT platform that meet its suppliers' local language, legal and IT needs. Additionally, Citi provided that corporate with a supply chain finance solution that has been able to grow as the corporate expands into new markets.

Investing In an *EV Future*

To be able to adopt a fully cohesive electric vehicle future will require considerable investment. Reinventing mobility's electrified future not only rests with OEMs and their suppliers but touches upon a diverse range of industries up and down the value chain including mining, infrastructure, and utilities. Substantial research and development efforts (R&D) are already underway and will continue to be needed to help EVs match the capabilities of their internal combustion engine (ICE) predecessors.

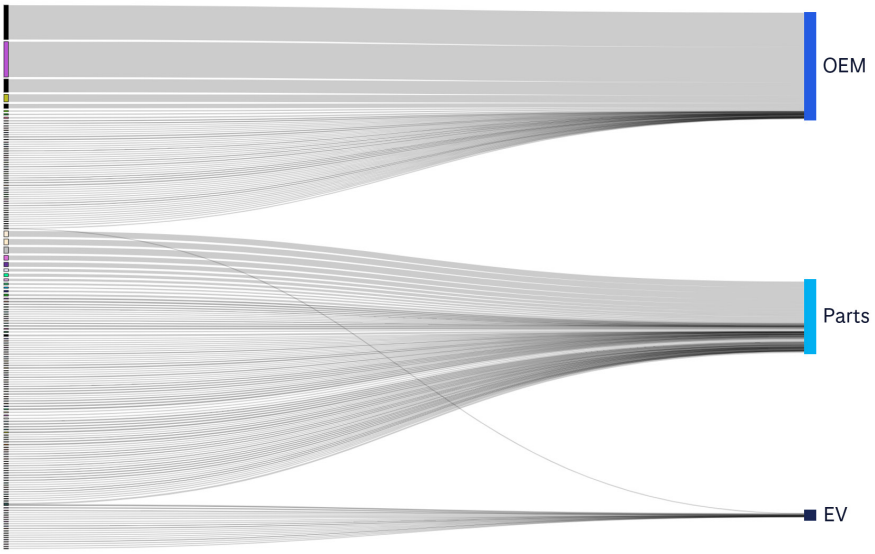
To contextualize what the global mobility cross-border supply chain looks like, Citi Global Trade Working Capital Advisory (TWCA) in partnership with Citi Global Data Insights (GDI) examined a range of data sources as proxies to some of the unique attributes of the supply chain. For this analysis TWCA and GDI have examined international shipping data[4] by value and weight, as well as Citi's own global payments data for both OEMs and component suppliers. While the resulting analysis is robust, it is important to note that it is limited to the extent which data is available.

Figure 9 and Figure 10 depict the change in the makeup of suppliers to the mobility sector from 2021 to 2022. From 2021 to 2022, at a time when many EV manufacturers are focused on ramping up deliveries, the number of suppliers to pureplay EV[5] manufacturers increased by 276%. At the same time, suppliers to the traditional OEMs decreased by 20%. Perhaps most surprising is the limited overlap between categories however, this is likely due to linear nature of the mobility industry's supply chain.

[4] Shipment data is provided by Dun and Bradstreet. D&B collects and provides maritime shipment data from the USCBP and global industry partners which captures granular shipment details such as shipper, consignee, date of shipment, port locations and product details on a daily basis.

[5] "Pureplay EVs" are OEMs which only produce electric drivetrain vehicles.

Figure 9. Distribution of Suppliers Across Mobility Sector, 2021



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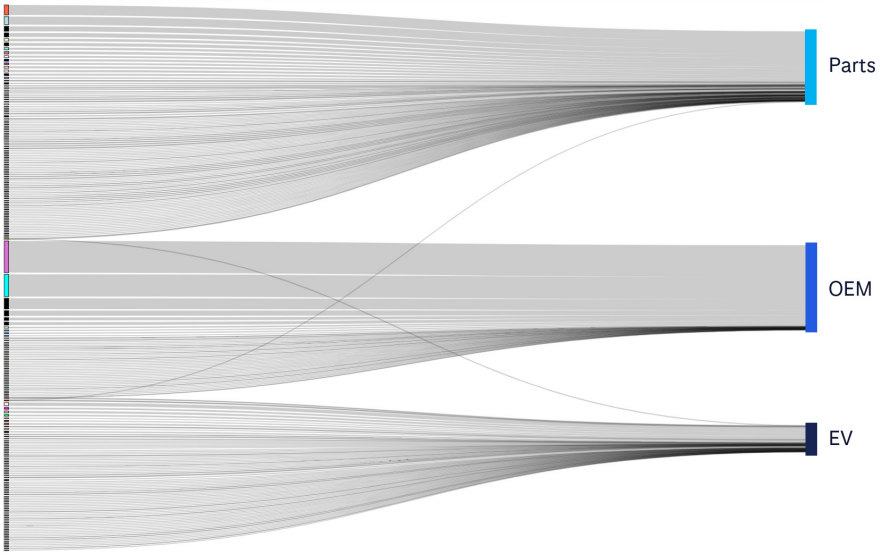
Source: Dun & Bradstreet, Citi Global Data Insights

Figure 10. Distribution of Suppliers Across Mobility Sector, 2022



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Source: Dun & Bradstreet, Citi Global Data Insights

Preferred Funding Structures *in the EV Space*

EV industry participants, whether OEMs or suppliers, should be familiar with a few key financing solutions available to them:

Research Tax Credits Receivables Discounting to Fund Research and Development (R&D)[6]: Offered in various forms by OECD and partner economies, such as the program offered in France, companies may be able to claim a portion of their research and development expenditures in the form of tax credits, which can then be monetized by a relationship bank. The liquidity generated can be an extremely efficient source of funding as the obligations are likely against a sovereign nation.

For many corporates, both in the mobility industry and outside the mobility industry, research and development accounts for a significant portion of their capital expenditure. For governments, incentivizing research and development can be a significant contributor of economic activity, yielding among other things, quality jobs within their country.

For a **major, global OEM**, France's R&D tax incentive programs yields a refund in excess of EUR 100mm annually. To eliminate these medium-term receivables from pooling on their balance sheet, the OEM chooses to partner with a financial services intermediary and **discount these receivables in the market.**

Since the obligor is a sovereign government, which can often be very well rated, Citi was able to structure an accounts receivable financing arrangement that provided the OEM with a **cost efficient, diversified source of liquidity.** The transition was a win for the client as the they were able to tap an efficient source of liquidity that they could then reinvest back into their business.

Accessing Liquidity through Accounts Receivable Finance: Bringing on new capabilities and driving adoption requires investment. Using structured accounts receivable financing solution may be a useful solution for companies seeking financing to use for investment or to support their liquidity structure.

[6] Citigroup is not acting in an any advisory role in relation to Legal, Tax, or Accounting issues relating to this structure or otherwise. All companies should obtain their own Legal, Tax, or Accounting advice in relation to your evaluation.

For one of the world's largest **battery manufacturers** looking to secure liquidity, much of their working capital wasn't just tied up in receivables from one customer but rather in a portfolio of receivables from some of the world's largest automotive manufacturers.

Based on the concentration of receivables in the portfolio and that the seller already had their own insurance policy covering the seven debtors in the portfolio, a **Credit Insured Accounts Receivable (CIAR) program** was the correct solution to help the client **monetize their receivables as efficiently as possible.**

Partnering closely with the client, Citi was able to structure a solution that monetized receivables from seven buyers in their portfolio while simultaneously satisfying the sellers pricing expectations and disclosure requirements. Additionally, Citi was able to work with the seller's insurer and satisfy their wish to use to use their own insurance policy.

Letters of Credit to Minimize Counterparty Risk: As new capabilities and offerings come online and trading relationships expand, buyers and suppliers likely may find themselves trading with a new counterparty that they might be unfamiliar with. In these circumstances, letters of credit may prove to be useful to help ensure payment while minimizing the risk of nonperformance.

The shift away from internal combustion engine vehicles to electric vehicles isn't just limited to consumers as transit authorities all over the world are looking for ways to reduce their emissions. One place where transit authorities have been able to curb their emissions is by electrifying their bus fleets.

For a leading **electric bus manufacturer** in North America, the opportunity to provide a major metropolitan area's transit authority with in excess of 500 buses was a major win for the business but in exchange they needed to be able to provide the transit authority with performance assurance. As part of the contract award, the bus OEM needed to furnish the transit authority with a milestone-based **performance standby letter of credit (SBLC).**

For this particular transit authority, the acquisition of long-range battery powered buses is part of its sustainability goals. Citi was able to provide the client with cohesive support from early on in the contract bidding process and structure a SBLC solution that both fulfilled the client's and the transit authority's needs.

As with other emerging or developing industries, its paramount that new or unestablished businesses focus on maintaining sound governance and processes when it comes to working capital management as financing likely is not as readily accessible. Effective cashflow forecasting will help ensure that companies are able to meet obligations without have to seek external funding sources. Additionally, corporates can join their customer's supply chain financing programs to gain access to additional sources of liquidity.

Role of Government *in Expanding EV Adoption*

One way governments have participated in expanding EV adoption is through the passage of legislation and by formally setting targets for phasing out internal combustion engine vehicles. Commitments vary by country, and even by state and city. European lawmakers passed a law in February 2023 that bans the sale of combustion powered vehicles by 2035.[7] Most targets that have been announced take affect sometime after 2030. The more near-term benefit of such targets is that it helps provide clarity for an automotive industry that's embarking on a fundamental change to how its vehicles are powered as many reposition themselves for an EV centric future.

Subsidies and other forms of financial incentives are proven helpful in helping consumers make the switch to EVs. Governments are also reshaping the manufacturing location landscape, with OEMs and Suppliers relocating factories to take advantage of vehicle subsidies.

As governments think big picture about securing supply of all the critical elements needed to produce battery powered vehicles, export credit agencies (ECAs) are seeing renewed purpose. Historically, ECAs have helped companies in their home countries fund exports and limit the risk of exporting to other countries. As countries move to secure critical metals, export agency financing structures are now being used by countries to secure their supply of metals needed to power EVs. Deals back by Italy's Sace and Germany's Euler Hermes are a testament to the growing prevalence of these kinds of transactions.[8,9]

To help meet the fast-growing demand for electric vehicles in the North American markets, **Solus, a major producer of copper foil used in EV batteries**, set out to build a **copper foil manufacturing facility in Canada**, the first of its kind in Canada.[9]

To bring Solus's ambitions to fruition, Solus sought to employ an **Export Credit Agency (ECA) financing structure**. The transaction was supported by a consortium of financial service firms and was unique in that it involved a partnership between K-SURE, the Korea Trade Insurance Corporation and EDC, Export Development Canada, a first for the two ECAs.

The transaction was a win as copper foil is a key component in EV battery production and provides stable supply for an essential component that's growing in demand. It also represents substantial foreign direct investment in Canada and will support the creation of high skill and high wage jobs.

[7] Reuters, EU lawmakers approve effective 2035 ban on new fossil fuel cars, 2023
[8] Global Trade Review, Export finance and commodities: An unlikely pairing?, 2023
[9] CBC, South Korean firm opening copper foil plant in Quebec for use in electric vehicles, 2023.

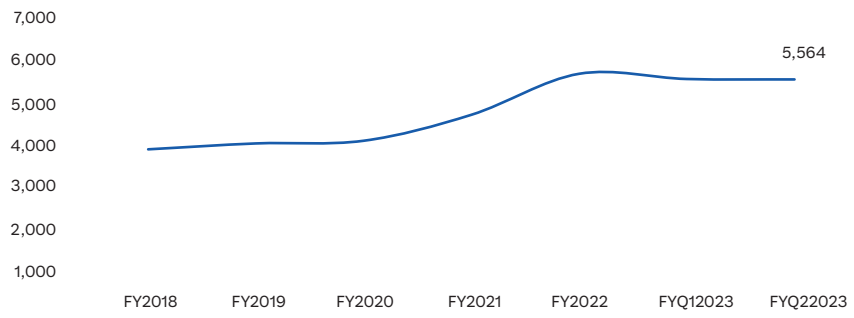
Supporting Customers *and Distribution Channels*

The dealership distribution model for the automobile industry has been in existence nearly as long as automobiles have. In the traditional dealership model, dealerships buy inventory from the OEMs and sell it onwards to customers. Increasingly, OEMs are joining other industries and adopting a direct sales model that enables them to sell directly to customers via online sales channels. In the new model, dealerships function as agencies for the OEM, facilitating orders and tending to vehicle maintenance needs. OEMs benefit by eliminating dealership's ability to compete with one another on price while dealers no longer suffer the burden of financing and managing inventory.

While mobility OEMs have traditionally been run in an extremely efficient manner, component manufacturers can have a more challenging time maintaining efficiency. Component manufacturers may often have limited distribution channels. As a result of limited distribution challenges, such manufacturers may have large amounts of inventory being held on their balance sheets, often as they serve OEMs "just-in-time" inventory model. Figure 11 shows that inventory for automotive components firms has grown steadily since 2018 and has remained elevated through the first two quarters of 2023 requiring additional working capital to support this.

Based on an analysis of Citi Services' global payments data conducted by Citi Global Data Insights in partnership with Citi Trade Working Capital Advisory, country-to-country flows have shown to be dynamic from 2021 – 2022. The charts below, Figures 12, 13, and 14 illustrates some of the noteworthy trade corridors that have shown growth from 2021 – 2022, with remitting country being the left side of the pair and beneficiary country being the right side of the pair. One standout factor that has also emerged is the level of concentration that exists in the industry as well. For example for OEMs, the number of country pairs (remitting country to beneficiary country) is about 20% smaller than for pharmaceuticals[10].

Figure 11. Median Inventory for S&P Global 1200 Automotive Component Suppliers, USD ($mm)



Note: Charts are for illustrative purposes only, and subject to change.
Source: S&P Capital IQ, Citi Services

[10] Filter 2021 country for > $50mm

For OEMs, near 600% growth in the United States to Poland corridor is supported by a strong automobile industry in both countries. The US is home to several auto manufacturers, and per the U.S.'s International Trade Administration, Poland's automotive industry ranks as one of the most important manufacturing sectors in Poland.[14] Additionally, Poland is home to manufacturing capacity for several of the world's largest automotive manufacturers. In three of the top corridors showing growth, Germany is the benefiting country, backed by its own strong automotive industry that's home to several of the world's leading automotive manufacturers. Malaysia is Germany's principal ASEAN trading partner[15] and Korea is described as the third most important market for Germany goods in Asia, after China and Japan.[16]

Looking specifically at EVs, China is noted in two of the largest growing corridors, the Great Britain - China corridor which saw 2217% growth and the US - China corridor, which saw 18% growth. The emerging growth in these two corridors is symbolic of the EV production growth taking place in China's automotive sector as new entrants have brought to market several new models. When looking at the list's top remitting countries, all rank in the top 25 of the UN's Human Development Index, with the exception of China, and underpins the challenge EVs face when seeking to grow adoption in new markets.[17]

Figure 12. Top 10 Emerging Original Equipment Manufacturers (Paying country on left, country receiving funds on right), %change[11]

OEM Corridor	%Change 21' – 22'
US-PL	592%
NL-GB	567%
SG-CN	413%
AU-DO	278%
BE-GB	261%
AE-DE	153%
IE-GB	148%
KR-DE	139%
MY-DE	134%
BR-US	118%

Note: Tables are for illustrative purposes only, and subject to change.
Source: Citigroup

Figure 13. Top 10 Emerging Electric Vehicle Corridors (Paying country on left, country receiving funds on right), %change[12]

Corridor	%Change 21' – 22'
GB-CN	2217%
NL-TW	442%
CN-US	263%
DE-KR	153%
NL-US	78%
US-MY	48%
GB-US	45%
GB-DE	26%
US-CN	18%
US-SG	13%

Note: Tables are for illustrative purposes only, and subject to change.
Source: Citigroup

Figure 14. Top 10 Emerging Automotive Component Corridors (Paying country on left, country receiving funds on right), %change[13]

Corridor	%Change 21' – 22'
IE-GB	622%
IT-GB	559%
DE-ES	456%
NL-GB	365%
US-DE	325%
FR-GB	186%
DE-US	129%
DE-IE	86%
CN-US	71%
DE-GB	68%

Note: Tables are for illustrative purposes only, and subject to change.
Source: Citigroup

[11] Based analysis of Citi's payments data, adjusted to eliminate first time or immaterial relationships; data as of Sept. 2023
[12] Based analysis of Citi's payments data, adjusted to eliminate first time or immaterial relationships; data as of Sept. 2023
[13] Based analysis of Citi's payments data, adjusted to eliminate first time or immaterial relationships; data as of Sept. 2023
[14] International Trade Administration, Market Intelligence: Poland Automotive Industry, 2020
[15] Federal Foreign Office, Germany and Malaysia: Bilateral relations, 2023
[16] Federal Foreign Office: Germany and the Republic of Korea (South Korea): Bilateral relations, 2023
[17] UN, Human Development Report 2021-22 Uncertain Times, Unsettled Lives: Shaping our Future in a Transforming World, 2022

As global trade corridors continue to evolve and grow over time, mobility corporates should be familiar with the wide array of trade finance options available to them to help facilitate their trade needs both at home and abroad. As new supplier relationships form, corporates can work with Citi to establish commercial letters of credit or bank guarantees to help mitigate the risk of an unknown trading partner. Citi can help mobility corporates structure trade loans that can help bridge their working capital needs and can help establish accounts receivable (AR) finance solutions that can support their customers' needs for longer payment terms while improving their own liquidity structure.

[17] International Trade Administration, Israel Country Guide, 2019
[18] Department for Business & Trade, Trade and Investment Factsheets: Germany, September 2023

Conclusion

As an industry in the middle of its most consequential change since its inception, mobility corporates must not lose sight of working capital management as they pursue new products and capabilities.

Maximizing liquidity while ensuring supplier resiliency through access to capital is important now and will be for the foreseeable future as the mobility sector takes on this period of change. Mobility industry participants should consider a few key points when it comes to their working capital management.

- **Maximizing excess liquidity to fund innovation:** Skillful working capital management can help enhance liquidity management and serve as a catalyst for innovation or corporate development.
- **Resilient trade requires reliable financing:** Protecting against supplier default or minimizing the risks of nonperformance both require reliable financing.
- **Selecting the right tool to support goals:** Trade financing solutions are multidimensional and can be suited to support a corporate's broader strategy, including sustainability-related solutions that can help support inherent relationship between electric vehicles and sustainability goals.

Citi's Global Trade Working Capital Advisory team can help support mobility corporates in periods of consequential change by helping them assess how working capital management can best position them for success.

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