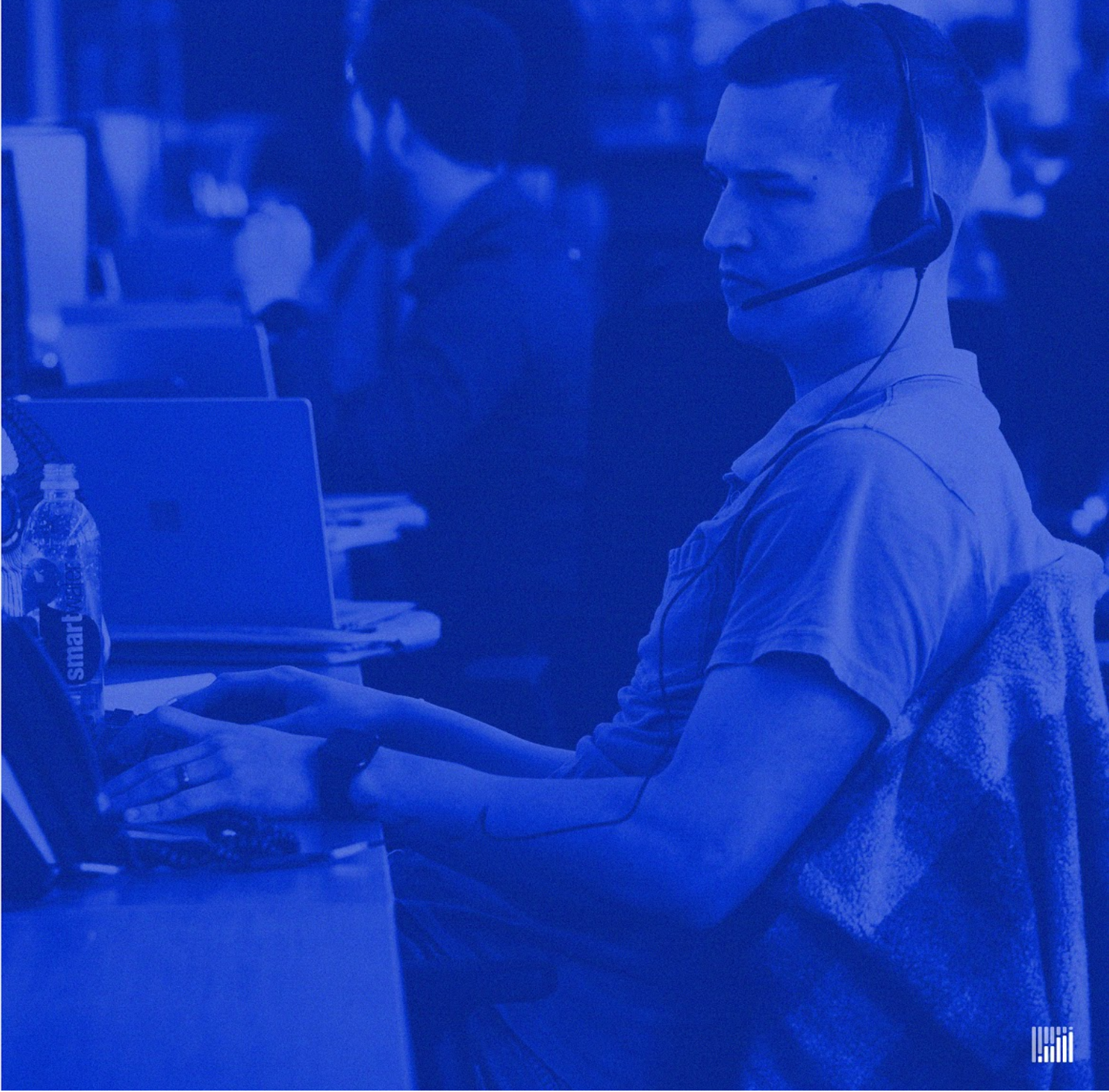


OCTOBER 2019

# FREIGHT BROKER PERFORMANCE ACROSS THE CYCLE

FREIGHTWAVES FREIGHTINTEL RESEARCH







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## Executive Summary

The goal of this whitepaper is to demonstrate the attractive aspects of asset-light freight brokerages' business models (though we believe future returns will be diluted by new-found digital competition) and to provide a rough primer that examines how they perform across the trucking cycle. We also compare and contrast the basics of brokerage business models and performance across the cycle relative to asset-heavy truckload carriers to assess whether they warrant the premiums afforded to them in the stock market and in private equity transactions. In general, we believe the answer to this question is "yes" due to their attractive secular growth, higher margins and returns on capital, and greater defensiveness in downturns.

The crux of the attractiveness of freight brokerages comes down to several factors: their asset-light (and capital light) nature produces high returns on low capital deployed; they compete in a large and growing market; they have largely variable cost structures that cushions the downside (instead of the largely fixed cost structures for carriers); and their business models have embedded elements of lagging margins that allow investors to capture the upside of the cycle with less downside and volatility in their earnings streams. Many truckload companies have expanded into freight brokerages to diversify their earnings streams, maximize the utilization of their fleets in downturns and because it does not take a lot of capital to do so. As a result of these factors, investors have traditionally afforded a premium to asset-light transportation companies compared to asset-heavy. For this same reason, private capital (both venture and private equity) has flooded into the space.

In this paper, we present our findings from constructing basic models for the top five publicly traded brokers (using their reported financials) and aggregate their performance into an overall broker index to gauge performance and trends across the last four years of the trucking industry, which has encompassed two freight recession years (2016 and 2019) and two strong years (2017 and 2018). The top five publicly traded brokers (by net revenue) in our analysis include: C.H. Robinson (CHRW); J.B. Hunt (JBHT); XPO Logistics (XPO); Echo Global Logistics (ECHO); and Landstar Systems (LSTR). By using this timeframe, we were able to substantiate the views laid out above.

The attractive nature of asset-light freight brokerages and decades of rapid growth have validated the first law of capitalism – high returns will attract growing competition until returns converge with the average cost of capital absent the presence of durable competitive advantages (or "moats" in Warren Buffett parlance). This is playing out with billions of dollars of new investor capital rushing into the brokerage space to compete (much of it digital and technology-oriented). Because venture capital is much more focused on gross revenue growth, we think it will



eventually come at the expense of the freight brokerages' margins as new upstarts aim to take market share primarily through discounting. However, while we see long-term competitive and margin pressure for brokers, in the near- to medium-term, we think gauging where we are in the cycle is more important for transportation investors. For much more information and insight into our views on the new competitive backdrop for brokerages, see our July report, "What are Digital Freight Brokers Worth?"

## Freight Broker Performance Across the Cycle

In general, freight brokerages perform best during periods of supply disruption and when there is volatility in the market. Freight brokers' gross margins (i.e. net revenue margins) typically expand when the truckload market is loosening and spot rates are falling. Conversely, freight brokers' gross margins typically compress when the truckload market is tightening sequentially and spot rates are rising.

We can think of booking trucks in the spot market as the cost of purchased transportation for a broker while the majority of revenue for a typical large broker (i.e. 50 to 75%) is contractually based, creating a two to three quarter lag in margin performance when the two diverge to a material degree.

One attractive element of freight brokerages is that they capture most of the upside of the trucking cycle but experience muted downside relative to truckload carriers due to their late cycle, lagging gross margins, variable cost structures and asset-light nature.

Echo Global Logistics does a good job summarizing the cycle for brokers in the chart below. For freight brokers overall, we would say the cycle is in Stage C or perhaps the early part of Stage D below. This is characterized by a soft market where there is excess capacity in the midst of a cycle that appears to have bottomed. Rising spot prices and falling contract rates should increasingly converge, squeezing brokers' margins at a time of weak gross revenue.



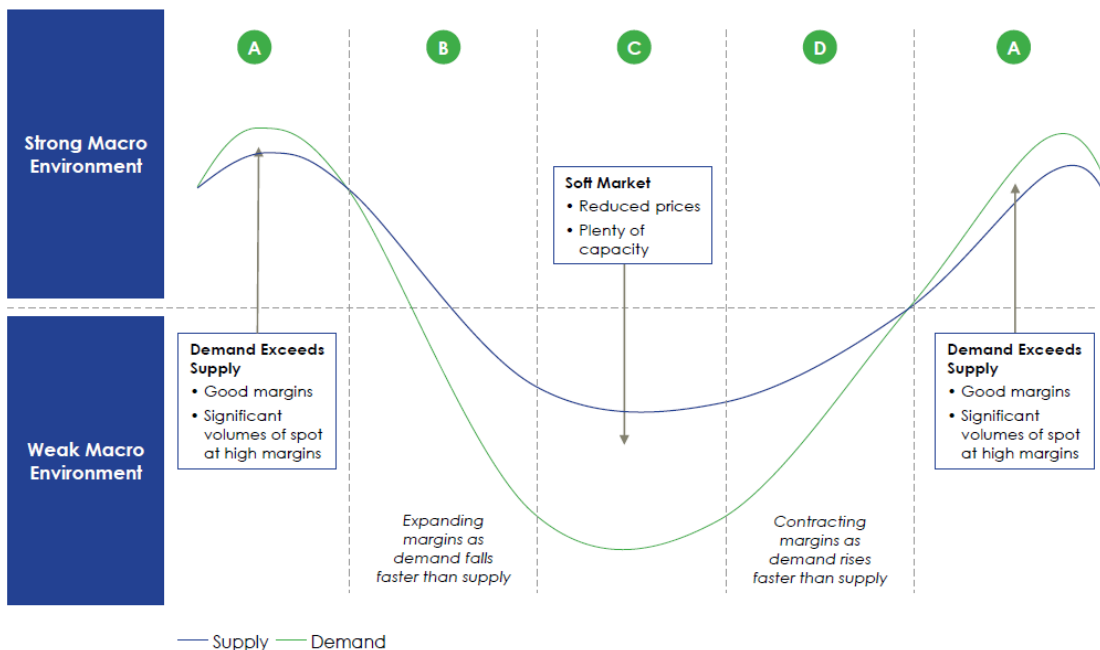
Figure 1: Echo Logistics' Illustrative Freight Cycle

# Freight Cycle Dynamics



## Illustrative Freight Cycle

Index of Supply and Demand



12

Source: Echo Investor Relations

Revenue growth for all the brokers (as measured by the top five publicly traded brokers) peaked at the same time around the second quarter of 2018 at about 30% year-over-year growth, which corresponds to the top of the trucking cycle. However, at that same time, gross margins for our freight brokerage industry benchmark bottomed at 15.4% and have since climbed by about 200 basis points to 17.4%, causing overall gross profit dollars for the freight brokerage industry to increase to a new high even as the freight market was in recession.

## A Freight Broker's Business Model

On the revenue side, there are three primary drivers of a broker's performance: the number of loads booked; average revenue per load; and the business mix of contractual and spot revenue.



The number of loads for the brokerage industry as a whole will typically rise and fall real-time in conjunction with overall trucking volumes. Revenue per load typically will respond to the upside and downside with a lag given typical heavy exposure to contractual agreements between brokers and their shipper customers. Therefore, the mix between contract revenue and spot revenue will have a material impact on their performance. Most large brokers typically obtain about 50 to 75% of their revenue from contracts with shippers. This is intentional and strategic because having a large proportion of contractual revenue smooths out business volatility and increases recurring revenue.

The greater the mix of contractual revenue, the greater the late cycle margin benefit and the bigger the early cycle margin compression. For this reason, we view brokerage stocks as ideal mid- to late-cycle investments. As opposed to asset-heavy truckload carriers, which we view as more early- to mid-cycle investments because they can leverage their high fixed cost bases on improving revenue into powerful earnings growth.

On the cost side, the purchased cost of transportation and variable incentive compensation are the two primary drivers of profitability.

The major factor that determines whether the number of loads are growing or shrinking is freight tonnage growth in the overall economy and whether the market is balanced or imbalanced. Freight brokers get more loads when the market is imbalanced because in a down market it becomes cheaper for a shipper to tap the spot market; in an up market carriers begin to reject contracted freight in favor of higher-paying spot loads.

Revenue per load is primarily a function of where spot rates were in the past during the most recent re-bid cycle. If the market has since turned down, contract rates are likely to be above spot rates. If the market has since turned up, spot rates are likely to be climbing toward or crossing above contract rates.

## **A Loose Market**

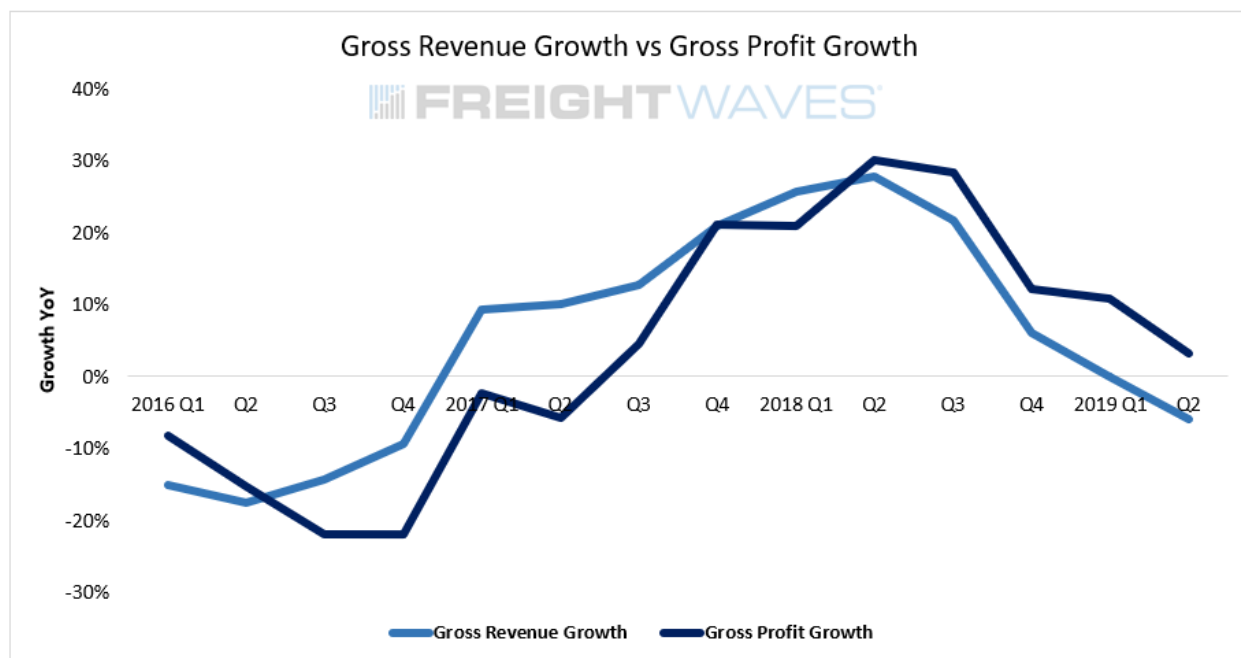
In a market with loose capacity, spot rates fall and spot and paper rates diverge, leading brokers to book less volume but at a higher margin. In loose markets where volumes are weak, gross margin expansion is a key driver of brokerage earnings growth.

As seen in the chart below, as the trucking market began to loosen in the second half of 2018, freight brokers' gross margins expanded and they were still able to grow gross profits at a time of decelerating and contracting gross revenue. This



relationship can be seen in the gap between the dark blue line (gross profit growth) and the light blue line (gross revenue growth). Loose markets become a problem for brokers when they drag on and turn into a sustained downturn because contract rates eventually turn downward and converge with spot, crimping margins at a time of weak volumes.

**Figure 2: Publicly Traded Broker Basket – Gross Revenue Growth vs. Gross Profit Growth**

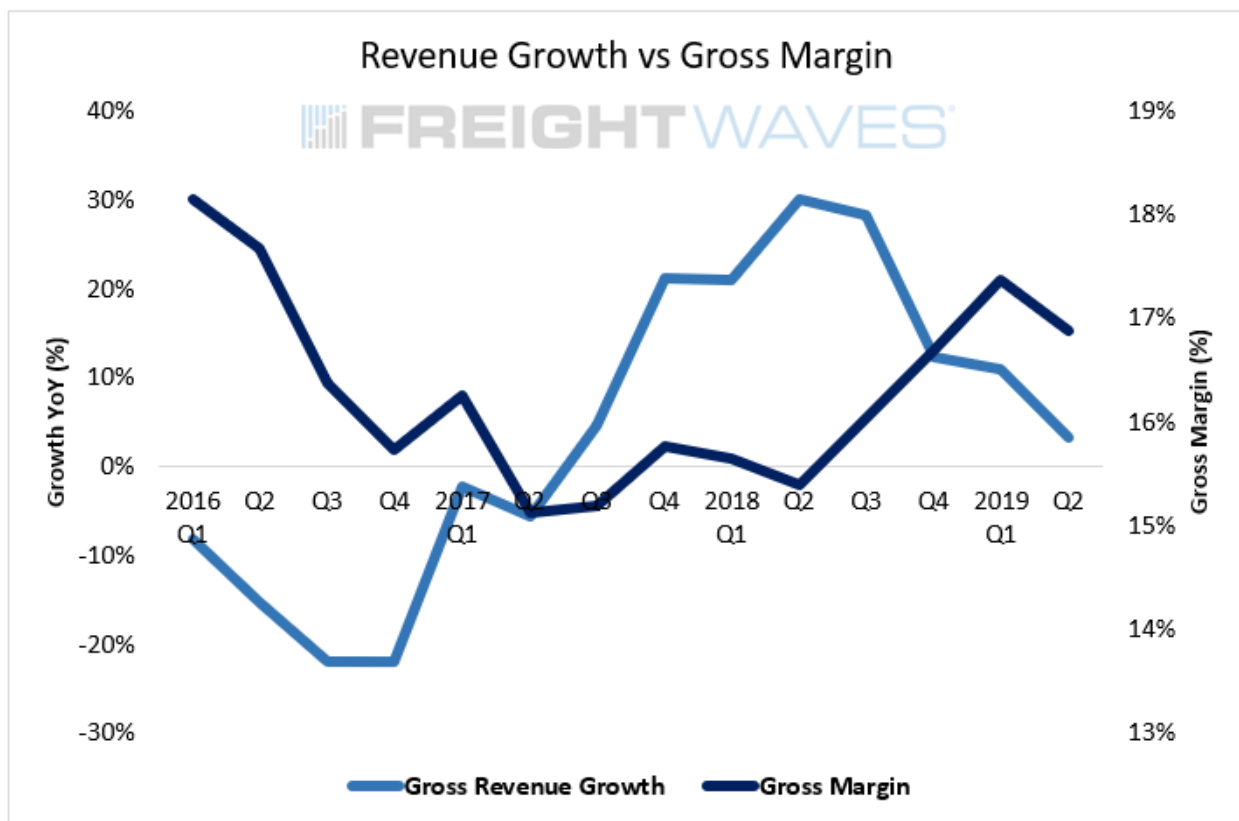


Source: FreightWaves





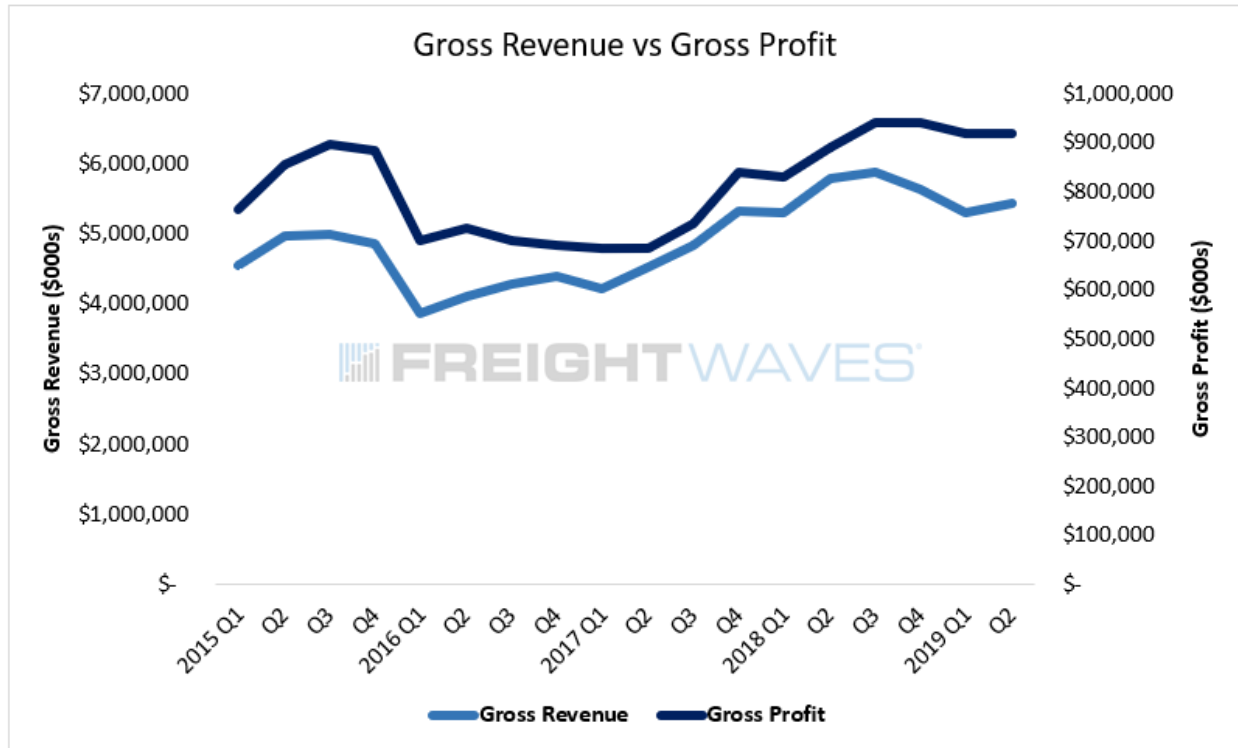
**Figure 3: Publicly Traded Broker Basket – Gross Revenue Growth vs. Gross Margins**



Source: FreightWaves



**Figure 4: Publicly Traded Broker Basket – Gross Revenue vs. Gross Profit Dollars**



Source: FreightWaves

In loose markets when gross revenue is falling, it is possible early in the downturn that net revenue could actually be rising if the cost of purchased transportation is falling faster than gross revenue. For example, in its most recent quarter, C.H. Robinson (CHRW) saw pressure from a weak trucking market as its North American Surface Transportation (NAST) segment’s gross revenue fell 9% year-over-year. However, this was more than offset by 240 basis points (bps) of year-over-year gross margin expansion as net revenue grew 3.5%. However, we expect the margin expansion story for CHRW and all the other publicly traded brokers to flip to headwinds and compression over coming quarters as the market tightens.

According to Goldman Sachs, the contract rebid cycle is typically weighted two-thirds to the first half of the year and one-third to the back half of the year, which suggests a two to three quarter lag of margin outperformance before contract rates are rebid lower towards spot in a down market when capacity is loosening.

Therefore, in loosening markets, it might be common for a broker to see its number of loads going down (or growth decelerating) while revenue per load may still be positive year-over-year (or at least flat) and the cost of purchased transportation is plunging with spot rates. This has been a common story with publicly traded brokers in recent quarters. With contractual rates finally inflecting negative year-over-year in



recent months, we think this dynamic is set to change. The longer the market goes down, the more likely it is that brokers will start to see significant pressure on revenue per load, both contractual and spot. This dynamic will be compounded by declining shipment volumes (gross tonnage) across the freight industry as economic conditions deteriorate.

Freight brokerages' variable-cost model (in terms of both the purchased cost of transportation and employee compensation) provide partial downside protection relative to asset-heavy truckload carriers, whose cost base is largely fixed in comparison. As a result, the magnitude of downside risk is less in the non-asset intensive world during periods of volume/price weakness and bankruptcies are not as common.

Conversely, in a loose market it can be common to see more brokers competing for fewer spot loads, which can actually cause pressure on overall industry gross margins.

## **A Tight Market**

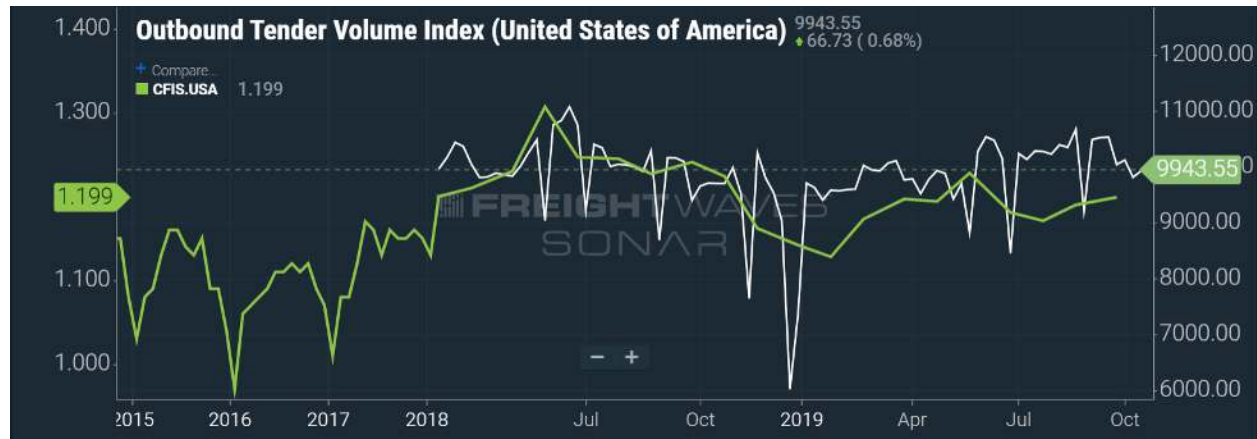
A tightening market is good for brokers because it is supportive of gross revenue growth that can more than offset margin pressure after the initial few quarters of the turn. When market capacity tightens, spot rates rise, and spot and paper rates increasingly converge, leading brokers to book more volume but at a lower margin. As the market continues to recover and pick up steam, the number of loads immediately increases but the revenue per load grows at a multi-quarter lag (until contractual rates are revised higher). This means the gross revenue improvement as the cycle tightens is offset to a degree by the gross margin pressure stemming from a rising spot market and hence increasing cost of purchased transportation.

In a strong market, tighter capacity and rising spot prices has a tendency to push shippers into the spot market because carriers begin to reject lower-priced contracted freight. Furthermore, brokers start to reject freight from their shipper customers at the old contracted rate because purchasing capacity at a higher rate than they are receiving is something they are loathe to do unless the customer is important enough to justify doing so temporarily. The broker and the shipper customer typically have to have a conversation in which the broker essentially says, "The market has moved up and if you want to move this freight, we're going to have to raise your rates because it will not cover the cost of obtaining a truck."

Brokers perform best during periods of supply disruption and inflections to either tighter or looser markets. In a tightening market, a broker can help you find a truck when they are tough to find and in a loose market, a broker can help you take

advantage of cheaper spot rates to move freight. Also, in a tightening market, there is a high correlation between load volumes and aggregate freight tonnage indexes such as national outbound tender volumes (SONAR: OTVI.USA), the Cass Freight Shipments Index (SONAR: CFIS.USA) or any of the other major freight volumetric indexes.

**Figure 5: National Outbound Tender Volumes vs. Cass Freight Shipments Index**



SONAR: OTVI.USA, CFIS.USA

When demand increases and freight volumes accelerate, spot rates will move up and typically drive gross margin compression because brokers pass through higher spot rates on a time lag (i.e. contractual business is usually marked to market higher with a one- to three-month lag). How long and how deep the gross margin compression is for brokers depends on their ability to eventually pass on higher carrier costs to their customers.

A higher percentage of contractual business for a broker is both a blessing and a curse. On the one hand, a greater mix of contract freight insulates a broker from some of the inherently high cyclical and volatility of the trucking market by ensuring a greater portion of revenue from loyal, recurring customers. On the other hand, the greater the amount of revenue derived from contractual relationships then the greater the gross margin compression a broker will see in a tightening market. Particularly for large publicly traded brokers, having a customer base of very large shippers can increase gross margin risk because the size of those large customers' books of business may lead a broker to be willing to take a temporary hit to margins in order to retain their business.

If a tight truckload market continues into year two (beyond just one year), brokers with a majority of contractual revenue are likely to have a great year and more or less keep up because they should be able to pass on large price increases to shippers (i.e. contract rates should catch up to rising spot rates).





At the peak of the cycle, however, margins tend to be strong because brokers benefit from a high volume of last-minute, emergency spot loads that are booked at attractive margins.

## **A Balanced Market**

In a balanced market where supply and demand closely approximate each other, shippers typically do not have a lot of trouble finding trucks (unlike in a tightening market) and spot rates are more balanced with contractual rates, providing little incentive for a shipper to use a broker to take advantage of cheaper spot rates.

There is a natural tendency for spot rates to fall slightly below contractual rates even in a balanced market because there is a built-in premium for shippers to be able to access capacity from high quality carriers on-demand, and the carriers need to price in a risk premium of some sort to protect themselves in the event that the market moves away from them (as it almost always does in the volatile trucking market). This means that there is a bias towards a natural positive spread in most market environments, including balanced markets.

When freight brokerage services are in higher demand, in either tight or loose markets, brokers are able to charge more for their services and hence drive gross margin expansion. In contrast, it is hard for brokers to drive gross margin expansion in a balanced market. If shippers have little trouble finding a truck and spot and contractual rates are relatively similar, the spread that brokers derive narrows (i.e. what they charge shippers and pay carriers is roughly the same) and it becomes hard to mark up the rates it charges shippers to move freight.

Therefore, in a relatively balanced market, a broker will need to drive spot volumes (i.e. the number of loads it books) to grow net revenue because revenue per load is relatively stagnant and it is tough for the broker to grow earnings through gross margin expansion. From this perspective, in a balanced freight market, we think it makes more sense to invest in asset-heavy transports that can better leverage fixed costs and drive margin expansion.

From a managerial and strategic perspective, another strategy that can be employed by a broker in a balanced market to help them grow organically is to add shipper customers, expand relationships with existing customers (i.e. take more market share of their brokerage budget/business) and introduce new services. In other words, growing volumes and taking market share are important in a balanced market.



## **Late-cycle Margin Benefits for Majority Contract Revenue Brokers**

Because of the late-cycle cushion embedded in the brokerage business model, profits (or net revenue) do not fall nearly as fast as gross revenue at the end of a cycle because gross margins expand.

Further, due to the inherent variable cost structure of broker incentive compensation, operating profits and net income may actually be up year-over-year on declining gross revenue. This is exactly what we have seen in the latter half of 2018 and the first half of 2019 as the trucking market turned down and capacity loosened.

## **Given where we are in the brokerage cycle, we think truckload stocks are a more attractive investment for the next 12 to 18 months**

Freight brokers are currently entering the unattractive part of the trucking cycle in which we are in the early stages of a recovery and spot prices have bottomed and are moving up while contract rates are finally decreasing year-over-year. This creates margin compression at a time of tepid volume growth and falling revenue per load.

Therefore, if spot rates have bottomed and pressure on contract rates continues for a few more quarters, we think it makes more sense to invest in asset-heavy truckload stocks with high operating leverage to a bottoming and second derivative improvement of revenue.

Where we could be wrong is if we have a double-dip freight recession on the back of a potential U.S. economic recession in 2020 because we think freight brokers' margins could expand further and remain strong, thereby making them a much more defensive investment on a relative basis.

## **Correlation Between Spot Rates, Tender Rejections and Brokerage Gross Margins**

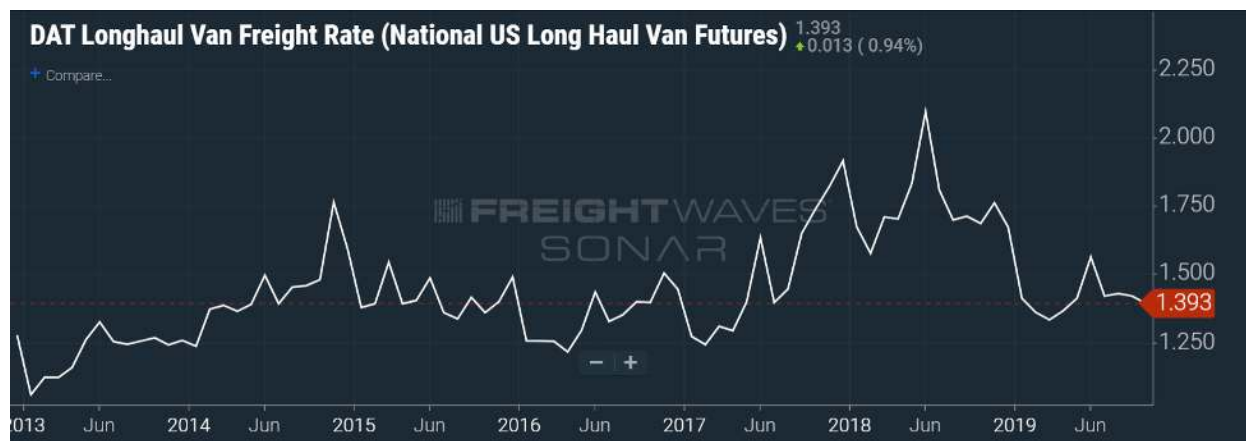
The trucking market peaked in the summer of 2018. We can clearly see this in the charts below for spot rates for dry-van, linehaul freight and national outbound tender rejections (SONAR: OTRI.USA). Spot rates peaked at \$2.10 per mile in July 2018 and fell 40% to \$1.25 per mile in April-May 2019. National outbound tender rejections peaked out at about 26% in July 2018 and fell 85% to just under 4% in the May 2019 timeframe.



Earlier we noted freight brokerage gross margins expand when the market turns down and capacity loosens. Accordingly, our publicly traded brokerage basket's gross margins bottomed at 15.4% in the second quarter of 2018 just as spot rates and national outbound tender rejections were peaking. Gross margins then went on a three quarter tear to reach a peak of 17.4% in the first quarter of 2019, peaking near the same time that spot rates and national outbound tender rejections bottomed.

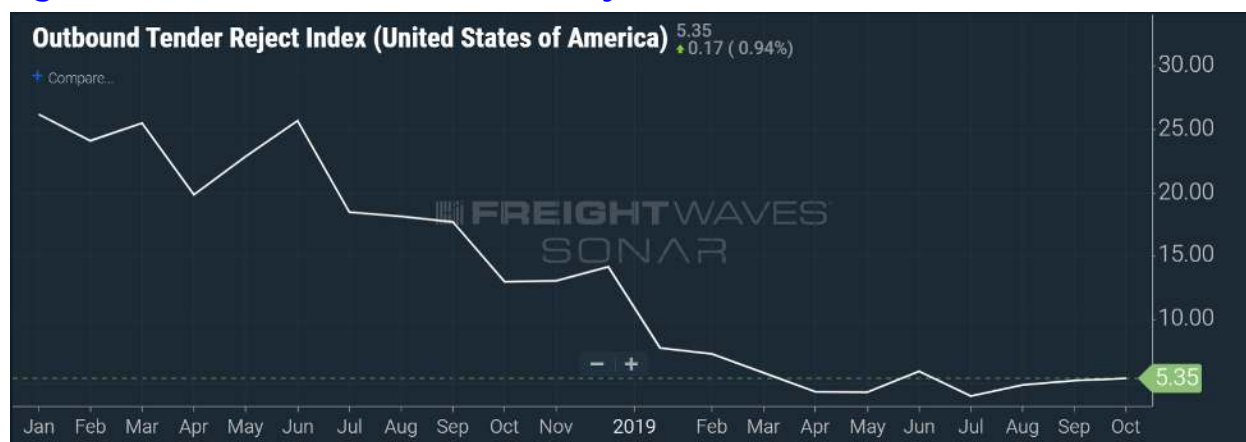
Moving forward, because we think the trucking market has bottomed, and thus spot and tender rejections should move up, brokers' margins are likely to be squeezed for the next couple of quarters as contractual rates are renegotiated lower to converge with rising spot rates.

**Figure 6: DAT Long-haul, dry-van linehaul rates**



SONAR: DATVF.VNU

**Figure 7: National Outbound Tender Reject Index**



SONAR: OTRI.USA



## Capital-light Nature of Brokerages

Additionally, on top of the balancing effect from gross margins and the variable cost structure, brokers also have an attractive business model because they tend to be capital-light (average capital expenditures relative to sales in the low-to-mid single digit percentage range for the pure-play brokers compared to approximately 10% for truckload carriers), which leads to high returns on capital.

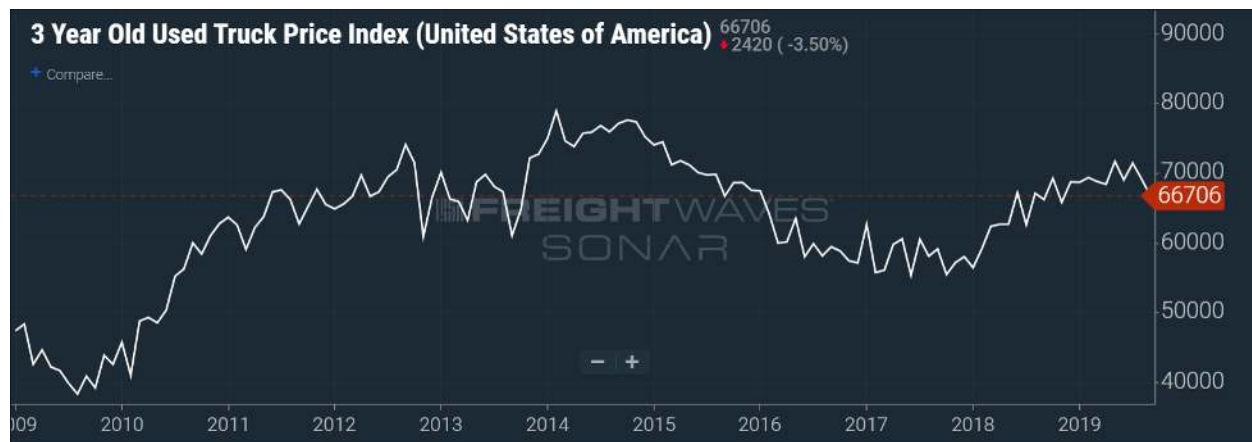
There are several different ways to calculate return on invested capital (ROIC), but for this paper's sake we define ROIC as follows – [After-tax operating income/average debt + equity capital]. Great businesses earn a sustained, high ROIC that exceeds their cost of capital (as defined by the weighted average cost of capital [WACC]). Weighted average cost of capital is simply the proportion of debt in the capital structure times the after-tax cost of debt plus the proportion of equity times the cost of equity. Exceptional businesses earn high margins while requiring little initial and incremental invested capital to grow, resulting in extraordinary returns on capital.

For non-asset based third-party logistics providers (3PLs) and freight brokerages, it is common to see returns on invested capital (ROIC) in the high teens to the low-to-mid 20% range on average across a full freight cycle. In contrast, on the asset-heavy truckload side, ROIC tends to average in the high single digit to low double digit range. The higher ROICs in logistics and 3PLs are a function of both higher margins and lower asset intensity (i.e. the numerator is higher and the denominator is lower).

Without getting too complicated, ROICs for pure-play brokers (or isolating the brokerage segments within truckload or intermodal companies) tend to average roughly 1.5 to 2 times higher than the rate of asset-heavy carriers, depending on where we are in the cycle. When the cycle is booming, this gap narrows substantially as carriers see a large increase in their returns on capital as they leverage their fixed costs on growing revenue.

It is also much easier to “bootstrap” (grow a company using its internal cash flow rather than through the debt or equity capital markets) a logistics company or brokerage relative to a trucking company due to the asset-light nature in which human beings, telephones, computers and access to working capital are the primary requirements instead of needing to slowly accumulate a fleet of trucks at roughly \$150,000 each for new trucks or \$60,000 to \$70,000 for used trucks.



**Figure 8: 3-Year-Old Used Truck Price Index**

SONAR: UT3.USA

## Freight Brokerage is Still a Growth Story But Competition is Heating Up

Despite decades of above GDP growth, there is still a strong growth story in freight brokerage despite penetration going from roughly 5% 20 years ago to nearly 20% penetration today. The consensus forecast is for 7% annual growth for the overall brokerage market for the next five years (Armstrong & Associates).

Freight brokers have a strong value proposition for shippers by saving them money and offering them access to large networks of carriers, in what is otherwise a very fragmented market. Due to all of these attractive characteristics, the freight brokerage market has attracted a lot of competition in recent years, particularly from digital upstarts, which we think could cause many of these key metrics to deteriorate going forward and could cloud the picture around typical cyclical and seasonal patterns.

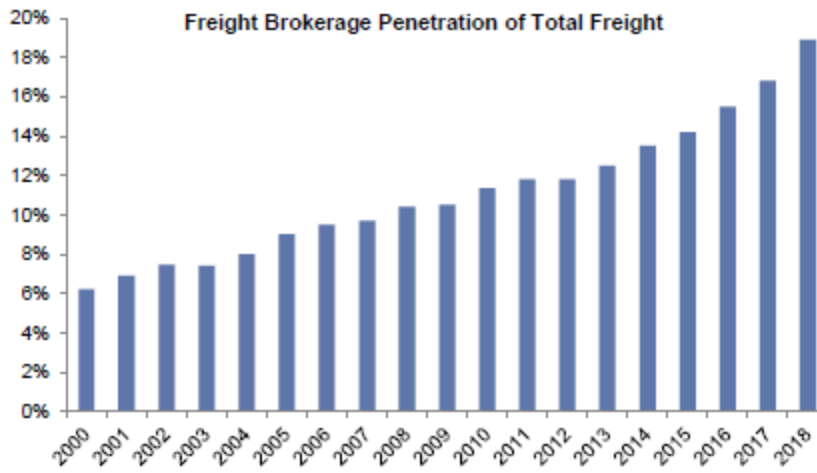
That being said, there seems to always be a boogeyman in the form of heightening competition just waiting in the wings to destroy freight brokers' margins. Five years ago, the worries were due to aggressive growth from Coyote Logistics and Total Quality Logistics. Nonetheless, we give more credence to the margin-destructive impact potential of digital freight matching (DFM)/digital freight brokerage (DFB) platforms because the rate of cash burn and investment is unprecedented.

Investors, whether public or private, must balance the long-term growth potential (strong albeit slowing from the last two decades) against the likely deterioration in margins from heightened competition.



**Figure 9: Freight Brokerage Penetration (2000-2018)**

**Exhibit 78: Freight Brokerage Penetration Continues as a % of Total**



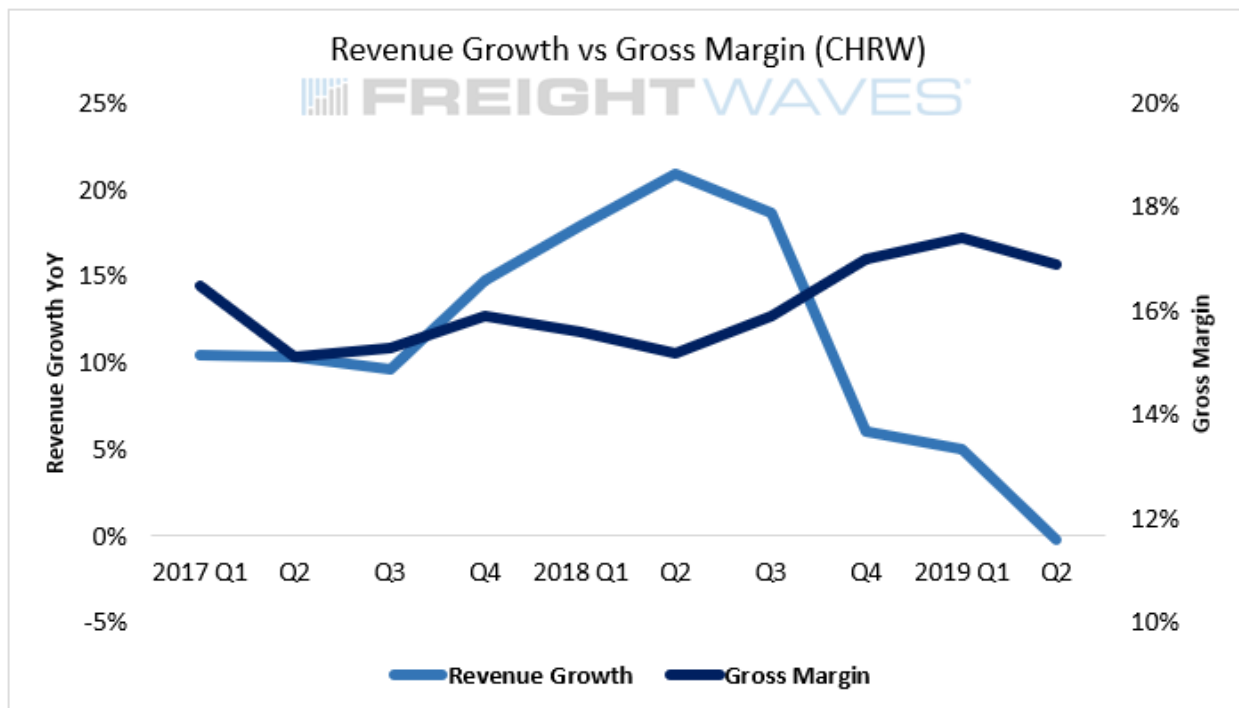
Source: Armstrong & Associates, Goldman Sachs Global Investment Research

Source: Armstrong & Associates, Goldman Sachs



## Appendix – Individual Broker Performance

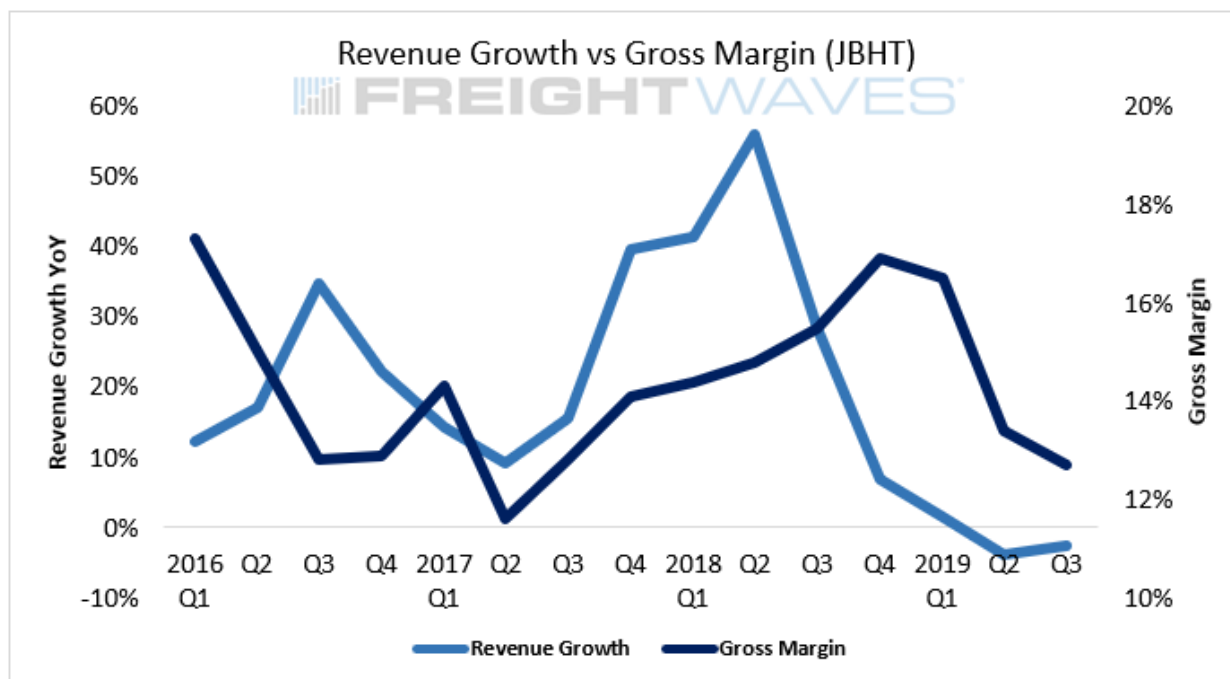
**Figure 10: C.H. Robinson (CHRW) Gross Revenue Growth (Left-Hand Scale “LHS”) vs. Gross Margins (Right-Hand Scale “RHS”) – North American Surface Transportation Segment**



Source: FreightWaves, C.H. Robinson Company Filings (\*segment reclassification from Transportation to NAST in 2016\*)

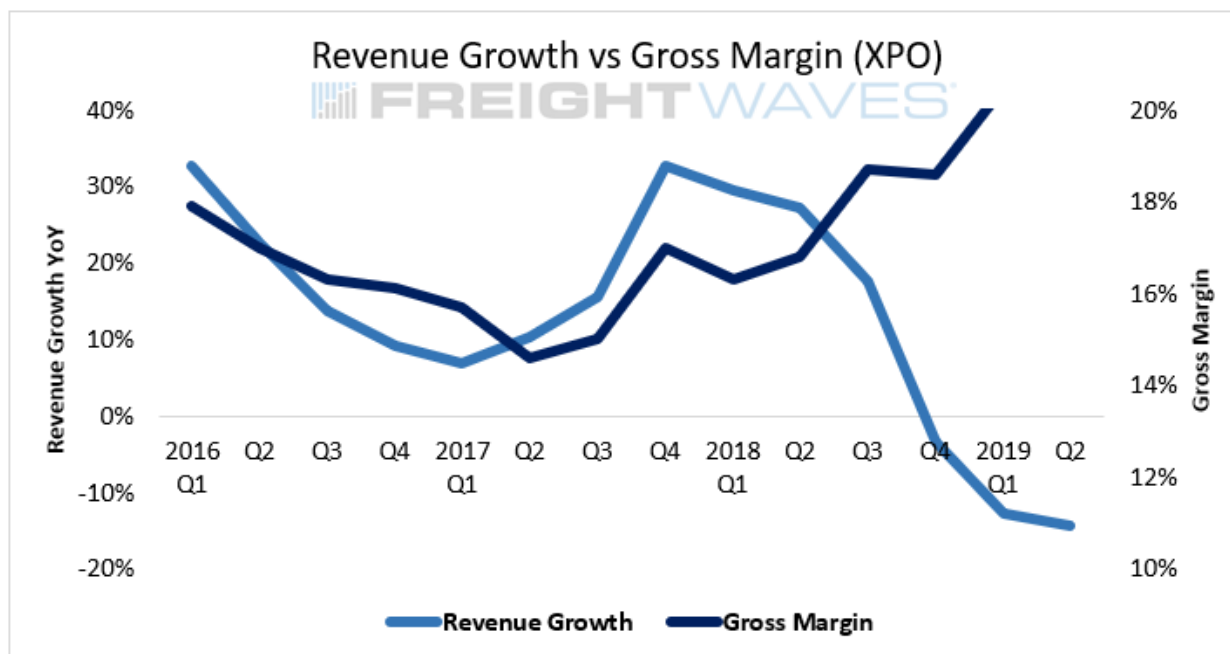


**Figure 11: J.B. Hunt (JBHT) Gross Revenue Growth (LHS) vs. Gross Margins (RHS) – ICS Brokerage Segment**



Source: FreightWaves, J.B. Hunt Company Filings

**Figure 12: XPO Logistics (XPO) Gross Revenue Growth (LHS) vs. Gross Margins (RHS) – North American Freight Brokerage Segment**

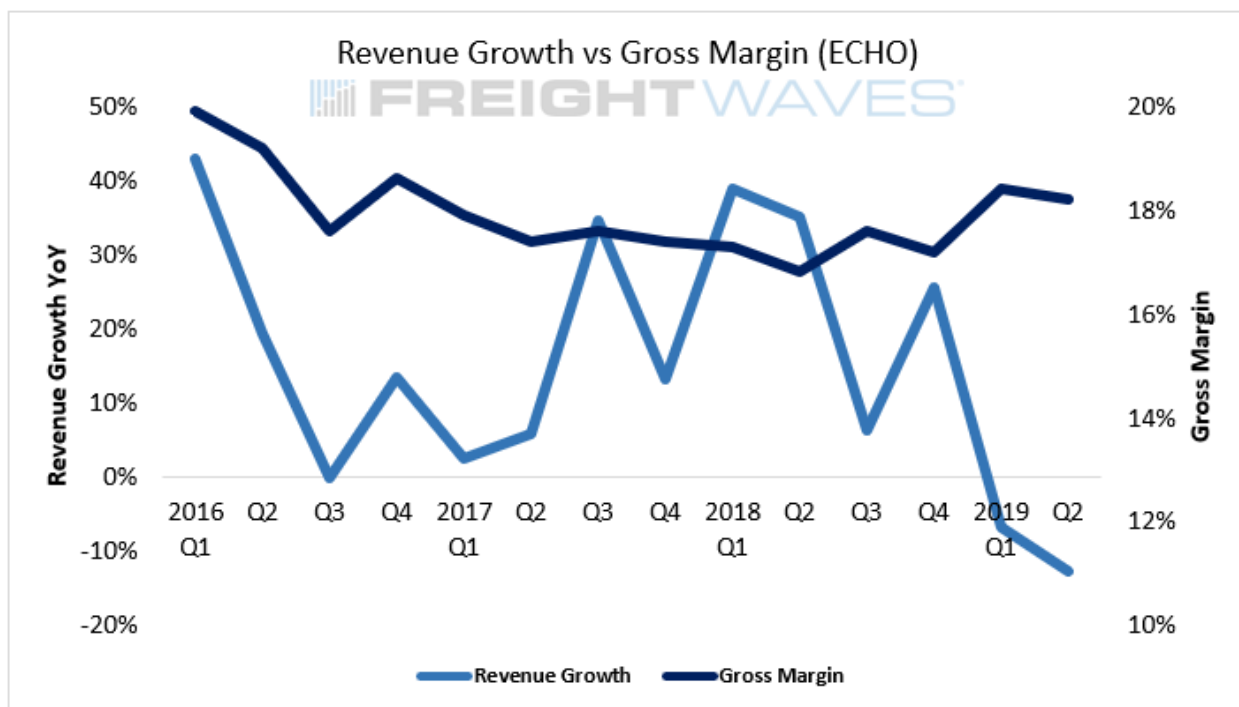


Source: FreightWaves, XPO Company Filings





**Figure 13: Echo Logistics (ECHO) Gross Revenue Growth (LHS) vs. Gross Margins (RHS) – Total Brokerage Revenue**



Source: FreightWaves, ECHO Company Filings



**Figure 14: Landstar Systems (LSTR) Gross Revenue Growth (LHS) vs. Gross Margins (RHS) – Brokerage Segment**



Source: FreightWaves, LSTR Company Filings

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