Iowa Freight Advisory Council

Impact of Supply Disruptions
June 17, 2022
IFAC Agenda

Discussion of how the Iowa and global supply chain systems have been impacted by recent disruptions (war in Ukraine, COVID-19 pandemic, etc.) and future implications or long-term impacts this could have.
Supply Disrupted: Ukraine’s Global Commodity Impact
Ukraine Commodity Impact

Russia and Ukraine’s share of commodity exports

Brent crude oil price forecasts

Sources: World Bank’s Commodity Markets Outlook.
Ukraine Commodity Impact
Corn Futures Over 20 year Horizon

Current $7.91<

July '22 20-Year Chart

$5.00

$3.00
Ukraine Commodity Impact

Source: WSJ Ukraine Is Struggling to Export Its Grain, and Here’s Why – June 5, 2022
Ukraine Commodity Impact

**FIGURE 1**

Daily vegetable oil prices, current USD

- Palm oil, Crude
- Rapeseed oil
- Soybean oil
- Sunflower oil

Russian Invasion of Ukraine

Soybean oil: CBOT, Palm Oil, crude: Malaysian Board daily price, Rapeseed Oil: Rotterdam spot prices, Sunflower oil: India CIF Mumbai price

Chart: David Laborde • Source: MPOB, Bloomberg, CBOT • Get the data • Embed • Download image
U.S. Soy Crush Margin
Ukraine War’s Future Impact?

U.S. road vehicle fuel efficiency

<table>
<thead>
<tr>
<th>Year</th>
<th>Miles per gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966</td>
<td>10</td>
</tr>
<tr>
<td>1970</td>
<td>12</td>
</tr>
<tr>
<td>1974</td>
<td>14</td>
</tr>
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<td>1978</td>
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<tr>
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<td></td>
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<tr>
<td>2014</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
</tr>
</tbody>
</table>

Source: Energy Information Administration (EIA), World Bank.
Note: Figure shows the fuel efficiency of U.S. vehicles in miles driven per gallon of gasoline consumed. Shaded areas refer to oil price shocks in 1973, 1979, and 2008.

Biofuel production

<table>
<thead>
<tr>
<th>Year</th>
<th>Mb/d of oil equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>0.0</td>
</tr>
<tr>
<td>1992</td>
<td>0.0</td>
</tr>
<tr>
<td>1994</td>
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<td>2004</td>
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<td>2008</td>
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<td>2012</td>
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<td>2014</td>
<td>0.0</td>
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<td>2016</td>
<td>0.0</td>
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<tr>
<td>2018</td>
<td>0.0</td>
</tr>
<tr>
<td>2020</td>
<td>0.0</td>
</tr>
</tbody>
</table>


Source: World Bank’s Commodity Markets Outlook
Supply Disrupted: COVID-19 Impact
COVID-19 Pandemic Impact

- Loss of agility - Rigid Supply Chain
- Labor Constraints
- Unknown Future - Supply Allocations
- Freight Service Level Gaps
- Buyer Behavior Changes

- Companies Use of Cash
- Secure Supply
- Warehouse Programs
- Price Inflation
- Suppliers Extended Lead-Times
- Supply/Demand Imbalance
COVID-19 Pandemic Impact

Image: Graph showing the Total Business: Inventories to Sales Ratio from 1994 to 2022. The graph indicates a significant spike in 2020, followed by a sharp decline in March 2022, with shaded areas representing U.S. recessions.

Source: U.S. Census Bureau

Note: The graph shows the ratio of total business inventories to sales, highlighting the impact of the COVID-19 pandemic on the economy.
COVID-19 Pandemic Impact

Estimated Quarterly U.S. Retail E-commerce Sales as a Percent of Total Quarterly Retail Sales:
1st Quarter 2013 – 1st Quarter 2022

Source: WSJ The Pandemic Was Supposed to Push All Shopping Online. It Didn’t– April 16, 2022
Source: WSJ Lumber Prices Slump with Rising Interest Rates – May 30, 2022
Employment Metrics

3.6% Unemployment or 5.9M Unemployed

62.2% Labor Participation Rate (67.3% peak)

11.5M Job Openings (7.1%)

6.7M Hires (4.5%) and 6.3M Separations (4.2%)

U.S. Labor Constraints
Price Inflation

U.S. Employment Cost Index (ECI)

Producer Price Index (PPI)

Note: Shaded area represents recession, as determined by the National Bureau of Economic Research.

All data are subject to revision 4 months after originally published.

Supply Disrupted: Energy
Energy Impact

Old Missouri Coal Plant Neared Retirement; Now It’s Needed to Avert Blackouts

Grid operator likely needs Ameren’s Rush Island generator as insurance to keep the lights on
Energy Impact

Total Dry Gas Production

billion cubic feet per day

Source: U.S. Energy Information Administration
U.S. Natural Gas Price History

Current $7.279<

Start of Shale Era

$6.00

$2.00
Logistics Update
Logistics Update

Rail, truck capacity constrains surface volumes, but rates soar higher

Year-over-year change in Cass Freight Index and Cass Freight Expenditures

Source: Cass Freight Index © 2021 IHS Markit
Logistics Update

Van Load-to-Truck Ratio

- 2022
- 2021
- 2020

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Recognizing private company success
Logistics Update

National Van Demand and Capacity

May 2022
Load-to-Truck Ratio
- 5.5+
- 2.6 - 5.4
- 1.1 - 2.5
- 0 - 1

*Hot Market Maps and Hot State Maps (above) in DAT RateView depict geographic trends in the load-to-truck ratio.*
Logistics Update

Graph: FRED Producer Price Index by Industry: Truck Transportation

- Shaded areas indicate U.S. recessions.
- fred.stlouisfed.org

[Graph showing the Producer Price Index for the truck transportation industry from 2004 to 2022, with shaded areas indicating U.S. recessions.]
Logistics Update

Exhibit 34: National Average Spot Van Rates ex. Fuel Surcharge

Source: Morgan Stanley Research, DAT Solutions (www.dat.com/resources/trendlines). Note: DAT sources from over $24 B in transactions and 65k lanes.

Exhibit 35: National Average Contract Van Rates ex. Fuel Surcharge

Source: DAT Solutions, Morgan Stanley Research
Logistics Update

Truckload Market Cycles vs. Class 8 Truck Orders

<table>
<thead>
<tr>
<th>Cycle 1</th>
<th>Cycle 2</th>
<th>Cycle 3</th>
<th>Cycle 4</th>
<th>Cycle 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2 2018 - Q1 2010</td>
<td>Q1 2010 - Q3 2013</td>
<td>Q3 2013 - Q1 2017</td>
<td>Q1 2017 - Q1 2020</td>
<td>Q1 2021 - Q1 2023 (f)</td>
</tr>
</tbody>
</table>

Coyote Curve (TL Spot Market Rates)  Cass Linehaul Index (TL Contract Market Rates)  ACT U.S. Net Class 8 Tractor Orders (Secondary Axis)
Logistics Update

US Retail Diesel Price
5.539 USD/gal for Wk of May 30 2022

Overview Interactive Chart

Level Chart

2013 2019 2020 2021 2022

1D 5D 1M 3M 6M YTD 1Y 3Y 5Y 10Y MAX

VIEW FULL CHART

MANAGED COMPANIES
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Logistics Update

Weekly Ethanol Rail Origin Dwell Times, (Union Pacific Corp)  
38.8  
+3.9 (-9.13%)
Logistics Update

Industry - Dwell Average

Date
- Last 5 years

Railroad
- (All)

Railroad
- BNSF
- CN
- CP
- CSX
- KCS
- NS
- UP

Date
- Apr 15, 18
- Oct 14, 18
- Apr 14, 19
- Oct 13, 19
- Apr 12, 20
- Oct 11, 20
- Apr 11, 21
- Oct 10, 21
- Apr 10, 22

Avg Dwell
- 0
- 10
- 20
- 30
- 40
- 50
Logistics Update

Railroads Slash Jobs:
Number of Employees at Class 1 Freight Railroads

Source: US STB

WOLFSTREET.com

Suddenly facing a "Labor Shortage"
Logistics Update

Freightos Baltic Daily Index, (China North America West)

G321.68
252.04 (-2.63%)

Compare...
Logistics Update

Obviously, these things are out of our control, but we need to do the things we can control.

1. Communicate and plan – lead times are important!
2. Work with customers buying habits.
3. Consolidation and mode shifting – warehouse utilization.
4. Encourage consignees to unload quickly and not hold up equipment/drivers.
5. Review how you ship orders to maximize cube in trailers.
6. Can consignees do some receiving on the weekends?