

CITD BRIEF:

TRADING UP SUMMARY



WES WATKINS CENTER FOR
**INTERNATIONAL
TRADE DEVELOPMENT**
School of Global Studies and Partnerships



TRADING UP SUMMARY

Introduction

The mission of the Wes Watkins Center for International Trade Development (CITD) at Oklahoma State University (OSU) is to bring the knowledge, network, and resources of OSU together to make Oklahoma more globally competitive, increase trade, and create jobs to keep Oklahoma companies and students in the state to build their futures. We are working to achieve this mission through providing Oklahoma companies with trade facilitation services through our Small Business Development Center (SBDC) unit and through relevant trade research such as our inaugural report: *Trading Up: Global Analysis of Oklahoma Trade*. Through reports like this one, and a planned series of *CITD Briefs*, which will be shorter, issue specific studies, we desire to bring academic rigor, and thoughtful dialogue about trade into the public domain in a way that is meaningful to business leaders and policy makers and also accessible to the general public.

The research for *Trading Up* spanned several months and the report was finalized at a time when most of the world was sequestered at home during the initial stages of the COVID-19 pandemic. We are in a time of profound economic uncertainty, where the importance of global supply chains has become part of the public narrative. It is a time where everything from the character of day to day human interactions to the shape of global engagement are being questioned and reconsidered. Some level of restructuring appears inevitable. People around the world are talking about whether this will spark a re-set across many domains including education, health care, economic development, and especially trade. In fact, it is widely expected that permanent changes to supply chains and trade flows will be one of the mid- to long-term outcomes. This scenario will provide Oklahoma's citizens, firms, and institutions with both challenges and opportunities, and we hope analyses like this one can help aid how we navigate these shifts together.

Our analysis approaches Oklahoma trade at a variety of altitudes and applies several different lenses. It is expressed in plain language but with enough depth to uncover general market inefficiencies, potential opportunities for Oklahoma businesses, and possible directions for deeper exploration, all with a view toward improving Oklahoma's global competitiveness.

Why does global trade matter?

We start the report with a high-altitude view of Oklahoma's role in global trade. Trade allows us to get what we need to function in our daily lives. Whether it be the food that ends up in our grocery stores, components of the cars we drive, the buses we ride, or the aircraft that vault us to meetings, conferences, and vacations, most products are comprised of inputs from a range of countries. On the export side of the equation, items produced here in Oklahoma, from grains and meats to components, assemblies, and finished goods, are also shipped all over the world. And it's not just physical goods; Oklahoma provides service exports as well. In fact, the value of service exports from Oklahoma between 2006 and 2016 grew five times faster than the export of goods. Oklahoma service exports with the greatest growth potential include business and financial services, e-commerce, travel services, engineering, architecture/design, technology troubleshooting, and telecommunications.

The bottom line is that trade impacts all of us, yet it is not a zero-sum game. Instead it offers outcomes where both the sellers and buyers benefit. In its most basic form, international trade provides countries with markets to sell their products and the ability to buy products they cannot efficiently produce themselves. We believe that, even in the midst of uncertain times, there are more opportunities now than ever before for Oklahomans to

engage in international trade. The path to growth for Oklahoma's exports includes items that extend well beyond those that the state is known for, such as wheat, cotton, and oil. One measure of the opportunity is to compare international trade as a share of state GDP, and in this case, the state is among the bottom ten. However, there are sectors where we are very competitive, particularly compared to surrounding states, and we believe there is opportunity to expand those sectors and develop competitiveness in others.

Our research approach

Our research team of graduate students began by evaluating several broad sectors: Services (including Education), and Goods (broken down into Heavy Industry, Light Industry, Agriculture, and Natural Resources). Using a visualization called a Tree Map (see Figures 1 and 2), we show a snapshot of the mix of products that Oklahoma exports and imports. This visualization presents some immediate insights. For example, Oklahoma *imports* significant quantities of Crude Oil. This was surprising to us. Oklahoma's reputation as an oil producing state made this finding counterintuitive so we decided to investigate it further. We decided to take a closer look at several agricultural products as well, since that is such an important part of Oklahoma's heritage. We also noticed that machinery made up a large proportion of our exports and determined that should be one more area to look at.

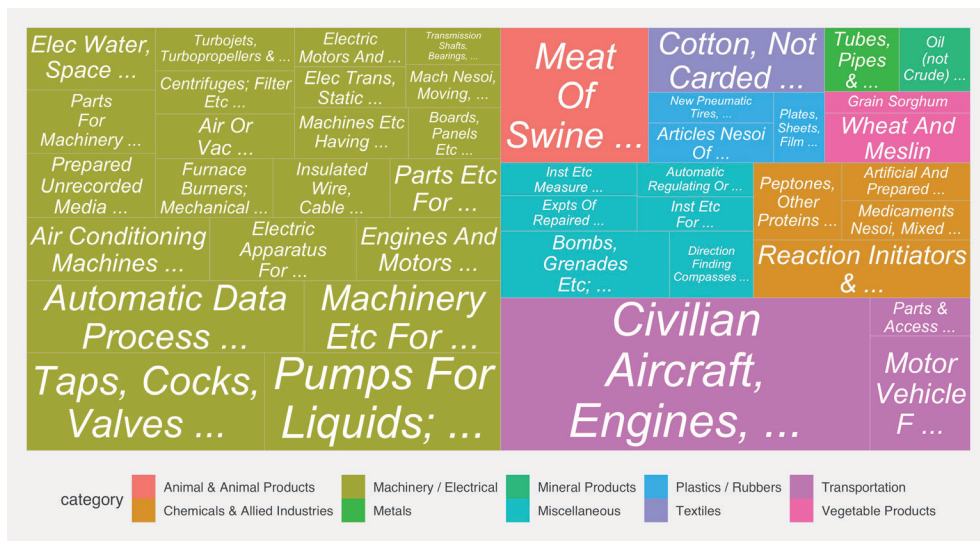


Figure 1: yearly average of Oklahoma exports above \$30m (USD) for 2015-2018. Color categories are based on two-digit HS codes (see HS Codes and Industries Table, pg 3) and box labels are four-digit HS codes. Larger boxes represent higher values. Data are from USA Trade® Online.

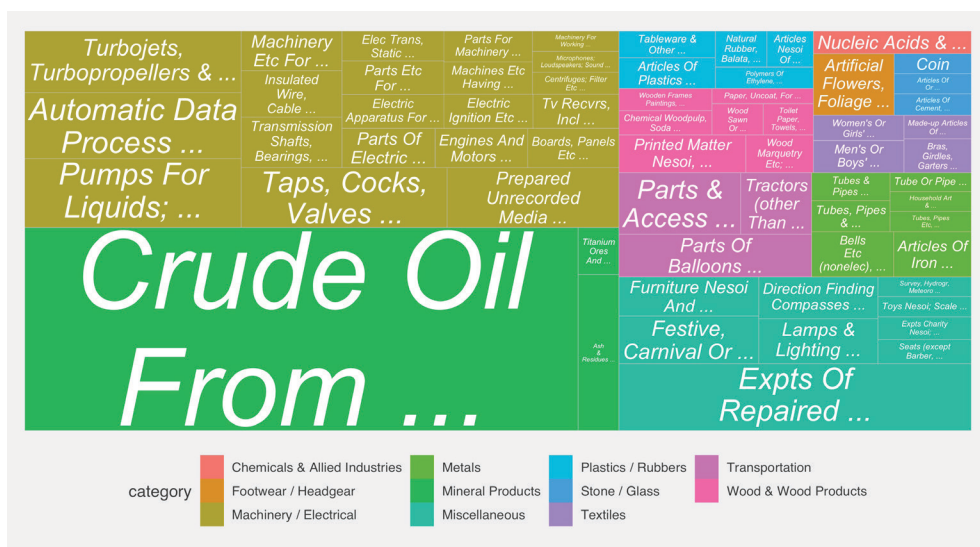


Figure 2: Yearly average of Oklahoma imports above \$30 million (USD) for 2015-2018. Color categories are based on two-digit HS codes (see HS Codes and Industries Table, pg 3) and box labels are four-digit HS codes. Larger boxes represent higher values. Data are from USA Trade® Online

As we learned more about these commodities, we recognized that their role and place in the supply chain was important to consider as global trade transactions take place in the context of a complex network. This network includes trade in finished goods, but is dominated by trade of intermediate goods within global supply chains, which make up around 70 percent of total trade.¹ For that reason, we included a supply chain network analysis as part of each commodity study. Then, given that one of our ultimate organizational objectives at the CITD is to impact Oklahoma's global competitiveness in a positive manner, we compared the export competitiveness of a range of Oklahoma exports to the exports of those same goods from surrounding and comparable states using an analysis called revealed comparative advantage (RCA). This approach led to the selection of several additional commodities that we included in our analysis. It also made us wonder if, over time, it would be valuable to build a library of commodity studies in order to both track and evaluate opportunities for Oklahoma to compete even more strongly in particular categories of goods.

We eventually settled on seven commodity groups for the report: crude oil, pork, cotton, air conditioning machines, furnace burners, taps/cocks/valves, and transportation buses.



Crude Oil. The crude oil import story was just too intriguing to pass up, so we start with that. The key insight ties to the crude slate which is a simplified way of understanding things like sulfur content and density.

It turns out that the type of crude oil that Oklahoma produces is primarily of the “light-sweet” variety, while the installed refining capacity in the state is oriented toward “heavy-sour” crudes (see Figure 3). For that reason, we currently import a great deal of crude. This situation and a number of other dynamics we evaluated present investment and policy implications that are discussed in the full report.

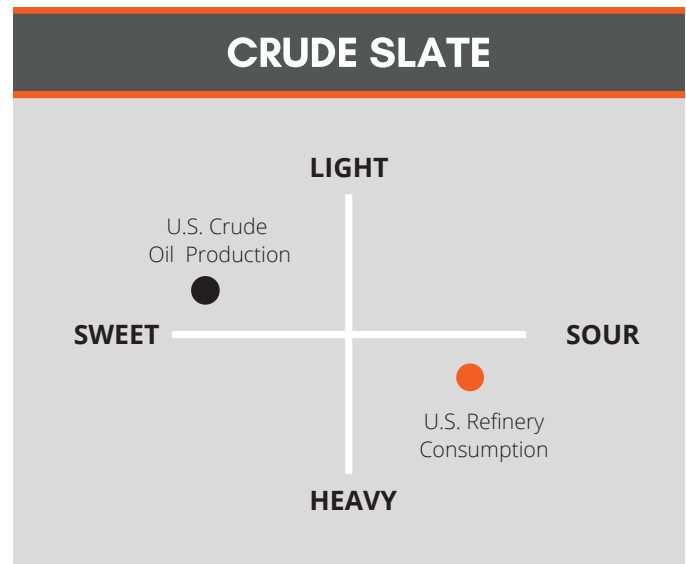


Figure 3: Crude grades and their uses within the U.S. market. Source: CITD Analysis.



Pork. Pork is an important agricultural export for Oklahoma. Oklahoma also maintains a strong revealed comparative advantage relative to several comparison states (Arkansas, Colorado, Kansas and Texas in this case). Our supply chain analysis revealed that vertical integration is an important component of the industry, but rather than being vertically integrated, many Oklahoma pork producers participate as suppliers for larger corporate actors whose headquarters lie outside Oklahoma. This suggests that much of the value add also takes place beyond Oklahoma, and yet, Oklahoma's pork industry is quite export dependent. For example, the share

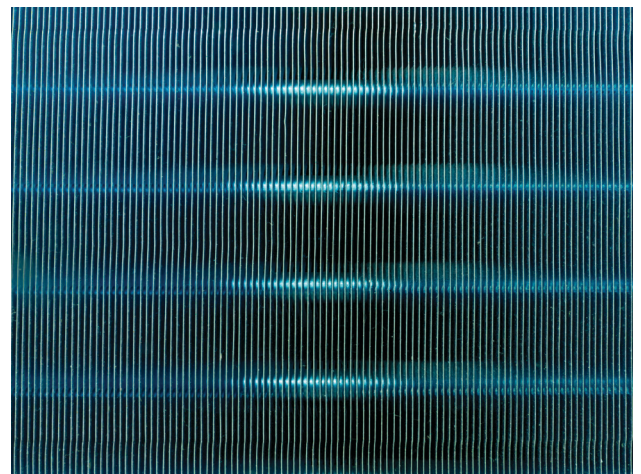
of Oklahoma's income from pork export sales is 24.1 percent, while Iowa's much larger pork industry maintains export share of only 14.8 percent. The impacts of African swine flu on Chinese herds, competition from Brazil, the EU and Canada, and potential export growth markets like Japan and South Korea are also discussed.



Cotton. Another agricultural product that continues to be important to Oklahoma’s economy is cotton, and Oklahoma cotton was exported to 17 countries in 2018. From a supply chain perspective, it’s interesting that cotton grown in Oklahoma fields and exported may return as an import in the form of briefs, bathrobes, or blazers. As such, the analysis is quite complex and multi-faceted. One interesting perspective that was brought out in the analysis is how changes in preferences and expectations at the consumer demand end of the supply chain are driving water use, soil quality, and emissions considerations at the grower level. This will continue to be an interesting sector to watch.

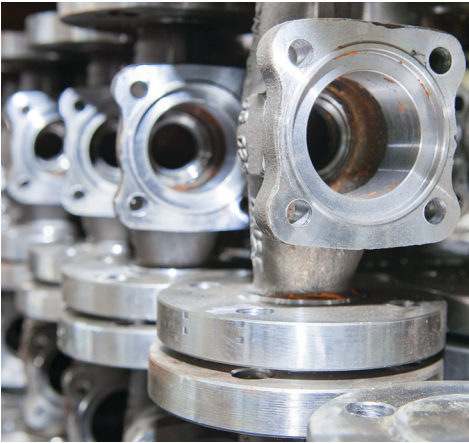
The next two commodities we selected had adjacent four-digit HS codes (HS 8415 and HS 8416 respectively).²

Air Conditioning Machines. Air conditioner (AC) manufacturing consists of a truly global and complex supply chain. The compressor is manufactured from multiple parts belonging to several HS Codes. The compressors are then combined with a number of small and complex parts which are assembled into the finished air conditioner. In this case, Oklahoma firms are providing most of the value added to these machines by utilizing the imports of air conditioning machine parts and converting them into their final form to sell to end users. The two biggest threats to this industry are growing tensions due to fierce competition, and the need for intensive research and development to keep up with increasing environmental regulations, driven mostly by higher energy efficiency requirements and the phasing out of certain substances as refrigerants.



Furnace Burners. Oklahoma is the number one state exporting furnace burners, but our analysis showed that the revealed comparative advantage may be eroding. This industry was listed in a recent study as number nine in the top ten domestic industries that are most affected by increased costs as a result of new import tariffs. Absent alternative sourcing, these additional input costs make Oklahoma’s end product less competitive globally. Another headwind is that on the environmental policy side of the equation, there are countries that have been given time to decrease emissions of atmospheric pollutants that in the U.S. are already restricted.

Oklahoma’s competitiveness in both air conditioning machines and furnace burners (HS 8415 and HS 8416) has been affected by input cost impacts due to tariffs as well as increasingly stringent environmental policies. However, both industries also rely on intensive research and development efforts, which could provide the path to overcoming tariff and environmental policy challenges. Could this be an opportunity for Oklahoma policy makers to consider research and development incentives for companies competing for global market share in these industries?



Taps, cocks and valves. The function of this category of products (represented by HS 8481 at the four-digit level) is primarily for the transmission of fluid power. They represent both a top import and export of Oklahoma. As we examined the trade flows we noticed a sharp drop in both imports and exports from 2014 through 2016 and hypothesized that the drop was tied to the oil and gas downturn during the same period. However, in a state by state comparison the team also observed some states' exports remained flat during the same period. Were the products of others in this same category tied to markets other than oil and gas? Could diversification be a strategy for Oklahoma firms to deploy? In subsequent conversations with industry players, we confirmed these assumptions and that such opportunities for altering production and market mix may in fact exist.

Transportation buses. Oklahoma has made a name for itself within this industry sector and in 2018 was the third largest U.S. exporter of transportation buses. There are a number of factors (including fuel consumption standards, engine size, and road dimensions) that make Canada one of a very few export markets for U.S.-made buses. As a result, over 90% of these exports went to Canada in the form of school and shuttle buses. More broadly, Oklahoma is continuing to strengthen its capability and reputation along various parts of the automotive sector supply chain. Its skilled workforce and engineering talent, among other attributes, have started to draw national attention, as evidenced by Oklahoma being a finalist in 2020 among potential locations for a new Tesla plant.³ The development of alternative fuels and hybrid electric-diesel engines as well as other adaptations could provide a path to greater export potential in the future.



Conclusions and future research

Our report *Trading Up: A Global Analysis of Oklahoma Trade* provides a brief overview of why trade is good for Oklahoma, the overall state of trade for Oklahoma in each major sector, and a more detailed analysis of several commodities that Oklahoma exports. Through this report we set out to accomplish three goals. First, we aimed to provide an accessible report that highlights the complexity of trade and a research methodology for how to best identify the challenges and opportunities facing Oklahoma in trade. Second, we sought to connect the research of Oklahoma State University faculty with our research themes. Finally, and more broadly, we have tried to demonstrate the insight this type of research can produce, and to provide a framework and direction for future study.

When Congressman Wes Watkins founded the CITD in the late 1980s, he had a vision to grow Oklahoma's global trade presence. Watkins' biographer Kim D. Parrish captured the Congressman's dream about a place "where students would be trained in the discipline of doing business with the world, opening up international markets in Asia, Africa, South America and Europe to products born and bred in Oklahoma by Oklahomans."⁴ At the CITD, we continue striving to fulfill Congressman Watkins' vision, and we hope you will join us in this quest. We welcome your input, feedback, or inquiries that would lead to meaningful future efforts.

Endnotes

- 1 OECD. (n.d.). Global value chains and trade. Retrieved from <https://www.oecd.org/trade/topics/global-value-chains-and-trade/>
- 2 Harmonized System Codes (HS Codes) refer to a standardized numerical method of classifying traded products. They are “harmonized” because the same system is used to classify groups of products in different countries (the two-, four- and six-digit codes represent internationally accepted standards).
- 3 Oklahoma Secretary of Commerce update webinar, August 6, 2020.
- 4 Parrish, Kim D., Making Things Better: Wes Watkins’ legacy of Leadership, Oklahoma Heritage Association Publishing, Oklahoma City, 2016, p.322

Please email us at citd1@okstate.edu, call us at **405-744-4272**,
or go to our website <https://global.okstate.edu/partnerships/citd/> to learn more.
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