

Discussion of  
Global Supply Chains: The Looming “Great Reallocation”

By Laura Alfaro and Davin Chor

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## 1. OVERVIEW

This is a most welcome initial study evaluating the responsiveness of supply chains to US trade policy from two of the world’s foremost experts on multinational production and global value chains, Laura Alfaro and Davin Chor. They ask the important question: “What has been the impact of US tariffs and other measures on the direction of trade and foreign direct investment?” The paper is by nature descriptive, an adjective I use as praise. At this point, really we just want to know what is going on—and the paper is very illuminating on this front.

At the same time, a conceptual framework would be helpful to provide benchmarks for whether outcomes are moving toward or away from some goal. It would be missing the point to use the usual modeling frameworks here. The shift in US policy is occurring precisely out of a concern that our canonical frameworks do not capture geopolitical concerns or key human and environmental aims. The authors have chosen, perhaps wisely, an agnostic framework centered on shifts in US demand both toward friends (called “friend-shoring”) and toward domestic production (called “reshoring”).

However, given the focus of this Symposium on issues of policy relevance, I will take a risk... I will discuss the authors' analysis within the new conceptual framework for trade policy emerging from the two most recent presidential administrations and raise a few considerations for monetary policy.

## 2. THREE OBJECTIVES OF MODERN US TRADE POLICY

Some will mock the suggestion that there is a coherent conceptual framework underlying the direction of recent US trade policy. However, three optimizing objectives for modern trade policy and its adjacent industrial policy have definitively emerged:

1. improving the lives of US workers
2. promoting national security through secure supply chains
3. addressing climate change

### 2.1 Wellbeing of US workers

Both the 45<sup>th</sup> and 46<sup>th</sup> US Presidents have declared themselves champions of the wellbeing of US workers. Alfaro and Chor take a top-line look at trends in manufacturing employment before versus after 2017. They find the most convincing evidence of a pickup in employment in semiconductor production, but only mixed signs in automotive and electrical manufacturing. Since 2017, business entry and expansion in these targeted sectors appears quite a bit more robust than trends in the jobs numbers.

#### 2.1.1 Can industrial policy focused on businesses benefit workers?

Alfaro and Chor speculate as to several reasons for the lackluster response in employment so far, including the pandemic, lack of labor with appropriate skills, and lags in “agglomeration” effects. Others have noted the role of technology in reducing the demand for

labor in manufacturing even when production increases, including Collard-Wexler and de Loecker (2015) in an analysis of mini-mills in the *American Economic Review* and Kurutz (2016) in a *New York Times* profile of Ms. Gina Locklear, a business owner leading the resurrection of sock production in Fort Payne, Alabama.

Regardless, it is important to know if complementary measures are a prerequisite for protectionism and corporate subsidies to result in benefits for workers. We might take note that Singapore, South Korea, and Japan pursued aggressive workforce development when launching their industrial policy in the 1950s and 60s, investing heavily in vocational training like metallurgy and strengthening public K-12 education (Studwell 2013). *They also are reported to have (in some cases brutally) suppressed union activity.* But an alternative approach in Germany, the birthplace of industrial policy (Studwell 2013), suggests that unions can be a mechanism both to enhance worker benefit from industrial policy and a way to facilitate the industrial policy itself (Drubner 2017).

### 2.1.2 Workers in industries where policy increases input costs

When tariffs and industrial policy raise the cost of inputs, they present headwinds that also must be confronted for workers broadly to benefit. In a rigorous analysis, Federal Reserve Board Economists Aaron Flaaen and Justin Pierce (2019) do not find any statistically significant impact of the 2018 steel and aluminum tariffs on jobs in steel and aluminum production after 2 years. But they do show that the tariffs on metals and Chinese goods imposed in 2018 and 2019 raised input prices for producers, resulting in a reduction of close to 200,000 manufacturing jobs in the US by 2020.

Interestingly, Alfaro and Chor show that it is not just the cost of goods exported by China that have increased with the tariffs. We are also paying more for imports from our friends in

industries where we have diversified away from China—whether due to increased costs or increased markups we don't know.

This begs the question—should worker-centered trade policy also be concerned about jobs in businesses that use the intermediate goods we are friend-shoring and re-shoring at higher cost?

### 2.1.3 Policy implications related to Objective 1

Thus, Alfaro and Chor's results underscore that worker-centered trade policy is not a panacea for employment. In terms of the Fed's dual mandate, if Alfaro and Chor's conjectures about skill mismatches are correct, these sectoral shifts already may be affecting the level of structural unemployment. Over the longer term, sectoral shifts induced by these changes in US policy may increase levels of labor force participation if they provide higher-paying jobs that do not require a 4-year college degree.

## 2.2 National security goals

The increasing emphasis on national security in justifications for trade and industrial policy measures over the last 7 years is unmistakable. In 2018, the Trump administration issued an extensive interagency report led by the Department of Defense outlining national security arguments for protecting supply chains across a range of industries collectively defined as the US "defense industrial base" (United States Department of Defense 2018). The Biden administration issued a supply chain task force report in its first 100 days echoing a number of messages from that report, especially critical minerals and semiconductors (The White House 2021).

### 2.2.1 Sourcing

Policy interventions related to national security have focused on shifting sourcing away from geopolitical rivals, both by diversifying toward friendlier countries and by encouraging relocation to the US. Alfaro and Chor's work shows that in some respects, these interventions may be accomplishing their goal. Their careful look at the US trade data shows that even though US imports from China reached a 10-year high last year, the tariffs and other measures are associated with a relative shift in US demand away from China toward countries seen by the US as "friendlier."

At the same time, they reveal that bilateral shifts in US trade flows do not equal diversification. Diversifying away from China is basically a game of whack-a-mole. Where US import demand shifts, Chinese producers naturally follow—either by increasing direct investment in Mexico and Vietnam, or due to our friends importing more inputs from China as they expand their exports to us.

### 2.2.2 On the topic of securing supply chains

I worry about the authors repeatedly advertising the forthcoming update to the World Input-Output Tables as central to better understanding the diversification and resilience of supply chains.

Alonso de Gortari's (2019) work illustrates how we may vastly underestimate the content of imports sourced from a particular country if we use broad sectoral input-output tables instead of data on firm-level transactions. As Ralph Ossa (2015) shows, another reason is that the market for materials that are hard to substitute can be extremely concentrated. Maybe auto producers buy paint from many different sellers, but if all the pigments that go into the paint come from the same place (Wheatley and Ramsay 2011), then a shock to this seemingly minor player can

severely impair auto manufacturing in far-flung places. Even though pigment is a tiny portion of value added in the input-output matrix. Finally, the World Input-Output Tables look only at the country of origin for good shipments, not at the owner's national origin, so it would not characterize Chinese-owned companies in Vietnam as being a source of dependence on Chinese goods.

### 2.2.3 Policy implications related to Objective 2

Thus, the only way to trace the full extent of exposure to geopolitical risk or bottlenecks is through data on firm-level transactions. This poses challenges for both research and policy. The recent report commissioned by the Biden administration from the National Academy of Sciences on fragility in pharmaceutical supply chains is an excellent illustration of these challenges (National Academies of Sciences, Engineering, and Medicine 2022).

In terms of the Fed's mandate, the shifts in trade patterns and unit values documented by Alfaro and Chor suggest that policies used to redirect supply chains may affect the sensitivity of prices and investment to monetary policy by creating frictions and uncertainty in goods markets and prompting changes in firm's markup behavior. They may also affect monetary transmission by distorting flows of cross-border trade and foreign direct investment, important channels of transmission.

### 2.3 What about addressing climate change?

There are two ways that the shift in US trade and industrial policy may be helping to address climate change manifest in Alfaro and Chor's results. Neither of them relate to subsidies of electric vehicles.

### 2.3.1 An unintended but not unwelcome consequence?

Work by Joe Shapiro (2020) presented at the Federal Reserve Bank of San Francisco Pacific Basin Research Conference in 2019 shows that goods with the highest carbon footprint are upstream goods. Think metals and semiconductors. Shapiro showed that many countries like the United States charge substantially lower tariffs on these inputs used in production than on final goods. That means we charge the lowest taxes on the dirtiest goods, effectively subsidizing their production. Shapiro estimates that if we simply evened out tariffs across all goods—whether high or low—the resulting shift in demand away from imports with a high carbon footprint could reduce carbon emissions more than the most prominent plans for reduction of global greenhouse gas emissions, including the Paris Accord.

As Flaaen and Pierce (2019) point out, the new trade policy is making upstream goods—inputs—more costly to US firms. Alfaro and Chor’s results suggest this is true even for upstream goods imported from countries other than China. The one study we have of consumer prices—by Alberto Cavallo, Gita Gopinath, Brent Neiman, and Jenny Tang (2021)—shows far less impact. So, by making dirty upstream goods more expensive compared to final consumer goods, the new US trade policy may be shifting demand away from goods with the highest carbon footprint, helping to fight climate change.

Further, Alfaro and Chor conclude that reshoring appears to be shifting US production toward upstream goods. Moving production of goods with a high carbon footprint to countries with tighter environmental standards also may help chip away at carbon emissions.

### 2.3.2 Policy implications related to Objective 3

For these two reasons, Alfaro and Chor’s analysis is supportive of the notion that the new trade barriers and efforts to reshore manufacturing of upstream goods may help fight climate

change by indirectly inducing a reduction in carbon emissions. It is unclear whether this unintended effect will sufficiently affect volatility in climate conditions to have implications for the practice of monetary policy.

### III. SUMMARY

In summary, Alfaro and Chor provide a fascinating analysis of changes in trade patterns connected to the new US trade and industrial policies. The most definitive finding is that shifting US import demand away from China may not result in diversification away from Chinese suppliers. The study leaves as an open question whether there are substantial employment effects or benefits to workers from the policies, but provides some supportive evidence that a welcome but unintended consequence of the policies may be to help reduce global carbon emissions.

The potential implications of the phenomena that Alfaro and Chor document for the behavior of employment, prices, investment, transmission and even climate change mitigation as they relate to monetary policy are manifold, and likely will take years to fully identify and measure.



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