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Why hasn't the impact of the trade war been greater?

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1. Introduction

Since the Global Financial Crisis, the world has taken a turn toward more restrictive trade policies. The most prominent case is the Trump Administration's tariffs on imports from China but also from other countries, resulting in tariff retaliation by China but also by other countries. The tendency, however, is more general. According to Global Trade Alert, restrictive trade policy interventions have exceeded liberalizing trade policy interventions worldwide in every year since 2009, although the gap between the two aggregates was largest in 2018–19 (Fig. 1).[1] The United States, unsurprisingly, tops the list of countries ranked by number of trade-restricting measures over the decade. Rounding out the top ten are India, Russia, Germany, the UK, Argentina, Brazil, Italy, France and China, in descending order. The point being that the movement toward more restrictive trade policies extends across time and space even if the U.S.–China trade war grabs the headlines.

For several years – since the Trump Administration's January 2018 imposition of 30-to-50 per cent tariffs on solar panels and washing machines, the March 2018 imposition of 10-to-25 per cent tariffs on steel and aluminum, and the subsequent imposition of tariffs of 25 per cent and higher on a range of Chinese goods – analysts have been warning of serious macroeconomic consequences. According to Davies (2018), a global trade war "would administer a negative shock to world

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[1] The Global Trade Alert estimates here are those adjusted for reporting lags (https://www.globaltradealert.org/global_dynamics/day-to_1214).

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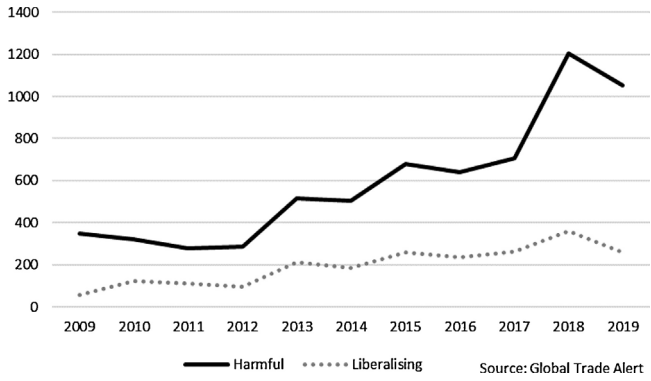

Fig. 1. New trade policy interventions per year.

GDP of perhaps 1–3 percentage points in the next few years"; moreover, "there is a downside to the distribution that could turn out to be much worse."[2] Simulations using the IMF's Global Integrated Monetary and Fiscal Model suggest that a permanent 10 percentage point increase in U.S. tariffs on imports from all other regions would reduce the level of real GDP by about 1 per cent for the U.S. and one-third of 1 per cent for the rest of the world.[3] Given the basic linearity of the model, the effects of a 25 per cent tariff would be roughly two-and-a-half times as large, and retaliation would make the negative impact correspondingly greater. In a follow-up paper using this same model, Berthou, Jardet, Siena, and Szcerbowicz (2018) simulate the impact of a 10 percentage point increase in tariffs on all imports by all countries. They find that global GDP falls by up to 2 per cent in the first year and by 3 per cent after 2 years.

But while the tariffs have materialized, the serious macroeconomic damage has not – at least not yet. Global economic growth has slowed, but only slightly, from 3.6 per cent in 2018 to 3.0 per cent in 2019 and 3.4 per cent in 2020, according to the latest estimates in the IMF's *World Economic Outlook* at the time of writing. It is poised to accelerate again starting in 2021, according to the forecasts of the same institution.[4]

Should we be surprised? This paper ponders potential explanations for why the impact has not been greater. In the conclusion, I then turn to the implications for policy modeling.

2. Induced exchange rate adjustments

A first explanation for why the output and employment effects of tariffs are not larger is that their impact on relative prices is offset by changes in the exchange rate. While the logic is easiest to see in a full-employment economy, the case is more general. By raising the relative price of imports, a tariff will shift demand toward domestically-produced goods. But if domestic supply is inelastic, something else will have to give in order to shift demand back toward imports. That something else is the exchange rate, which has to appreciate proportionately to leave relative prices unchanged.

[2] According to IMF Managing Director Kristalina Georgieva, in comments made on the sidelines of the Fund-Bank annual meetings in October 2019, "By 2020, tariffs already imposed or announced [by the U.S. and China] would shrink global GDP by 0.8 per cent." Cited in Fitzgerald (2019).

[3] See Anderson et al. (2013).

[4] It is not clear exactly what assumptions about future trade policy underlie these longer-term forecasts.

Mundell (1961) was first to lay out this argument and also to point to its limitations. In the absence of full employment and the existence of the Laursen–Metzler effect (the tendency for an improvement in the terms of trade to increase savings), output will decline, despite the tendency for the exchange rate to partially offset the tariff's impact on relative prices, due to lower spending. If the Laursen–Metzler effect is weak or non-existent, however, as suggested by subsequent theoretical work (e.g. Obstfeld, 1982), then so too will be the negative output effects.

In addition, Mundell's neutrality result assumes that the domestic-currency price of imports moves with the exchange rate – that prices are sticky in the producer's currency. But in a world of dollar invoicing, such as that of Gopinath, Itskhoki, and Rigobon (2010), the dollar price of U.S. imports will not move with the dollar exchange rate. U.S. tariffs will still raise the price of imports, which will presumably reduce spending on domestically-produced goods if the elasticity of substitution between home and foreign goods is low, or raise such spending if that elasticity of substitution is high. Or it will have no macroeconomic impact at all if that elasticity is one, as turns out to be the case suspiciously often in empirical work.

The response also depends on precisely why exporters invoice in dollars. If the reason is that they value preservation of their U.S. market share, then they will presumably also cut their dollar prices to offset the incipient impact of the tariff on market share. In this case there will be no need for the exchange rate to move, since there will be no impact on final goods prices, only on foreign producers' margins. And if there is no impact on relative prices, there will again be little in the way of macroeconomic effects.

In practice, the pre-tariff prices of imports into the U.S. from China have not fallen sufficiently to offset the impact of tariffs on relative prices. As shown by Higgins, Klitgaard, & Nattinger (2019), those prices fell by roughly 2 per cent between the time of the first U.S. tariff action against China in the first half of 2018 and late 2019, too little to offset tariff rates of 10 to 20 per cent. Moreover, the pre-tariff prices of imports into the U.S. from China and from other emerging markets essentially moved in lockstep over the period. This tells us that U.S. tariffs raise the prices of Chinese products for U.S. consumers. It doesn't, tell us, however, the magnitude or even the sign of the output effects, given that elusive elasticity of substitution.

Finally, and self-evidently, exchange rate adjustments can't offset the impact of tariffs, whatever those impacts may be, if equivalent tariffs are imposed by all countries.

3. Monetary and fiscal policy offset

A second explanation for the missing macroeconomic effects is that the negative direct effects are offset, in total or part, by changes in monetary and fiscal policies. In the U.S., trade policy actions were preceded by the Tax Cuts and Jobs Act of December 2017. In China, they were followed in both 2018 and 2019 by cuts in income and value-added taxes and reductions in pension contribution rates.

This assumes, of course, that reductions in business taxes in the U.S. translated into additional business investment, which is disputable. It assumes that increased after-tax income in China was spent, rather than being saved due to increased uncertainty (more on which below). It suggests that, insofar as such tax cuts won't be repeated, the negative macroeconomic effects of tariffs have only been delayed and will become evident going forward.

In addition, the negative macroeconomic consequences could be offset, in whole or part, by central bank action. Central banks seeing weaker growth will presumably respond by cutting interest rates or delaying the normalization of such rates. The 18 months following the initial U.S. trade-policy actions saw the Federal Reserve shift from raising interest rates to reducing them.

In 2019 the People's Bank of China cut its base interest rate and reformed its prime loan rate "to help steer borrowing costs lower for companies and support a slowing economy that has been hurt by a trade war with the United States" (CNBC, 2019). At the outset of 2020 it cut reserve requirements.

This monetary offset may have limited traction, however, when interest rates are already low, as they are in advanced countries including the United States. The Federal Reserve has been reluctant to experiment with negative interest rates, fearing public outcry. The impact of forward guidance and quantitative easing, or at least the magnitude of their impact, remains a matter of dispute. These observations suggest that any negative growth effects of tariffs and retaliation will be larger in the United States than China, given that the People's Bank has more room to respond.[5]

4. Effects of uncertainty

There is also the view that not only actual trade policy actions but also uncertainty about future trade policy actions can depress spending, fixed investment spending in particular. Fixed investments are hard to reverse; they depreciate only over long periods. Thus, uncertainty about whether a given domestic or foreign investment makes sense, in light of uncertain trade policies, raises the option value of waiting (Dixit & Pindyck, 1994).[6] Berthou et al. (2018) suggest, in addition, that firms facing trade policy uncertainty may be perceived as risky by financiers; they may therefore find it more costly to fund new investments. These authors assume that the borrowing risk premium for firms in the affected countries will increase by 50–100 basis points, with further negative effects on investment.

Baker, Bloom, and Davis (2019) document the rise in trade policy uncertainty in the U.S. and globally, building indices of these concerns from newspaper invocations of the relevant terms. Caldara, Iacoviello, Molligo, Prestipino, and Raffo (2019) show that the rise in trade policy uncertainty in the U.S. is even more dramatic when placed in a long-term perspective (Fig. 2).[7]

Caldara et al. include two measures of aggregate U.S. trade policy uncertainty, based on newspaper coverage and the volatility of import tariffs, in a VAR model of investment. They find that increased in trade policy uncertainty reduces investment and economic activity. They then link their measure of trade policy uncertainty to firm-level investment data. They show that increases in firm-specific trade-policy uncertainty predict lower capital accumulation after one year. The decline in aggregate investment associated with the rise in trade policy uncertainty between 2017 and 2018 is 1–2 per cent. If the investment share of GDP is 22.5 per cent and the multiplier is a 1.5, then the associated decline in GDP is 1/3 to 2/3 of a per cent of GDP, noticeable but far from humongous.[8]

[5] Monetary policy will also have limited traction if the effect of higher tariffs is felt mainly as a negative supply shock (about which monetary policy can do little) rather than a negative demand shock. I consider this possibility in a later section.

[6] Steinberg (2019) emphasizes that this effect may influence the investment decisions even of firms that are not exposed to export markets or import competition due to general equilibrium effects.

[7] In addition to newspaper articles, these authors also utilize information from conference calls and the variability of tariff rates (more on which below).

[8] For their part, Berthou et al., focusing on borrowing costs, estimate that a 100 basis point increase in the borrowing risk premium reduces global real GDP by 0.4 per cent on impact and by roughly the same amount after 3 years.

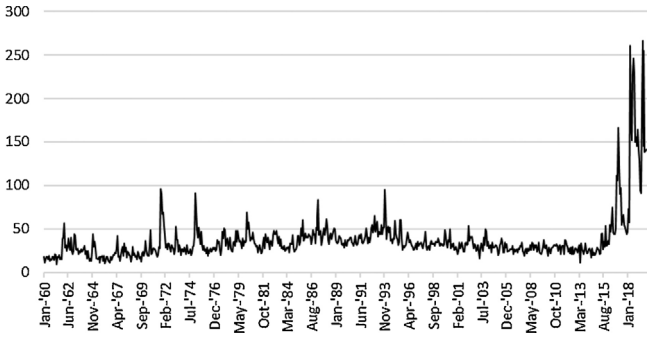

Fig. 2. Trade policy uncertainty in the US, 1960–2019.
Source: Caldara, Dario, Matteo lacoviello, Patrick Molligo, Andrea Prestipino, and Andrea Raffo, "The economic effects of trade policy uncertainty," revised November 2019, Journal of Monetary Economics, in press.

This focus on investment provides a hint of why larger aggregate impacts of trade policy uncertainty have not materialized to date.[9] On the one hand, uncertainty about future trade policies causes firms to shift investment from the present to the future. On the other hand, it encourages firms to frontload inventory investment and induces additional production for inventories, since trade-related uncertainty raises questions about access to those same stocks in the future. With one form of investment shifting forward in time and the other shifting back, there may be little if any net macroeconomic impact.

5. Impact on global supply chains

An obvious channel through which tariffs could have negative supply-side effects is by disrupting global supply chains. Firms that have outsourced production to foreign counterparts or that import parts and components from abroad may find doing so uneconomical because of tariffs. If they respond by re-shoring production and sourcing parts and components from higher-cost suppliers at home, those higher costs will make for lower productivity per unit of output, other things equal. As Jones (2011) puts it, "The key implications of intermediate goods for economic growth, development, and macroeconomics arise from seeing them as another form of capital." Trade wars that disrupt access to imported intermediate inputs make this form of capital utilization more expensive. The effects of supply-chain destruction will then be analogous to the effects of capital destruction. That the first round of U.S. tariffs fell heavily on imports of intermediate goods suggests that there could be something to the point. It may not be possible to access equivalent inputs through import substitution, since enhancing the efficiency of import-substituting intermediate goods sectors can be difficult in the short run. And this negative supply shock is not something that is effectively addressed by demand-management policy.[10]

[9] An exception to this focus on investment is Handley and Limao (2017) and Caballo et al. (2018), who consider the impact of trade policy uncertainty on exports (since the decision to export, like the decision to invest, can involve fixed costs, especially when export growth is on the extensive margin). They find a significant negative impact of trade policy uncertainty on U.S. exports, although they do not draw out the macroeconomic implications. Pierce and Schott (2016) similarly find a large impact on U.S. imports from China of the reduction of uncertainty attendant on China's accession to the World Trade Organization.

[10] As noted in footnote 6 above.

Are the macroeconomic implications of supply-chain disruptions large or small? The answer, not for the first time, is that we don't know. Pointing in the direction of small is the observation that it may be possible to modestly reengineer supply chains in response to tariff actions, creating alternatives to re-shoring. Assembly operations in China can be relocated to Vietnam in response to U.S. tariffs imposed on the first country but not the second. Such reengineering assumes, of course, that tariff coverage by source is not comprehensive. It assumes that there are no fixed factors that are difficult to transfer, and no learning by doing that defies easy replication.

There is also a literature incorporating intermediate goods into models of economic fluctuations. Contributors explore the conditions under which shocks to specific intermediate-producing sectors can have significant aggregate consequences, contrary to the implication of the law of large numbers, which suggests that randomly distributed sector-specific shocks should not matter in the aggregate. Jovanovic (1987) and Durlauf (1993) analyze models in which shocks to specific firms or sectors, by giving rise to cascade effects, will infect other firms and sectors. In their models, cascades arise from strategic complementarities, situations in which reductions in production by one imperfectly competitive firm reduces the marginal revenue of other imperfectly competitive firms, inducing the latter to produce less as well. Their theoretical analyses suggest that supply chain disruptions, whether owing to tariffs or other causes, may indeed matter in the aggregate, although they do not tell us how much they matter.

An alternative, less theoretically grounded approach is to make use of "natural experiments" such as the exogenous supply chain disruptions caused by the Great East Japan Earthquake of 2011, associated tsunami, and failure of the Fukushima Dai-ichi Nuclear Power Plant. The prefectures directly impacted by the earthquake, tsunami and accident accounted for 4.7 per cent of aggregate Japanese output, but they were home to important suppliers of parts and components to, inter alia, the motor vehicle and electronics industries.

Carvalho, Nirei, Saito, and Tahbaz-Salehi (2016) trace the propagation of the earthquake shock to the rest of the Japanese economy by comparing the post-earthquake sales growth rates of firms at different supply-chain distances from firms in the earthquake-affected region. Aggregating their results, they find that prorogation of the shock over input-output linkages can account for a 1.2 percentage point decline in overall Japanese gross output in the year following the quake. This is more than four times the magnitude of the direct effect, which was a swing in sales growth of −6 per cent in a region accounting for 4.7 per cent of the economy (−6 * .047 = −0.28 per cent).

This, then, is a suggestion that the indirect effects of tariff-induced supply chain disruptions can be significantly larger than the direct effects. The question to be answered is how much larger in general.

6. Impact on productivity more generally

In addition, tariffs may negatively affect productivity in other ways. Final-goods tariffs may shift resources from sectors where productivity is high to sectors where it is low, or from sectors where it is growing rapidly to sectors where it is growing more slowly. It may negatively affect the productivity of all firms by reducing the intensity of competition and therefore the need for firms to innovate in order to survive.

Relatedly, firms may find it more rewarding to devote their resources to lobbying for protection – to unproductive rent-seeking – rather than to reducing costs. Murphy, Shleifer, and Vishny (1993) suggest a variety of reasons why efforts to extract favorable policy treatment from government may be bad for innovation and productivity growth. Typical innovators are not members of established

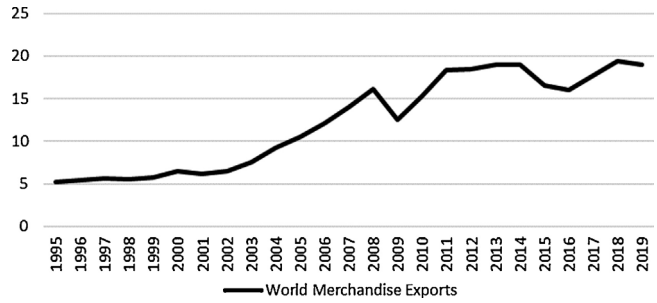

Fig. 3. World merchandise exports (trillions of United States dollars).

lobbies or part of the government elite.[11] Innovators are likely to be cash constrained, making it more difficult for them to raise resources for their lobbying efforts. Innovative projects take more time to come to fruition than do other investments, giving producers to who they pose a threat to innovative competition a generous window in which to organize their opposition.

Recent research (Burstein & Melitz, 2013) emphasizes firm heterogeneity and the fact that aggregate productivity depends on the allocation of resources across more and less productive firms, and that this allocation can be affected by trade policy. The consequences may show up in the short run, as less productive firms delay their exit decisions and more productive ones defer their entry. This response can then give rise to significant short-term macroeconomic dynamics (Ghironi & Melitz, 2005).

The implication of this literature for the long run is that higher trade costs, by insulating low-productivity firms from foreign competition, induce the reallocation of productive resources from high- to low-productivity firms, thereby reducing aggregate TFP. Berthou et al. (2018) assume that the long-run effect of a universal 10 per cent tariff is to reduce TFP in the tradable-goods sector permanently by 1.75 per cent. Furceri, Hannan, Ostry, and Rose (2019) similarly find a large negative effect of increases in tariffs on labor productivity using data for 151 countries since 1963.

7. Conclusion

For several years, economic commentators have been predicting large negative consequences from the restrictive trade policy actions of the United States and other countries. While there has been extensive trade policy action and, indeed, a slowdown in the growth of world merchandise exports (Fig. 3), the associated deceleration in global GDP growth has been modest.[12] The question addressed in this paper is why the visible macroeconomic consequences have not been greater.

One answer is that those negative effects are present but that they have been offset, in whole or part, by exchange rate adjustments and countervailing monetary and fiscal policy initiatives, as markets and sensible policy makers respond to initiatives by other, less sensible policy makers. This may be so, but it begs the question of whether additional offsetting action will be possible going forward.

[11] Incumbent, presumably less dynamic firms, in contrast, have had lots of time to get organized.

[12] The slowdown in the growth of world merchandise exports would appear to date from 2014, if not before, preceding the sharp increase in restrictive trade policy actions in 2018 (Fig. 1). This is a reminder to be cautious about imputing causality.

Another answer is that the negative effects of trade-policy uncertainty and trade-policy-related distortions on resource allocation, rent seeking, global value chains and other determinants of TFP growth are there but that their negative effects are limited owing to the capacity of markets and firms to respond constructively on variety of margins.

Yet another answer is that the negative macroeconomic effects are coming but that they have been submerged until now by cross-cutting macroeconomic currents. For example, firms anticipating future import supply disruptions have an incentive to build inventories of imported merchandise and parts in anticipation. But once inventories rise to those higher desired levels and accumulation stops, the full impact on corporate spending will become evident.

An additional answer is that the shift in a more protectionist direction has been partial rather than universal. The U.S. has imposed tariffs on some commodities and countries but not others. Some tariffs have been delayed, others rolled back, as per the U.S.–China "Phase 1" trade deal mooted at the end of 2019. This contrasts with the approach taken in much policy modeling, which takes as its point of departure a uniform across-the-board tariff. This may be because the form that tariffs ultimately take is difficult to anticipate and therefore to model, especially when such measures are imposed in ad hoc and seemingly arbitrary fashion. Alternatively, it may be that estimating aggregate effects using the kind of disaggregated models needed to capture variable tariffs is a tall order.

My own view is that the most compelling argument for significant negative macroeconomic effects is the negative impact on productivity operating through disruptions to global supply chains, inducements to rent seeking, and the failure of older, less productive firms to exit owing to the insulation they enjoy via tariff protection. But some of these effects take time first to materialize and then to ramify through the economy. As with the impact of computers on productivity, there is a period when it can be said that the impact of tariffs on productivity shows up everywhere but in the statistics. As we learned from the subsequent history of digitization, the appropriate response to this observation is "just wait."

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