Responses to
"Response to "A Replication of "The Role of Intermediaries in Facilitating Trade"
(*Journal of International Economics*, 2011)" by Duan, Qian, Das, Meriluoto, and Reed"**

We thank the reviewer for their additional comments. They have spurred us to do a better job of explaining our methods. Below are point-by-point responses to the reviewer's comments.

<u>**Comment 1**</u>: *On the exercise examining the results across geography.*

DQDMR re-run our main specification by breaking the customs data into three mutually exclusive geographic areas. They view each of these as regressions as tests of the underlying theory of intermediation. In doing so, they are making an assumption about the data generation process: that the geographic samples are independent draws. However, we do not believe that is the case, and their assumption is inconsistent with our framework. The model assumes that the goods market is fully integrated within China (a standard assumption in trade models), which implies that intermediaries can export products produced from outside their region. Therefore, we are unsure what their analysis of regional heterogeneity is testing. Compare direct versus indirect exports within regions in China fails to account for the fact that indirect exporters may be sourcing products from throughout the country.

<u>Response</u>:

Our motivation for undertaking the regional sub-sample analysis is to check the robustness of AKW's results. Our interpretation of AKW's theoretical model is that the model assumes constant parameters for the relevant population of all the intermediary firms. Further, this is the implicit empirical assumption the authors make when they pool the data for their analysis. As a result, we believe we are being consistent with AKW's model when we separate the observations into geographical subsamples.

Our first approach was to divide the data into three sub-samples of China – East, Central and West. However, we recognize that almost 90% of the firms in China are concentrated in the eastern provinces. Hence, in the revised version of the paper, we sub-divide the eastern provinces into 3 regions – East1, East2 and East3. These correspond to the Bohai Bay Economic Rim, the Yangtze River Delta Economic Zone, and the Pearl River Delta Economic Zone, respectively. We believe breaking up the full sample into further subsamples has the advantage of providing additional tests of AKW's prediction rather than one.

<u>**Comment 2**</u>: *On the exercise examining the data before 2005.*
We are explicit in our paper as to why we use the customs data from 2005 for our analysis. Our model assumes free entry into intermediation. Before 2005, China did not allow free entry into the export market across all sectors. Without knowing how China allocated these licenses, the strict sorting mechanism in the model can break down. For example, Khandelwal et al. (2013) examine the breakdown of productivity sorting into exporting in the apparel sector. A similar point is also emphasized in Bai et al. (2017).

<u>Response</u>:
AKW make a convincing case that the 2005 data is better suited for testing their theory because of the existence of licensing requirements. That being said, we note that AKW themselves use Enterprise Survey Data from 2002/2003.

Our first response to this concern is to note that the licensing requirements were reduced in steps over the period 2003-2005. To the extent licensing restrictions worked against finding support for AKW's theory, one would expect that the results in favour of their theory should be stronger as one moves from 2002 to 2004. However, that is not the pattern evident from TABLE 5. The strongest support for AKW's Prediction #2 are in years 2001 and 2002. Coefficient estimates from 2003 and 2004 have the wrong signs, with the estimate from 2003 being significant at the 1-percent level.

To further address AKW's concern, we separated our analysis of Prediction #3 into two tables. TABLE 6A uses data from 2005. TABLE 6B uses pre-2005 data. The predictions for Chinese population, number of required documents, and tariffs are not supported even when we restrict our tests to the 2005 data (see TABLE 8 and the discussion on page 20).

Comment 3: *On using different vintages of the Enterprise Survey and WB Doing Business data.*
The 2012 Enterprise Survey data became available after our paper's publication, so we could not use these data in our analysis. The 2012 ES data contains 40% fewer manufacturing firms compared to the 2002/03 data that we used in our paper, which suggests that the sampling methodology may have changed between survey rounds. Additionally, China's trade costs in 2012 were very different relative to a decade earlier. Our paper supplements the 2002/03 data from China with a unique dataset that tracks direct and indirect exports in a panel of Ghanaian firms (the Ghana RPED/GME data). Previous work by Krüger (2009) had confirmed that low productivity firms are more likely to export indirectly. Our analysis further demonstrates that firms that indirectly export in an initial period are more likely to transition into direct exporters in the subsequent period (see Tables 10 and 11 of our paper). This dataset, which captures firms operating in a different setting, provides additional support that intermediaries facilitate trade through indirect exports.

DQDMR demonstrates that the coefficient on the number of import procedures in destination markets is sensitive to the version of the Doing Business database. They further document that the published version of the database differs from the values from the online version (conditional on the year). The WB Doing Business database1 notes that "Previously published data points may be revised as new information is available," so we view the online database as the most accurate version.

Response:
We agree with AKW that in choosing between the three different measures of number of required import documents (AKW/Book/Online), there are reasons to prefer the results from the Online measure of this variable. However, the predictions for Chinese population, number of required documents, and tariffs are not supported even when we restrict our tests to the data the authors believe are most appropriate for their model: 2005 data using the Online measure of import procedures (see TABLE 8 and the discussion on page 20).

We welcome DQDMR's replication exercise and believe that replication plays a vital role in economics. We are pleased that DQDMR can independently replicate our results from scratch. The additional specifications that they run are not consistent with the framework we have written. The usual approach to test sensitivity is a leave-one-out strategy, as opposed to examining heterogeneity across coefficients. Additionally, we believe that DQDMR should have offered an ex ante methodology for the additional specifications, as it is always possible to slice data into subsamples until the effect deviates from the pooled

sample. Finally, the main predictions of the framework have been confirmed in several published papers, including Abel-Koch (2013), Akerman (2018), Crozet et al. (2013), and Lu et al. (2016).

Response:

To address concerns of cherry-picking results, we should have completed a pre-analysis plan. We did not do that. In our defense, we are still learning Open Science methods and are only now beginning the practice of developing, and publicly posting, pre-analysis plans in our research. We again note that we did not approach our replication with the goal of trying to refute AKW's findings. Rather, we attempted to be objective, independent auditors.