Cross-Border Trade Competition and International Stock Return Comovement*

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ABSTRACT

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ABSTRACT

Stock markets of countries that actively engage in international trades may move together more or less depending on their international trade linkages. This paper demonstrates that the stock markets of two countries with similar exposure to common demand shocks are more likely to move together. However, stock markets are less likely to move together if two countries compete intensely in the product market. This implies that stronger cross-border trade linkages may not result in higher cross-market return correlations.

The last several decades have seen a rise in globalization as a result of rapid technological developments and lower transportation costs. A particularly salient component of globalization is the cross-border flow of goods, which has grown substantially over this period. The proportion of cross-border trade to total global Gross Domestic Product (GDP) increased from 13% in 1970 to 30% in 2018 (World Bank). With cross-border trades connecting economies, the increase in global trade is commonly perceived to have a positive impact on the comovement of stock returns across markets, as local demand shocks reverberate through the global trade network.[1]

However, trade linkages may not necessarily imply a higher return correlation across markets. For two countries that compete intensely in a common market, a positive production shock in one of the countries would result in lower product prices in the common market, potentially harming the competitor country, as highlighted by Krugman, Obstfeld, and Melitz (2015) in their classical international economics textbook. More generally, countries producing similar goods may observe a lower stock market correlation due to product market competition in common markets.

The potentially negative effect of this "competition" channel on return correlations may be muted as countries competing for market shares in common export markets are also exposed to common demand shocks in those markets. Two countries sharing common export markets would have increased shared exposures to the demand fluctuations in their common markets, with a demand shock affecting the stock returns of these two countries in the same direction, leading to a higher correlation between their stock markets.

This paper studies whether the stock markets of countries that compete fiercely in a common export market are characterized by lower or higher cross-market return correlations. After disentangling the product market competition channel from the shared exposure

[1] Bekaert and Harvey (2000), Griffin and Stulz (2001), Bekaert, Harvey, and Ng (2005) Forbes (2004), Baele (2005), and Eiling and Gerard (2015), among others, either assume or document positive relationship between equity market correlations and globalization.

to “common demand” shocks, we demonstrate that more intense product market competition leads to a lower comovement of country-level stock market returns. Our novel finding provides a prospective explanation for the surprisingly limited evidence of increased cross-market correlations in recent years, as highlighted in Bekaert, Hodrick, and Zhang (2009) and Bekaert, Ehrmann, Fratzcher, and Mehl (2014).

We start with constructing two trade measures that capture (1) the extent of product market competition and (2) the shared exposure to common demand fluctuations, respectively, between a pair of countries. The first measure is based on the competition measure developed in Glick and Rose (1999), which measures the extent to which two focal countries compete in other countries, i.e., their shared export markets. We construct a measure of “competition” between a pair of countries at the granular product level, and then aggregate them to the country-pair level. We develop the second measure to capture common demand exposure based on the similarity of export destinations between the two countries. Instead of focusing on shared exposure at the product level (as in the first measure), this “common demand” measure is estimated using country-level aggregate exports. For example, when firms in two countries export different goods to a common market, they would both be subject to common demand fluctuations arising from the common market.

Our results indicate that these two dimensions of cross-border trade linkages affect the stock market return relationships in opposite directions. First, higher product market competition between a pair of countries is associated with lower return comovement between the respective stock markets of those countries. Second, when a pair of countries have higher shared exposures to common export destinations at the aggregate level, their stock markets are likely to move together more with each other. These results suggest that intensive cross-border trade linkages may imply a higher or a lower stock market return correlation, depending on the intensity of product market competitions.

Our first analysis studies the comovement of country-level stock index returns with the US index returns, as measured by the slopes of simple regressions of country-level stock index daily returns on contemporaneous and different lags of US index daily returns. We document a strong negative relationship between these comovement measures and cross-country product market competition. That is, stock markets of countries that compete more with the US in the product market have a lower correlation with the US stock market. This pattern is also robust after after controlling for the common demand exposure, and accounting for the country's export fraction to the US and the contribution of exports to the country's total GDP.

Our baseline analysis at the daily frequency allows us to capture the anatomy of this relationship, and reveals delays in cross-market return dynamics. These delays would allow investors to form a parsimonious trading strategy using exchange-traded country funds (country ETFs) listed in the US. During the sample period, the resulting strategy would generate 7.3 basis points (bps) per day (18% annualized returns), or 3.4 bps per day (8% annualized) after accounting for transaction costs associated with bid-ask spreads.

We further investigate whether the lower comovement for countries with more intense export product market competition with the US is related to currency effects. This investigation is motivated by prior studies examining the propagation of crisis in a focal country to other countries that it competes with (e.g., Forbes 2004, Pavlova and Rigobon 2007). According to these studies, a negative shock in a focal country leads to its currency depreciation and relative currency appreciation of its competing countries. As a result of this shift in terms of trade, firms in competing countries would face a comparative disadvantage, ultimately resulting in a higher correlation between the stock returns of the focal and competing countries.

We find conflicting evidence to this "terms of trade" channel. First, we observe currency effects consistent with the existing literature: the currency returns of countries that compete more intensely in the export product market with a focal country have lower correlations with the focal country's stock index return. However, in contrast to the existing literature, we find a lower correlation between the stock returns of a pair of countries that compete more intensely in the product market. This pattern is observed when both index returns are denominated in their respective local currencies.

Our working hypothesis is that the export product market competition between firms across a pair of countries is an important determinant of the stock market correlation between the two countries. This hypothesis assumes that a supply shock, rather than a demand shock, in one of the countries plays a more significant role in the cross-market return correlation. To validate this assumption, we decompose US industries into upstream and downstream industries according to the vertical position of each industry in the supply chain. We then calculate the upstream and downstream industry returns, respectively. The upstream industry returns are more likely to reflect supply shocks than the downstream industry returns, which are more likely to reflect demand shocks. Our analysis indicates a lower comovement between the US upstream industry returns and the equity index returns of countries that compete more intensely with the US in the export product market. Indeed, we observe no relationship between product market competition and the comovement between US downstream industry returns and other countries' market index returns.

With the US being the largest economy in the world both in trading volume and the size of its stock market, it seems natural to develop our baseline analysis of the effects of trade linkages from the US perspective. Nevertheless, the patterns we document are not necessarily limited to the US market and economy. We, therefore, extend our analysis to all country pairs and perform a global panel analysis. We find similar results to the US-centric analysis. Countries that compete more intensely in the export product market have lower stock market return correlations, whereas countries with common aggregate demand shocks have higher return correlations. This relationship remains significant after controlling for other trade measures as well as the currency effect.

This study is related to several streams of research. Much of the recent literature on cross-country return correlations focuses on the dynamics of the correlations. For example, Karolyi and Stulz (1996) find the correlations of daily Japanese and US stock market returns increase following large shocks in one of the markets, but not necessarily following macroeconomic announcements. They argue that the increase in comovement is due to the "contagion effect." On the other hand, Forbes and Rigobon (2002) assert that instead of contagion, there is only "inter-dependence." They suggest that asset correlations vary according to the economic fundamentals. In a more recent study, Bekaert, Ehrmann, Fratzcher, and Mehl (2014) argue that local factors become more important than global factors during crises as the global market becomes disintegrated. The current study focuses on the cross-sectional patterns of the country index return dynamics as a function of various dimensions of cross-border trade activities, including product market competition.

This article also contributes to the growing literature that examines the relationship between international asset return correlations and cross-border trades. The importance of trade linkages as a determinant of the cross-market dynamics has been studied in multiple contexts. Glick and Rose (1999) study the influence of trade linkages on the foreign exchange market, particularly during currency crises. In this context, the current study is related to Forbes (2004), which examines the effect of trade linkages on international stock return predictability during two currency crises – the Asian and Russian debt crises. She argues that tighter trade linkages are associated with a positive comovement of stock prices through the terms-of-trade effect. As will be described in detail in the following section, the implications of our framework are different since a country could benefit as their export product market competitors suffer, for example, due to shifting demands of consumers in the export markets.

This paper is also related to studies of information flows across different stock markets and sectors. An empirical study by Rapach, Strauss, and Zhou (2013) investigates the lead-lag effect of country returns at the monthly frequency. They find that the US stock market leads to other markets due to information inefficiency. The current paper is distinct in at least two aspects. First, we consider the lead-lag effect at shorter horizons, reflecting the recent development of more interconnected equity markets over the last two decades. Second, instead of focusing on whether one country leads another, we study the cross-sectional patterns. We identify various dimensions of trade linkages, including export product market competition, that characterize the sign and magnitude of the transmission of the shock.

I. Trade Competition and Equity Index Comovement

Cross-border trade activities are commonly perceived to increase cross-country stock market comovement. For example, higher global demand for travel could increase the demand for airplanes, likely leading to higher stock prices of countries that supply parts to the aircraft manufacturers. Similarly, an innovation in the technology industry in Japan increases the global demand for high technology products, which could subsequently increase the stock prices of retailers in multiple countries that sell these products. Hence, demand shocks could propagate through the global supply chain, potentially increasing the correlations of stock returns across countries.

Nevertheless, the net effect of international trade exposures on the correlation between the stock markets of a pair of countries exporting to the same markets could be ambiguous. The common export market exposures could increase stock market comovement for this pair of countries, as they face similar demand shocks emanating from the shared export markets.

For example, an increase in consumer demand in the US would benefit all countries exporting products to the US.[2]

However, cross-market stock correlations can be lower for countries competing in the product markets. A negative productivity shock in one of the exporting countries could hurt its competitiveness and benefiting other countries competing in the same product market. One recent instance illustrates this potential effect. Following the Tohoku earthquake of Japan in 2011, the costliest natural disaster in recent history, the South Korean stock index gained substantially over the next two months. Japanese and South Korean firms compete intensely in many product markets (e.g., cars, electronic products) across multiple export destinations around the globe. While the Korean stock market index (KOSPI) increased by more than 12% two months after the earthquake, the Japanese index (TOPIX) decreased by 10.6%. In comparison, the US index return was slightly positive (+2.7%) during that period.

To further illustrate this idea, consider a simple economy with two countries and a single representative consumer. Denote the two countries by Germany (G) and Japan (J). Assume the economy only consumes cars (with total global consumption C), with Germany and Japan being the only producers. Finally, the global production of cars is determined by the relative productivity of the two countries, Japan and Germany, each denoted by α_G and α_J, where $\alpha_G + \alpha_J = 1$.

[2]In addition to the common demand channel, Forbes (2004) highlight a potential channel of the terms of trade that may also increase comovement. For example, a negative productivity shock in the focal country could lead to currency depreciation. This is unfavorable for countries that compete with the focal country as they need to reduce the price they charge for the products they export to remain competitive against the focal country, likely resulting in higher correlations across countries that share common markets.

The global consumption of German and Japanese cars equals $\alpha_G C$ and $\alpha_J C$, respectively. Hence, if stock prices are determined by the total amount of goods produced, the stock prices of these two countries equal:

$$S_G = (1 - \alpha_J)C$$

$$S_J = \alpha_J C$$

In this simple economy, the cross-country correlations between German and Japanese stock index returns are directly affected in two ways. The first is through the cash flow effect due to a productivity shock in one of the countries (e.g., α_J). Such shock should increase the comovement of country stock prices in the same supply chain but decrease the comovement of those in competing supply chains. In this simple economy, a positive productivity shock in Japan will increase the demand for Japanese cars and consequently stock prices of both Thailand and Japan, resulting in a positive correlation between these two countries. However, this demand shift would hurt German stock prices, resulting in a negative comovement of stock prices between Germany and Japan. The second is through the shocks to the car demand (C) of the global consumer. A positive demand shock should equally increase the stock prices of all exporting countries regardless of their trade linkages, resulting in overall positive return correlations.

In this paper, we study how a shock to one country relates to the stock prices of the competing country. The two measures of trade linkages we develop aim to distinguish the two shock transmission channels. The first measure captures product market competition, highlighting the negative effect of a productivity shock in one of the countries (α_J) on the performance of the competing country $(1 - \alpha_J)$. The second measure captures common demand, aiming to capture the extent that a common demand shock (C) affects the stock prices of countries serving the same market in the same direction.

II. Trade Measures

1. Competition measure

We develop several trade-based measures to capture the rich structure of trade linkages. Our first measure captures the product market competition between two countries a and b, constructed using the product-level trade database of the BACI database obtained from the Centre d'Etudes Prospectives et d'Informations Internationales (CDPII). This dataset initially comes from the United Nations (UN) Comtrade provided by the UN statistics division. The dataset covers international import and export for more than 200 countries and 5,000 products between 1994 and 2019, at the 6-digit level of the Harmonized Commodity Description and Coding System (HS). The methodology used to compile and clean the data is provided in Gaulier and Zignago (2010).

Trade competition between a pair of countries is estimated following Glick and Rose (1999). We first measure product market competition between country a and b at the individual product level. The competition for product p is defined as

$$C_p(a,b) = \sum_{d \in D^{a,b}} w_p(a,d) \left(1 - \frac{|X_p(a,d) - X_p(b,d)|}{X_p(a,d) + X_p(b,d)}\right), \tag{1}$$

where $D^{a,b}$ is the set of all countries in the world excluding a and b, $X_p(a,d)$ is the export of product p from country a to export destination d, and the weight, $w_p(d) = \frac{X_p(a,d)}{\sum_{d' \in D^a} X_p(a,d')}$, measures country a's export of product p to country d as a proportion of the export of the same product to the entire world.

There are two things to note from this product-level competition measure. First, the numerator inside the parentheses, $|X_p(a,d) - X_p(b,d)|$, is negatively related to how countries a and b compete in market d. If both a and b export an equal dollar value of product p to a third country, country d, this numerator would be zero, denoting an intense competition between the two exporting countries a and b with both countries having identical market shares of product p in country d. The value in the parentheses is 1 in this context. In contrast, if only one country exports product p to country d, the numerator equals the denominator, and the value in the parentheses is 0, denoting the absence of product market competition.

Second, this measure is asymmetric between each pair of countries (a, b): $C_p(a,b)$ is conceptually different from $C_p(b,a)$. This asymmetry comes from two sources. The first source is conceptual: the weight ($w_p(a,d)$) for each product market (product p in export destination d) is defined from the perspective of the first country, i.e., a for $C_p(a,b)$. The weights are determined by the relative importance of country d as an export destination for a only, completely ignoring the importance of country d to b. The measure is designed so that if countries a and d do not trade much with each other, competition in d's market would not affect country a's competitive position even if countries b and d trade intensively. The asymmetry would be particularly relevant if two countries a and b substantially differ in size; this asymmetry will be discussed in more detail in the next section. The second source is data-related: the potential asymmetry in the UN trade data itself, as the database is based on self-reporting by the customs authority of each country.

Aggregating from the product level, we define the country-level competition between a and b as the weighted average of the product-level competition:

$$\text{Competition}(a,b) = \sum_{\forall p} \frac{X_p(a)}{X(a)} C_p(a,b), \tag{2}$$

where $X_p(a)$ is a's total export of product p ($= \sum_{\forall d} X_p(a,d)$) and $X(a)$ is the total export of country a of all products ($= \sum_{\forall p} X_p(a)$).

2. Common Demand Measure

Our second measure is the common demand (CD) measure. This measure is conceptually connected to the product market competition measure as two countries with a high degree of competition would export to similar markets and should be exposed to common demand risk emanating from those markets.

To compute the CD measure, we obtain country-level total exports and imports data from the IMF Direction of Trade Statistics (DOTS), which provides a breakdown of the annual total of merchandise imports and exports by each counter-party country. Then, the CD of country a with respect to country b is defined as

$$CD(a,b) = \sum_{d \neq b} f(a,d) \left(1 - \frac{|f(a,d) - f(b,d)|}{f(a,d) + f(b,d)}\right), \tag{3}$$

where $f(a,d)$ is the fraction of country's a's total export that is exported to country d, which is calculated as the amount of export from country a to d ($X(a,d)$) divided by the total export of country a to the entire world ($X(a) = \sum_{\forall d} X(a,d)$).

Our CD measure resembles the competition measure in Equation (2), with two crucial differences. First, the competition measure is calculated from individual product-level data, which is then aggregated to the country level, whereas the CD measure is computed from the aggregated trade data. If two countries export different products (e.g., Australia exports iron ores and France exports luxury products) to the US, their CD measure will reflect their shared exposure to US demand shocks, but the competition measure would underline the lack of product market competition between the two countries.

Second, instead of calculating the dollar amount of export difference as in the competition measure ($|X_p(a,d) - X_p(b,d)|$), the CD measure uses the difference between the respective *fraction* of the amount exported to the common market by each of the two countries ($|f(a,d) - f(b,d)|$). Therefore, the CD measure will be higher when two countries have similar compositions of export destinations.

The motivation for using the dollar amount of export for the competition measure and fraction of export for the CD measure is easier to illustrate for two countries with differing sizes. A (S)mall country and a (L)arge country will compete intensely in a product market only if these two countries have similar market shares in that market ($X_p(S,d) \approx X_p(L,d)$) despite their different sizes.

However, a common demand shock could affect the two countries regardless of the different sizes of their economies (or total exports). Countries that rely heavily on a single export destination, e.g., the US for Mexico and Costa Rica, would be substantially affected by demand shocks in that destination country (i.e., the US) despite the substantial difference in the economy sizes of Mexico vs. Costa Rica.

3. Two additional trade measures

The previous two measures consider two countries' linkages with a third country as a common export destination. Stock market correlations could also be affected by the direct trade relationship between the two countries or the characteristics of each country.

We define a direct trade (DT) measure to capture the extent of one country's reliance on a second country as an export destination in cross-border trades. Using the DOTS data, we define direct trade, $\mathrm{DT}(a,b)$ of country a to b as the log difference between the export of country a to b ($X(a,b)$) and the total export of country a to the entire world ($X(a) = \sum_{\forall d} X(a,d)$). This measure should have a positive influence on stock return correlation. If a significant fraction of country a's exports flow to country b, then any demand shock that originates from country b should affect country a. As such, this measure is also useful to capture the economic proximity between the two countries.

Our last measure is the share of exports of a country's aggregate economic activities. We measure this by taking the log difference of a country's total export ($X(a)$) and its total GDP. All else equal, we expect that countries with a higher export share of GDP to be influenced more by the global economy compared to countries that have a relatively larger domestic market and export less to the rest of the world.

4. Relationship between Product Market Competition and Common Demand

Our main investigation of the relevance of the two dimensions of trade linkages is developed mainly from the US perspective. First, countries that export similar amounts of the same set of products to the same destination markets as the US would have a higher product market competition measure with the US ($Competition(a, US)$). We predict that these country's stock indices would display a *lower* correlation with the US stock index. Second, countries whose aggregate export destinations are similar to those of the US would have a higher CD measure with the US ($CD(a, US)$). We predict that their stock indices would be more likely to move in the same direction as the US index.

We continue to note that the competition and common demand measures seem likely to be positively correlated due to their similar constructions, with the main distinction stemming from whether the two countries export similar *products* to the common export destinations. In our analyses, we include both of them so that the parameter estimates would reflect their respective marginal effects. Nevertheless, to illustrate their correlation, we chart a scatterplot of the competition and CD measures of various countries with respect to the US in Figure 1. Each country abbreviation (e.g., CAN) represents the pair of time-series averages of the corresponding trade measures between that country and the US, e.g.,

$Competition(CAN, US)$ on the x-axis and $CD(CAN, US)$ on the y-axis for Canada. The figure displays two important features of the trade measures that are worth mentioning.

First, geographical proximity is closely related to the common demand channel but not necessarily to competition. North American countries (in the upper left hand corner) display high CD exposures with the US. However, these countries do not directly compete with the US in the product markets. This observation seems plausible with Canada and Mexico trading substantially with the US by specializing according to their comparative advantages. Rather than competing with each other, many firms in these countries share the same vertical supply chain with US firms. In contrast, most European countries do not share a common demand exposures with the US; instead, these countries seem to compete with the US in various product markets globally.

The second observation is that these two trade measures are negatively correlated ($\rho = -0.45$). Countries that share common demand exposures with the US tend to have less intense product market competition with the US. This negative relationship is remarkable given our initial concern of a potential mechanical correlation between the competition and CD measures as they take similar forms, except for the crucial difference of product-level vs. aggregate export similarities. The competition measure is aggregated from individual product level similarities, whereas the CD measure is computed directly from aggregated export data. The observed negative relationship between the two measures works to alleviate potential concerns that the measures are mechanically related, highlights the distinct features of trade linkages captured by each of the two measures, and allows us to perform empirical analyses to identify the distinct effect of each measure.

III. Empirical Results

In this section, we analyze how the two aspects of international trade linkages – common demand exposure and product market competition – relate to the comovement of international stock returns. We take the US as the focal country and begin the analysis by using daily return data. We compare how the stock markets of different countries react to shocks to the US stock prices as a function of those countries' trade linkages vis-a-vis the US. We employ the trade linkage measures calculated in year t as a potential explanatory variable for the cross-country return dynamics in the following year $t+1$.

1. Daily contemporaneous/predictive relations

Analyzing international stock returns at a daily frequency requires extra caution. For instance, when the US stock market opens at 9:30 AM Eastern Standard Time (EST), the London Stock Exchange is in the middle of its trading hours of the same day (1:30 PM), whereas the market in the Tokyo Stock Exchange is already closed (10:30 PM). Likewise, when the US stock market closes at 4 PM, most of the stock markets, including Australia and New Zealand, are closed. Hence, a shock during the US trading hours is likely incorporated into stock prices in other markets globally during the following trading day.

We take these asynchronous trading hours into account in our analysis of the cross-market daily stock return dynamics. We refer to the first day the stock market closes after our focal market – i.e., the US market for the first part of our analyses – closes as 'contemporaneous,' the following trading day as 'one-day predictive,' and so forth. The exception is for markets in the rest of the North and South American continents, where 'contemporaneous' is defined as the same trading day, given the almost complete overlap in trading hours with the US market. For example, a Monday in the US is contemporaneous with the same Monday in the rest of the Americas and Tuesday in markets of Asia-Pacific, Europe, and Africa. Similarly, Tuesday for stock markets in the Americas and Wednesday for the rest of the world are treated as one-day predictive.

The literature on cross-market return dynamics suggests that the global equity market is relatively integrated, and stock prices across countries tend to move together. The literature has also observed some predictive relationships at a higher frequency, such as at the daily level, especially if some markets are less efficient, less liquid, or if the flow of information is slower in some markets.[3] In the rest of our discussion, we refer to the combined pattern of contemporaneous movement and short-term predictability of returns as "comovement" and make specific reference to "predictability" only when we exclude the contemporaneous pattern.

Before performing our main analysis, we first examine how prevalent these comovement patterns are. We do this by examining how international equity index returns correlate with each other both contemporaneously and with short lags. We consider the regression model of

$$R_{i,t+k} = \alpha_i + \beta_i R_{US,t} + \epsilon_{i,t+k}, \tag{4}$$

where $R_{i,t+k}$ is the stock index return of country i on day $t+k$ denominated in USD. As discussed above, we refer to the regression of $k = 1$ as contemporaneous and $k = 2$ as one-day predictive for all countries except for countries in the American continents, where $k = 0$ is treated as contemporaneous and $k = 1$ and $k = 2$ as one-day predictive, respectively.

Table 1 summarizes the contemporaneous and predictive slopes of daily international index returns regressed on US index returns. The slopes and standard errors of the contemporaneous, one-day predictive, two-day predictive, and three to five days (one-week)

[3]See, for example, Karolyi and Stulz (1996), Griffin and Karolyi (1998), Griffin and Stulz (2001) Forbes and Rigobon (2002), among others, that study the comovement and predictability of international stock returns at the daily frequency. See also, Chordia and Swaminathan (2000), Hou and Moskowitz (2005), Hou (2007), among others, that suggest the lead-lag relation among US stock returns can appear due to slow diffusion of information.

predictive regressions are provided in the table. As has been previously documented, there is a strong positive comovement observed between the US and each country's index returns. One potential reason for this contemporaneous pattern is a global macro factor shared among different countries. Ferson and Harvey (1993), for example, report that international stock returns are partially predictable using global factors such as the world market index.

In addition to the contemporaneous comovement, we also observe some directional predictability. The predictability seems plausible in this setting if the US market is relatively more efficient or liquid than other markets. In this context, the US market would respond first to a global shock before the rest of the global markets react (e.g., Rapach, Strauss, and Zhou 2013). To illustrate this possibility, we examine the predictability of country-level index returns using past US index returns by reporting the predictive slopes for different horizons in the subsequent three columns: one-day, two-day, and one-week returns, respectively. As anticipated, some indices are predictable by US market returns with a day of lag. For some countries (e.g., Egypt, Indonesia, Thailand, and Turkey), the predictability persists up to the weekly horizon.

It is important to note that there is a considerable variation in both contemporaneous and predictive βs. While the contemporaneous slopes are all positive, some index returns (e.g., Finland, France, Germany, Greece, Sweden, and Switzerland) are *negatively* predicted by the US returns at longer horizons such as a week. This paper focuses on this heterogeneous response to US returns, highlighting the role of the trade-based linkages of common demand exposures and product market competitions. The averages of each country's measures of competition and CD with the US are reported in the last two columns of Table 1.

Figure 2 and Figure 3 illustrate the effects of these trade linkage measures on cross-market dynamics. First, Figure 2 illustrates the relationship between the competition measure and the predictive βs of different lags. Panel (a), (b), (c), and (d) compare direct trade with the contemporaneous, one-day, two-day, and one-week βs of the predictive regressions. The sum of the βs for the third, fourth, and fifth day leading returns is used as a dependent variable for the one-week slope. Overall, we observe a negative relationship between each country's competition ranking and its contemporaneous, one-day, two-day, and one-week predictive βs, with a correlation coefficient of -0.42, -0.55, -0.40, and -0.45, respectively. This figure suggests that a higher trade competition is associated with a weaker relationship between the respective equity index returns even at the one-week horizon.

Second, Figure 3 illustrates the relationship between the CD measure and the predictive slopes for different lags. We observe the opposite patterns for common demand. The magnitude of the correlation between the contemporaneous and one-day predictive βs and common demand is positive and high $(0.42 - 0.60)$.

2. Comovement of daily stock returns

We next perform formal statistical analyses of these patterns using different lags of returns. We are particularly interested in examining whether common demand and product market competition have distinct effects on the cross-country equity return dynamics. We hypothesize that the cross-country patterns of equity market dynamics are related to how countries are connected through trade linkages.

To formally test this hypothesis, we implement the two-step estimation procedure of Fama and MacBeth (1973). As a first step, for each country i, we capture how international equity prices react to contemporaneous and lagged US market returns. That is, we estimate the following daily time-series regressions:

$$R_{i,t+k} = \alpha_i + \beta_{i,0} R_{US,t} + \beta_{i,1} R_{US,t-1} + \beta_{i,2} R_{US,t-2} + \beta_{i,3} \sum_{\tau=3}^{5} R_{US,t-\tau} + \epsilon_{i,t+k}, \tag{5}$$

where $k = 1$ for countries outside of the American continents, and $k = 0$ for countries in South or North America. We estimate this regression annually without any overlapping observations. These annual regressions generate four series of annual estimates of $\beta_{i,\cdot}$s for each country i ($\beta_{i,0}$, $\beta_{i,1}$, $\beta_{i,2}$, and $\beta_{i,3}$), each representing a different horizon of US returns' predictive pattern.

The second stage regression is a cross-sectional regression of each of these $\beta_{i,\cdot}$s on the lagged common demand and competition measures. In particular, we regress $\beta_{i,\cdot}$s estimated using daily returns in year y on the common demand and competition measures derived on year $y-1$. The regression model is given as follows:

$$\hat{\beta}_{i,y} = \delta_{i,0} + \delta_{i,1} Comp(i, US)_{y-1} + \delta_{i,2} CD(i, US)_{y-1} + \mathbf{c}_j' \mathbf{Control}_{i,y-1} + e_{i,y}, \qquad (6)$$

where **Control** is the vector of country specific control variables and $j = 0, 1, 2, 3$. We report the time-series average of the second-stage regression slope coefficients (b_1, b_2), the associated t-statistics calculated using Newey and West (1987) adjustments, and the average of the R^2 of the second stage regressions.

Table 2 shows the results. Panel A shows the result for analyses in which each of the two trade measures ($Comp(i, US)_{y-1}$ or $CD(i, US)_{y-1}$) is included separately as an explanatory variable in the second stage regression. Panel B reports the parameter estimates when both trade measures are included simultaneously in the second stage regression. For both specifications, we first consider only the contemporaneous variable $\beta_{i,0}$ in Equation (5) by letting $\beta_{i,1} = \beta_{i,2} = \beta_{i,3} = 0$ for all countries. Columns (1) and (4) in Panel A show how the contemporaneous relationship between equity index returns depend on each of our trade measures. Column (1) in Panel B includes both measures in the second stage regression predicting contemporaneous return betas, $\beta_{i,0}$.

Next, we focus only on the predictive variables ($\beta_{i,1}, \beta_{i,2}, \beta_{i,3}$) in the first-stage regression (i.e., setting $\beta_{i,0} = 0$ in Equation (5)). Columns (2) and (5) in Panel A as well as Column (2) in Panel B report the parameter estimates from this alternative specification. Finally, Columns (3) and (6) in Panel A and Column (3) in Panel B summarize the results of the full specification in Equation (5).

Three observations are worth noting from the two panels of this table. First, the relationship between the international and US index returns is weaker when a country competes more with the US. However, a country's stock returns move together with the US when the country shares a common export market with the US. Therefore, these two dimensions of trade linkages seem to have opposite roles in cross-country equity return dynamics. Second, the two trade measures explain 31.9% of the cross-sectional variation in contemporaneous return betas. The power decreases for the one-day predictive relationship, with more than 20% of the variation explained by the two trade measures. For the one-week predictive relationship, the two measures still explain more than 16% of the cross-sectional variation of the predictive βs. Third, we observe some delays in reaction to US returns. US market shocks take at least two full days (three calendar days) to be transmitted through these trade channels.

In addition to the direct effects of the two trade channels, stock prices of firms that trade internationally may also be affected by the 'terms-of-trade' mechanism. A positive productivity shock in the US could lead to a strengthening of the US dollar, particularly relative to the currencies of countries that compete intensely with the US in the product markets.

Furthermore, this mechanism also predicts that following a positive US shock, non-US stock returns denominated in their local currency would be higher for countries with high competition measures. This is because these countries benefit from the weakening local currency. Therefore, the terms-of-trade mechanism would also imply a higher correlation between the US stock return and the locally-denominated stock returns of countries with which the US competes more intensely in the product markets.

With the currency effect and local-denomination stock return effect heading in opposite directions in this framework, the observed negative effect of product market competition on (US-dollar denominated) stock return correlations that we observe so far would be due to the negative currency effect outweighing the positive local-denomination stock return effect.

To investigate this possibility, we decompose each non-US country's stock market returns into two components in the first-stage regression: (1) the corresponding currency returns with respect to the US dollar and (2) the stock market returns denominated in the local currency. The results of this decomposition are reported in Table 3.

Panel A presents the results of the second-stage regressions, where currency returns are used as the dependent variable in the first-stage regression. The results in Panel A indicate that the product market competition measure has a negative correlation with the sensitivity of non-US currency returns to US stock returns. This implies a relative currency depreciation for countries that compete more intensely with the US following positive US stock returns, consistent with the terms-of-trade mechanism.

However, the pattern that we observe in Panel B, where local currency stock returns are used as the dependent variable in the first-stage regression, is the opposite. Indeed, we find that the sensitivity of local-denomination stock returns to US stock returns has a positive correlation with product market competition. In other words, positive US stock returns tend to be followed by a relative decrease, not an increase as implied by the terms-of-trade mechanism, in local stock prices in countries that compete more intensely with the US in the product markets. Hence, the patterns we observe using this return decomposition are not fully consistent with the hypothesized terms-of-trade mechanism. In aggregate, we conclude that the negative effect of product market competition on international stock return correlation does not operate through this currency-driven mechanism.

In contrast, the dynamics of return decomposition presented in Table 3 remain consistent with our working hypothesis that competition and common demand channels have opposite effects on how a shock is transmitted internationally. A positive US price shock is positively related to currency and equity values in countries that share common export markets with the US. In contrast, a positive shock in the US negatively affects firms in competing countries. Along with lower local-denomination stock returns in Panel B, the corresponding currency depreciation that we observe in Panel A also reflects the deterioration of the economic fundamentals of those countries.

We also consider two additional trade-based measures. If US stock price dynamics are driven by domestic US demand shocks, it is natural to assume that the stock returns of countries that export heavily to the US would be positively correlated with US stock returns. A country's exposure to the US as its export destination is a product of two factors: the country's reliance on exports as a fraction of its economy and the country's reliance on the US as a fraction of its total exports. We measure the former using the country's export share, i.e., its total export amount as a fraction of its total GDP. We measure the latter using a "direct trade" measure, i.e., the country's export to the US as a fraction of its total export amount. It is worth noting at this point that this direct trade measure is likely to be related to the CD measure since both are likely to be related to a country's geographical distance from the US.

Table 4 reports the results of the cross-sectional regressions after adding export share and direct trade as independent variables. We do not observe any evidence that the stock returns of countries that rely more on exports tend to move together with the US market. As hypothesized, stock market returns tend to move together with the US for countries that export more to the US. Nevertheless, the two primary trade measures in this study – CD and competition – continue to be important determinants of stock return comovement in the manner consistent with Table 2.

Among US firms, previous studies show that there is cross-industry return predictability in the short-term along the supply chain. While the subject of this paper is at the aggregate level, the DT channel resembles the customer-supplier link studied by Cohen and Frazzini (2008) or Menzly and Ozbas (2010). Consistent with these studies, we find positive contemporaneous and predictive relationship within the same supply chain. However, the predictability becomes substantially weaker after a day and somewhat reverses within a week.

3. Weekly dynamics of country stock markets

We have established that the returns of stock markets of countries that compete more with the US move less with the US stock market returns. Our analysis also highlights some predictive relationships on a daily frequency. The competition and common demand effects seem to last more than a day and often for two subsequent trading days.

The daily analysis is limited in two dimensions. First, analyzing daily returns in an international setting is challenging due to asynchronous trading hours, with only a few countries observing trading hours similar to the US. Second, the asynchronous trading hours also result in difficulties in controlling for global stock market returns. In this section, we deviate from the previous analysis across these two dimensions. First, we use weekly instead of daily returns. Second, we control for the global and currency returns in the first stage regression.

The first stage regression we consider is as follows:

$$R_{i,t} = \alpha_i + \beta_{i,US} R_{US,t} + \beta_{i,g} R_t^* + \beta_{i,q} \Delta q_{i,t} + \epsilon_{i,t}, \tag{7}$$

where $R_{i,t}$ is the stock return of country i for week t denominated in USD, $R_{US,t}$ is the value-weighted CRSP weekly returns, R_t^* is the MSCI world index returns denominated in USD, $\Delta q_{i,t}$ is the return of currency i relative to the USD, where a higher $q_{i,t}$ implies a currency appreciation for country i. Weekly returns are computed by taking the sum of log daily returns over five days. The control for the global market and currency returns follows the international capital asset pricing model of Adler and Dumas (1983). We restrict the beta on currency returns $\beta_{i,q}$ to be 0 in several specifications, and we call these specifications "Uncontrolled". The first-stage regression is estimated every year using weekly data that belongs to that particular year.

Similar to the daily analysis, the second stage regression is the panel regression of the US return beta $\hat{\beta}_{i,US,y}$s estimated using weekly returns during year y on the lagged common demand and competition measures of year $y-1$. We choose to lag the trade measures to be consistent with our first analysis. However, the results are qualitatively similar if we use contemporaneous trade-based measures instead. The regression is given as

$$\hat{\beta}_{i,US,y} = \delta_{i,0} + \delta_{i,1} Comp(i,US)_{y-1} + \delta_{i,2} CD(i,US)_{y-1} + \mathbf{c}_j' \mathbf{Control}_{i,y-1} + \text{Year FE}_y + e_{i,y}, \quad (8)$$

for all country i and year y. We include year fixed effect in this regression as our objective is to investigate the cross-sectional relationship.

The results of the panel regressions using betas estimated using weekly return data are reported in Table 5. We report the results for both currency controlled and uncontrolled ($\beta_{i,q} = 0$) specifications. We find a strong negative relationship between stock market co-movement and the competition measure in these panel regressions. The coefficients are strongly negative and statistically significant even after controlling for direct trade and export share (both positively related to the US return betas). In other words, US index returns move together less with the stock market returns of countries with which the US competes more intensely, consistent with our main results in Table 2.

We do not observe statistical significance for the common demand measure in Models 1 and 3. Moreover, when we add direct trade as a control variable in the second stage regression, the sign of the common demand coefficient becomes negative in Models 2 and 4. The inconsistency of the common demand channel in the second stage regression is likely to be related to the inclusion of the value-weighted global stock market returns in the first-stage regression, which should capture aggregate demand shocks. The patterns are similar regardless of whether we control for currency returns in the first stage regression.

4. Upstream vs. downstream returns

A positive demand shock in the US should affect both the US stock returns as well as the stock returns of countries that export to the US. It may also positively influence stocks markets of countries that share export destinations with the US if global demand shocks are correlated with US demand shocks. However, this positive demand shock should not have any perceptible effect on countries that compete in specific product markets with the US.

In contrast, a supply shock – such as disruption of the supply chain or technological innovation – within the US could directly affect countries competing with the US. A positive supply shock should increase the stock prices of non-US firms within the same supply chain as US firms but decrease the stock prices of non-US firms in competing supply chains. For example, a positive productivity shock in the US aircraft industry will increase the stock prices of Japanese firms that supply parts to US aircraft manufacturers but decrease the stock prices of European firms operating in a competing supply chain. Therefore, stock prices of countries dominated by firms that compete with the US in the product market are likely to be negatively affected by a US supply shock.

The above example suggests that supply shocks should propagate through the competition channel, whereas demand shocks (of the common market) should propagate through the common demand channel. In this section, we examine whether demand and supply shocks affect the comovement in international stock returns differently.

To facilitate this test, we proxy demand and supply shocks using stock returns of firms based on their distance to the consumers (See, for example, Gofman, Segal, and Wu (2020), among others.) Downstream firms are located lower in the supply chain and produce goods directly consumed by end-customers, whereas upstream firms are located higher in the supply chain. They process raw materials and supply parts and materials used for further processing by downstream firms in the supply chain. Hence, a positive shock to upstream firms would benefit firms within the same supply chain and hurt firms operating in other supply chains. As a result, countries that compete with the US should move less with the stock prices of US upstream firms.

We first sort industries by their vertical position in the supply chain (Antràs, Chor, Fally, and Hillberry 2012) and assign firms based on the industries they operate into three groups: upstream, midstream, and downstream firms. The details of the construction of this measure are provided in Appendix A. We then repeat the previous analysis after replacing the US returns with the respective returns of upstream and downstream industry portfolios in the first-stage regression. Table 6 summarizes the results of this analysis. The left-hand side of the table reports the parameter estimates from the second-stage regressions using betas estimated using upstream industry returns, whereas the right-hand side reports the corresponding estimates using downstream industry returns.

The pattern on the left-hand side (Models 1-4) obtained using upstream US returns are consistent with our weekly results in Table 5 and particularly the negative coefficients for the competition measure. We do not observe a similar pattern using downstream US returns on the right-hand side (Models 5-8). The results are consistent with the hypothesis that countries that compete with the US have lower returns upon a positive supply shock in the US (as reflected in upstream US returns), but not so much when there is a positive demand shock in the US (as reflected in downstream US returns). These results are consistent with the intuition that US supply shocks are being propagated through the competition channel.

5. Global competition and stock market returns

In this section, we further expand the return dynamic analysis in Table 5 to the entire global market. We start in Table 7 by summarizing our two main trade measures by continent pairs. We first calculate the trade measures for each country pair in our sample. We classify each country pair by the continents and take the simple average of the trade measures depending on their location. The numbers reported in Table 7 are not symmetric since the trade measures are computed from each country's perspective.

Panel A shows that countries in the same continent (i.e., the diagonal) have higher common demand measures, indicating that they are exposed to common demand shocks. This is observed for all continents. Panel B shows a similar pattern for competition, with heightened competition within each continent, but primarily for Asian and European countries. The competition measures are typically low for African, Oceanian, and South American countries. As alluded to earlier, North American countries display relatively low competition within the continent, as they compete actively against countries in Asia, Europe, and South America.

For this global analysis, the first stage regression is as follows:

$$R_{i,t}^{j\$} = \alpha + \beta_{i,j,S} R_{j,t} + \beta_{i,j,G} R_t^{*,j\$} + \beta_{i,j,q} \Delta q_{i,j,t+1} + \epsilon_{i,j,t}, \tag{9}$$

where $R_{i,t}^{j\$}$ is the weekly stock returns of country i denominated in currency of country j, $R_{j,t}$ is the weekly stock returns of country j in currency j, $R_t^{*,j\$}$ is the weekly global value-weighted index denominated in currency j, $\Delta q_{i,j,t+1}$ is the currency returns of country i relative to country j. Similar to previous analyses, a higher $q_{i,j,t}$ implies a currency appreciation for country i relative to country j. This regression is estimated annually for each pair of countries using the weekly data that belongs to that particular year. We also consider a specification that does not control for currency returns, where $\beta_{i,j,q}$ is assumed to be zero.

Our primary interest is how shocks to country j reflected in its stock index returns are related to country i's index returns. Hence, we study whether $\beta_{i,j,S}$ can be predicted by the two trade measures we consider. The second stage panel regression we consider is as follows:

$$\begin{aligned}\hat{\beta}_{i,j,S,y} =& \delta_1 Comp_{i,j,y-1} + \delta_2 CD_{i,j,y-1} + \delta_3 DT_{i,j,y-1} + \delta_4 XP_{i,j,y-1} \\ & + \text{Time FE}_y + \text{Same Continent FE}_{i,j} + I_j + e_{i,j,y},\end{aligned}$$

where $CD_{i,j,y-1}$, $Comp_{i,j,y-1}$, $DT_{i,j,y-1}$, and $XP_{i,y-1}$ are the trade measures of year $y-1$. We control for time fixed effects as well as for two countries being located in the same continent to account for geographical proximity. In several models, we also add country j fixed effect, which is an analogue to the US-based analysis. Our hypothesis is that the coefficient δ_2 would be negative in the second-stage regression.

Table 8 summarizes the results of the second-stage panel regressions. Overall, the results are consistent with our hypothesis developed earlier and are similar to the US-based result. The stock returns of countries that compete more in a common market have a lower correlation with each other. The negative effect on return correlation is observed after controlling for global market returns. Furthermore, we find that the stock markets that share common demand exposures tend to move together more.

There are two notable differences between the results reported in this table and Table 5 which uses the US as a focal country. The first is the robust statistical significance in the common demand measure in the global panel analysis. The second is the opposite signs for direct trade: positive in the US analysis and negative in the global analysis. Both of these differences are likely related to the relative size of the US in the global economy and equity market. The US stock market is by far the largest market in the world. Therefore, in the US-based analysis, the global value-weighted stock returns included as an independent variable in the first-stage regression act to absorb the influence of the common demand shock that each country shares with the US. However, in the global analysis, two neighboring smaller countries such as Singapore and Malaysia may be facing a common demand shock that arises from larger countries, e.g., Australia, China, or Japan, leading to a positive correlation between these two countries.

A similar logic holds for direct trade. Since the US is relatively large, the direct trade channel with the US is likely to matter significantly in the US-based analysis. However, a demand shock that originates from Singapore will not matter as much to the Malaysian stock market, particularly after controlling for the CD, even if Malaysia exports substantially to Singapore and vice versa.

IV. Conclusion

This paper examines the potentially ambiguous effect of trade competition on equity market comovement. We develop an empirical framework to distinguish the product market competition aspect of trade linkages from the common demand exposure as well as the direct trade channel between two countries. We quantify the product market competition between two countries in their common markets, and examine its effect on international equity return dynamics. While the direction of this effect is a priori ambiguous, we find that the product market competition channel has a negative effect on cross-market return correlation: equity markets of countries that compete more with the US in the product market tend to have lower correlation with the US stock market. This lower correlation is in contrast to the more widely documented positive effect for common demand linkages, i.e., the stock returns of countries that share common export markets with the US tend to have higher stock return correlation with the US.

Our finding that product market competition has a negative effect on cross-country stock comovement is novel to the literature. The conflicting effects of common demand exposure and product market competition dimensions of trade linkages that we document indicate that the increasingly integrated global trade network may not necessarily lead to increasingly high cross-market correlations among asset returns. Similarly, our findings indicate that the specter of trade wars and pandemic-stricken supply chains do not necessarily herald lower equity market comovement. Understanding how these correlations vary with the contours of the global trade network is crucial for investors seeking diversification in foreign equity markets.

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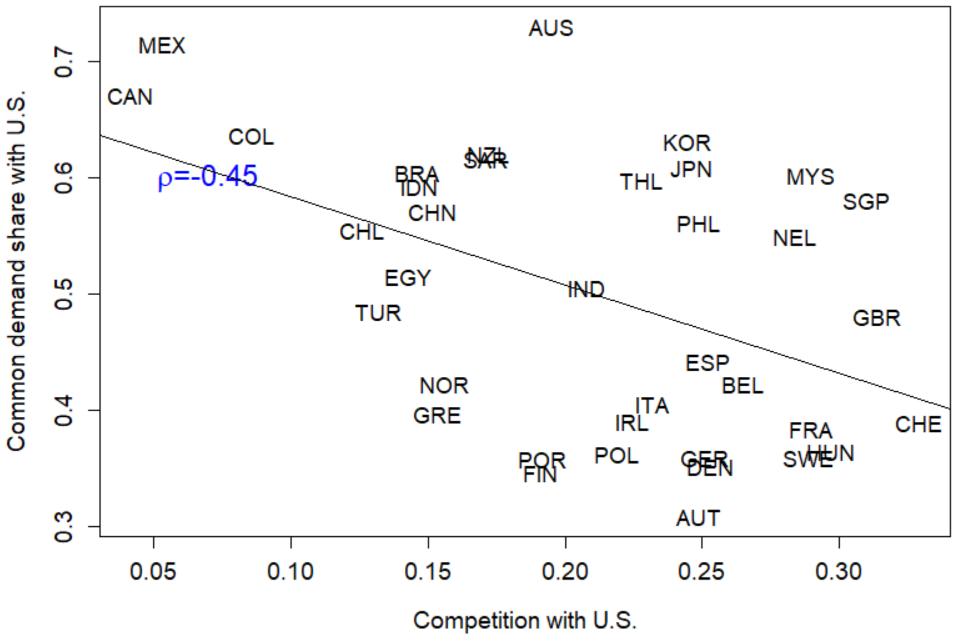
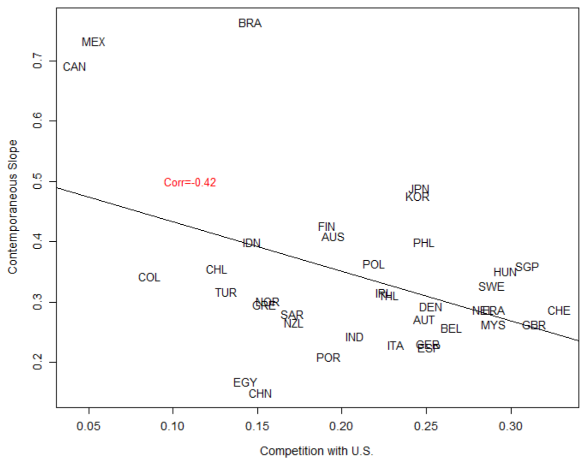
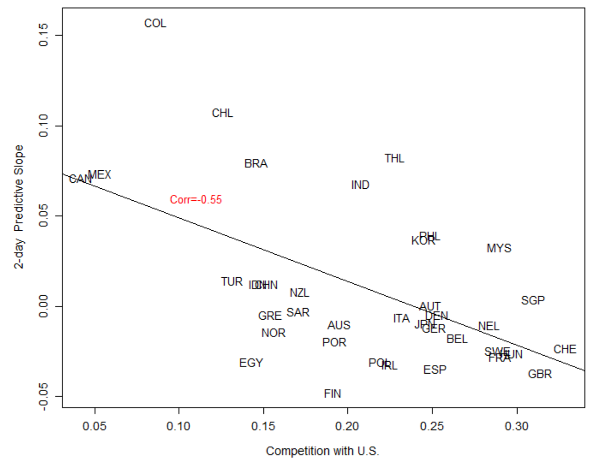


Figure 1: Competition and Common Demand

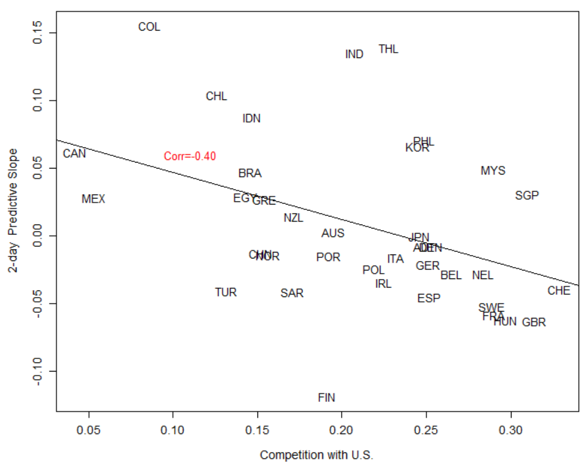
This figure plots the time-series averages of product market competition (x-axis) and common demand exposure (y-axis) with the US. The competition measure captures how a country competes with the US in the product market and is aggregated to the country level by taking the average, weighted by the exports of the focal country. The common demand measure captures the similarity of demand shocks faced in the export market by a country with the US and is directly estimated from the aggregate country exports. Countries are shown in three-letter ISO country codes.



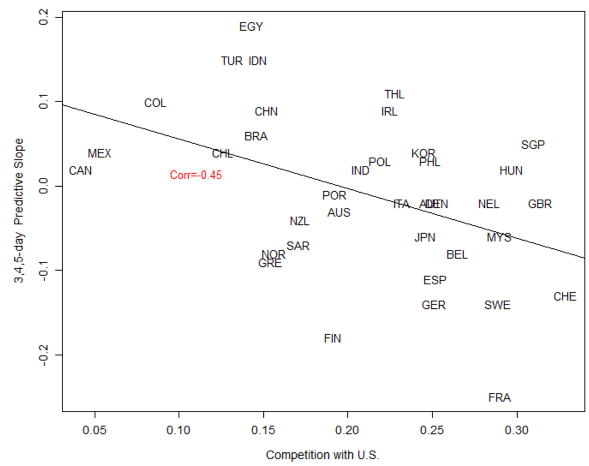
(a) Contemporaneous relationship



(b) One-day Predictive relationship



(c) Two-day Predictive relationship



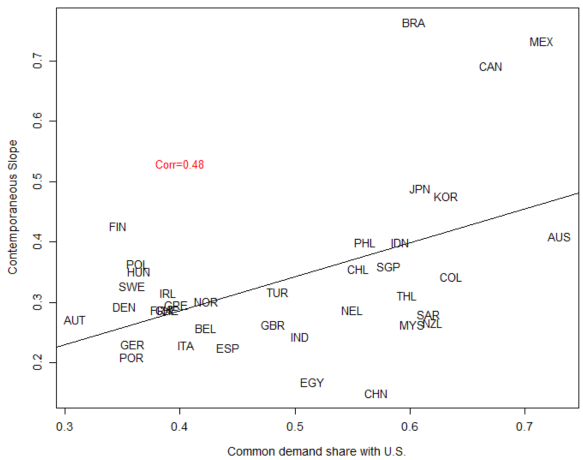
(d) One-week Predictive relationship

Figure 2: Competition and the Slope of Predictive Regressions

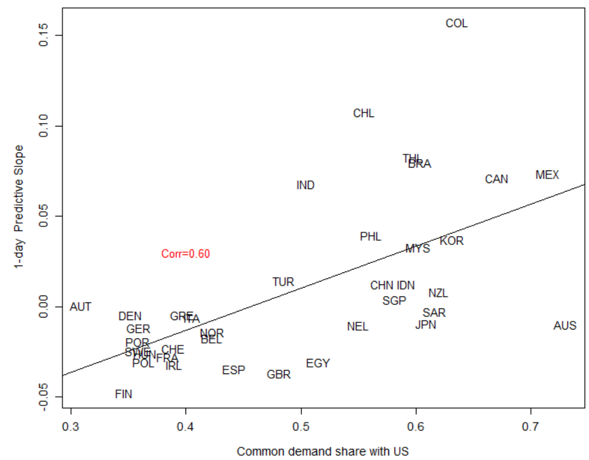
This figure plots the time-series averages of competition with the US (x-axis) and the slopes of the regression (y-axis)

$$R_{i,t+k} = \alpha + \beta_p R_{US,t-p} + \epsilon_{t+k},$$

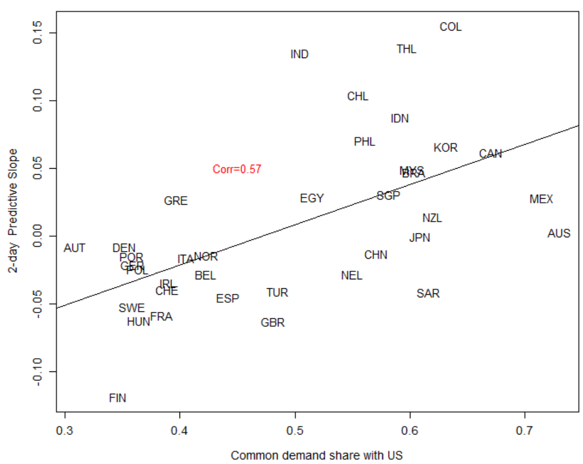
where $R_{i,t+k}$ is the stock return of country i on day $t+k$ denominated in USD. $k = 1$ if a country does not belong to the continents of America, otherwise $k = 0$. Panels (a),(b),(c) show the results for $p = 0, 1, 2$, respectively and panel (d) shows the result using $(\sum_{\tau=3}^{5} R_{US,t-\tau})$ as an independent variable. Competition is defined at the product level and aggregated to the country level.



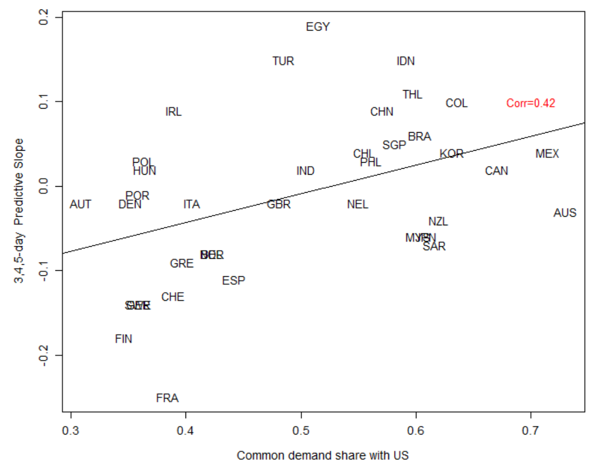
(a) Contemporaneous relationship



(b) One-day Predictive relationship



(c) Two-day Predictive relationship



(d) One-week Predictive relationship

Figure 3: Common Demand and the Slope of Predictive Regressions

This figure plots the time-series averages of direct trade to the US (x-axis) and the slopes of the regression (y-axis)

$$R_{i,t+k} = \alpha + \beta_p R_{US,t-p} + \epsilon_{t+k},$$

where $R_{i,t+k}$ is the stock return of country i on day $t+k$ denominated in USD. $k = 1$ if a country does not belong to the continents of America, otherwise $k = 0$. Panels (a),(b),(c) show the results for $p = 0, 1, 2$, respectively and panel (d) shows the result using $(\sum_{\tau=3}^{5} R_{US,t-\tau})$ as an independent variable. Common Demand is defined at the aggregate level as defined the main text.

Table 1
Daily Predictive Regressions

This table summarizes the slopes and the Newey-West standard errors off the contemporaneous and predictive regressions of

$$R_{i,t+k} = \alpha + \beta R_{US,t} + \epsilon_{t+k},$$

where $R_{i,t+k}$ is the stock return of country i on day $t+k$ denominated in USD. The regression with $k=1$ is defined contemporaneous and $k=2$ as one-day predictive, $k=3$ as second-day predictive, the sum of $t=4$ to $t=6$ as one-week predictive for all countries except countries that belong to the continent of America. For American countries, the above is lagged by a day. Common Demand (CD) and Competition ($Comp$) are defined in the main text, and the time-series averages are reported.

		Dependent Variables: Returns									
		Contemporaneous		Predictive							
	Sample			One-day		Second-day		One-week			
Country	begins	Slope	SE	Slope	SE	Slope	SE	Slope	SE	$CD(i,US)$	$Comp(i,US)$
Australia	1995	0.41***	(0.017)	−0.01	(0.027)	0.00	(0.035)	−0.03	(0.016)	0.730	0.195
Austria	1999	0.27***	(0.031)	0.00	(0.053)	−0.01	(0.061)	−0.02	(0.029)	0.309	0.249
Belgium	1999	0.26***	(0.026)	−0.02	(0.043)	−0.03	(0.051)	−0.08	(0.024)	0.423	0.265
Brazil	1995	0.76***	(0.026)	0.08***	(0.045)	0.05	(0.057)	0.06	(0.027)	0.604	0.146
Canada	1995	0.69***	(0.020)	0.07***	(0.028)	0.06**	(0.042)	0.02	(0.014)	0.671	0.042
Chile	2002	0.36***	(0.021)	0.11***	(0.030)	0.10***	(0.042)	0.04	(0.023)	0.555	0.126
China	1995	0.15***	(0.024)	0.01	(0.037)	−0.01	(0.048)	0.09*	(0.026)	0.571	0.152
Colombia	2005	0.34***	(0.025)	0.16***	(0.039)	0.16***	(0.057)	0.10*	(0.028)	0.636	0.086
Denmark	1995	0.29***	(0.023)	0.00	(0.036)	−0.01	(0.044)	−0.02	(0.018)	0.352	0.253
Egypt	2000	0.17***	(0.027)	−0.03	(0.039)	0.03	(0.071)	0.19***	(0.028)	0.515	0.143
Finland	1995	0.30***	(0.032)	−0.05	(0.047)	−0.08*	(0.052)	−0.18***	(0.026)	0.346	0.191
France	1999	0.43***	(0.035)	−0.05	(0.050)	−0.12**	(0.064)	−0.25***	(0.032)	0.384	0.290
Germany	1999	0.29***	(0.029)	−0.03	(0.044)	−0.06	(0.046)	−0.14***	(0.024)	0.359	0.251
Greece	1999	0.23***	(0.027)	−0.01	(0.041)	−0.02	(0.050)	−0.09*	(0.023)	0.397	0.154
Hungary	2001	0.30***	(0.037)	0.00	(0.050)	0.03	(0.067)	0.02	(0.029)	0.365	0.297
India	1996	0.35***	(0.037)	−0.03	(0.060)	−0.06	(0.074)	0.02	(0.035)	0.505	0.208
Indonesia	1995	0.24***	(0.027)	0.07**	(0.038)	0.14***	(0.053)	0.15***	(0.023)	0.592	0.147
Ireland	1995	0.40***	(0.026)	0.01	(0.042)	0.09**	(0.064)	0.09	(0.029)	0.390	0.225
Italy	1999	0.32***	(0.031)	−0.03	(0.047)	−0.03	(0.061)	−0.02	(0.027)	0.406	0.232
Japan	1999	0.23***	(0.030)	−0.01	(0.045)	−0.02	(0.052)	−0.06	(0.026)	0.609	0.246
Malaysia	1995	0.49***	(0.028)	−0.01	(0.035)	0.00	(0.047)	−0.06	(0.020)	0.602	0.290
Mexico	1995	0.26***	(0.016)	0.03**	(0.026)	0.05*	(0.050)	0.04	(0.017)	0.715	0.053
Netherlands	1995	0.73***	(0.021)	0.07***	(0.035)	0.03	(0.050)	−0.02	(0.019)	0.550	0.284
Norway	1999	0.29***	(0.028)	−0.01	(0.044)	−0.03	(0.049)	−0.08*	(0.024)	0.423	0.156
New Zealand	1995	0.30***	(0.030)	−0.01	(0.048)	−0.01	(0.056)	−0.04	(0.027)	0.620	0.172
Philippines	1995	0.27***	(0.011)	0.01	(0.020)	0.01	(0.023)	0.03	(0.012)	0.561	0.249
Poland	1995	0.40***	(0.018)	0.04**	(0.033)	0.07**	(0.045)	0.03	(0.020)	0.363	0.219
Portugal	1995	0.36***	(0.025)	−0.03	(0.035)	−0.02	(0.053)	−0.01	(0.027)	0.358	0.192
Singapore	1995	0.36***	(0.023)	0.00	(0.031)	0.03	(0.045)	0.05	(0.021)	0.581	0.310
South Africa	2002	0.28***	(0.027)	0.00	(0.040)	−0.04	(0.053)	−0.07	(0.023)	0.616	0.171
South Korea	1995	0.48***	(0.031)	0.04	(0.047)	0.07	(0.061)	0.04	(0.031)	0.631	0.245
Spain	1999	0.23***	(0.028)	−0.03	(0.041)	−0.05	(0.050)	−0.11**	(0.025)	0.442	0.252
Sweden	1995	0.33***	(0.029)	−0.02	(0.041)	−0.05	(0.050)	−0.14***	(0.025)	0.359	0.289
Switzerland	1995	0.29***	(0.026)	−0.02	(0.038)	−0.04	(0.044)	−0.13***	(0.021)	0.389	0.329
Thailand	1995	0.38***	(0.024)	0.06**	(0.032)	0.15***	(0.052)	0.11**	(0.021)	0.598	0.228
Turkey	2006	0.31***	(0.026)	0.08***	(0.036)	0.14***	(0.057)	0.15***	(0.026)	0.485	0.132
United Kingdom	1995	0.32***	(0.046)	0.01	(0.062)	−0.04	(0.093)	−0.02	(0.036)	0.481	0.314

Table 2
Predictive Slope and Cross-Border Trade:
Annual Cross-sectional Regressions

This table summarizes the average of the slope coefficients, Newey-West adjusted t-statistics, and the average R^2s of the two-stage cross-sectional regressions. The first-stage is an annual regression using daily data

$$R_{i,t+k} = \alpha + \beta_{i,0} R_{US,t} + \beta_{i,1} R_{US,t-1} + \beta_{i,2} R_{US,t-2} + \beta_{i,3} \sum_{\tau=3}^{5} R_{US,t-\tau} + \epsilon_{i,t+k},$$

where $R_{i,t+k}$ is the stock returns of country i in USD on day $t+k$, $R_{US,t}$ is the value-weighted daily US stock market return on day t, and $k=1$ for countries outside of Americas and $k=0$ for countries in America. In Model (1), we let $\beta_{i,1} = \beta_{i,2} = \beta_{i,3} = 0$. In Model (2), we let $\beta_{i,0} = 0$. Model (3) does not impose any restriction. The reported estimates are from the second-stage cross-sectional regressions of

$$\text{Dep}_{i,j,y} = \delta_{0,j} + \delta_{1,j} Comp(i,US)_{y-1} + \delta_{2,j} CD(i,US)_{y-1} + e_{i,j,y},$$

for $j = 0,1,2,3$ and y represent different years. The adjusted R^2s of the second stage regression is reported beneath the Newey-West adjusted t-statistics. Panel A shows the result when only one independent variable is added at a time in the second-stage regression. Panel B describes the results when both variables are added similtaneously.

Panel A. Univariate Regressions

Second Stage Indep. Var.:	$Comp(i,US)$			$CD(i,US)$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\hat{\beta}_{i,0}$	-1.298^{***}		-1.317^{***}	0.853^{***}		0.879^{***}
	(-12.95)		(-13.37)	(9.19)		(9.55)
	0.186		0.189	0.256		0.264
$\hat{\beta}_{i,1}$		-0.597^{***}	-0.606^{***}		0.351^{***}	0.379^{***}
		(-6.44)	(-6.35)		(5.66)	(5.83)
		0.230	0.142		0.139	0.157
$\hat{\beta}_{i,2}$		-0.150^{**}	-0.196^{***}		0.103^{*}	0.135^{***}
		(-2.23)	(-3.49)		(1.87)	(2.70)
		0.311	0.061		0.110	0.110
$\hat{\beta}_{i,3}$		-0.081	-0.109^{**}		(0.03)	0.059^{*}
		(-1.42)	(-2.27)		(1.01)	(1.79)
		0.244	0.061		0.111	0.111

Panel B. Bivariate Regressions

	(1)		(2)		(3)	
	$Comp(i,US)$	$CD(i,US)$	$Comp(i,US)$	$CD(i,US)$	$Comp(i,US)$	$CD(i,US)$
$\hat{\beta}_{i,0}$	-0.806^{***}	0.696^{***}			-0.810^{***}	0.720^{***}
	(-8.28)	(8.04)			(-8.59)	(8.43)
	0.319				0.327	
$\hat{\beta}_{i,1}$			-0.398^{***}	0.257^{***}	-0.387^{***}	0.282^{***}
			(-5.64)	(5.32)	(-5.72)	(5.48)
			0.202		0.213	
$\hat{\beta}_{i,2}$			-0.106^{*}	0.07	-0.137^{***}	0.095^{*}
			(-1.74)	(1.19)	(-2.67)	(1.74)
			0.150		0.142	
$\hat{\beta}_{i,3}$			-0.042	0.042	-0.057	0.062^{*}
			(-0.72)	(1.19)	(-1.11)	(1.82)
			0.161		0.169	

Table 3
Stock Return Decomposition:
Currency Returns vs. Returns in Local Currency

This table summarizes the time-series average of the slopes, Newey-West adjusted t-statistics, and the average R^2s of the two-stage regression. In the first-stage regression we consider a time-series regression

$$R_{i,t+k} = \alpha + \beta_{i,0} R_{US,t} + \beta_{i,1} R_{US,t-1} + \beta_{i,2} R_{US,t-2} + \beta_{i,3} \sum_{\tau=3}^{5} R_{US,t-\tau} + \epsilon_{i,t+k},$$

estimated annually using daily data, where $R_{i,t+k}$ is the currency return of country i with respect to USD (Panel A) or the stock returns of country i in local currency (Panel B) on day $t+k$, $R_{US,t}$ is the value-weighted daily US stock market return on day t, and $k = 1$ for countries outside of Americas and $k = 0$ for countries in America. In Model (1), we let $\beta_{i,1} = \beta_{i,2} = \beta_{i,3} = 0$. In Model (2), we let $\beta_{i,0} = 0$. Model (3) does not impose any restriction. The reported estimates are from the second-stage cross-sectional regressions of

$$\text{Dep}_{i,j,y} = \delta_{0,j} + \delta_{1,j} Comp(i, US)_{y-1} + \delta_{2,j} CD(i, US)_{y-1} + e_{i,j,y},$$

for $j = 0, 1, 2, 3$ and y represent different years.

Panel A. Currency Returns

	(1)		(2)		(3)	
	$Comp(i,US)$	$CD(i,US)$	$Comp(i,US)$	$CD(i,US)$	$Comp(i,US)$	$CD(i,US)$
$\hat{\beta}_{i,0}$	−0.119***	0.254***			−0.130***	0.267***
	(−3.66)	(6.97)			(−3.94)	(7.25)
	0.227				0.242	
$\hat{\beta}_{i,1}$			−0.153***	0.111***	−0.160***	0.113***
			(−4.33)	(3.33)	(−4.20)	(3.13)
			0.160		0.171	
$\hat{\beta}_{i,2}$			−0.156***	0.053***	−0.152***	0.062***
			(−6.92)	(2.74)	(−7.27)	(3.02)
			0.127		0.136	
$\hat{\beta}_{i,3}$			−0.009	−0.002	−0.01	0.006
			(−0.56)	(−0.12)	(−0.65)	(0.35)
			0.165		0.169	

Panel B. Returns in Local Currency

	(1)		(2)		(3)	
	$Comp(i,US)$	$CD(i,US)$	$Comp(i,US)$	$CD(i,US)$	$Comp(i,US)$	$CD(i,US)$
$\hat{\beta}_{i,0}$	−0.654***	0.373***			−0.649***	0.382***
	(−5.65)	(3.85)			(−5.71)	(3.92)
	0.224				0.224	
$\hat{\beta}_{i,1}$			−0.242***	0.143***	−0.219***	0.172***
			(−3.44)	(3.36)	(−3.43)	(4.11)
			0.154		0.163	
$\hat{\beta}_{i,2}$			0.03	0.001	−0.007	0.006
			(0.65)	(0.02)	(−0.17)	(0.15)
			0.121		0.115	
$\hat{\beta}_{i,3}$			−0.05	0.039	−0.061	0.050*
			(−1.07)	(1.35)	(−1.46)	(1.75)
			0.137		0.154	

Table 4
Cross-sectional Regressions with Direct Trade and Export Share

This table summarizes the slope coefficients, Newey-West adjusted t-statistics, and the average R^2s of the two-stage regressions using different controls. The first stage is a regression of

$$R_{i,t+k} = \alpha + \beta_{i,0} R_{US,t} + \beta_{i,1} R_{US,t-1} + \beta_{i,2} R_{US,t-2} + \beta_{i,3} \sum_{\tau=3}^{5} R_{US,t-\tau} + \epsilon_{i,t+k}$$

estimated annually, where $k = 1$ for countries outside of the continent of America and $k = 0$ for countries in America. The reported estimates are from the second-stage cross-sectional regressions of

$$\text{Dep}_{i,j,y} = \delta_{0,j} + \delta_{1,j} CD(i,US)_{y-1} + \delta_{2,j} Comp(i,US)_{y-1} + \delta_{3,j} DT(i,US) + \delta_{4,j} PX(i) + e_{i,j,y},$$

where $DT(i,US)$ is country i's fraction of export to the US, $PX(i)$ is the fraction of export of country i to the total GDP of country i, for $j = 0, 1, 2, 3$ and y represent different years.

	$Comp(i,US)$	$CD(i,US)$	$DT(i,US)$	$PX(i)$
$\hat{\beta}_{i,0}$	-0.470^{***}	0.254^{**}	0.107^{***}	-0.011
	(-6.12)	(2.00)	(4.97)	(-0.76)
	0.444			
$\hat{\beta}_{i,1}$	-0.195^{***}	0.026	0.057^{***}	-0.024^{***}
	(-3.14)	(0.52)	(7.29)	(-3.60)
	0.313			
$\hat{\beta}_{i,2}$	-0.076	0.075	0.000	-0.018^{*}
	(-1.09)	(1.35)	(-0.02)	(-1.69)
	0.238			
$\hat{\beta}_{i,3}$	-0.083^{*}	0.107^{***}	-0.008^{***}	0.003
	(-1.89)	(3.11)	(-2.70)	(0.63)
	0.230			

Table 5
Trade Competition and Stock Market Correlations at the Weekly Frequency

This table summarizes the results of the two-stage panel regression with country cluster-robust standard errors. The first stage is a regression of

$$R_{i,t} = \alpha + \beta_{i,US} R_{US,t} + \beta_{i,G} R_t^* + \beta_{i,q} \Delta q_{i,t+1} + \epsilon_{i,t},$$

where $R_{i,t}$ is the weekly stock returns of country i in USD, $R_{US,t}$ is the weekly US stock returns, of country i, R_t^* is the weekly global value-weighted index denominated in USD, $\Delta q_{i,t+1}$ is the currency returns of country i relative to USD estimated annually using non-overlapping observation. Currency uncontrolled refers to the specification where $\beta_{i,q}$ is assumed to be zero. The second stage panel regression is

$$\hat{\beta}_{i,US,y} = \delta_1 Comp_{i,US,y-1} + \delta_2 CD_{i,US,y-1} + \delta_3 DT_{i,US,y-1} + \delta_4 XP_{i,y-1} + \text{Year FE}_y + e_{i,y},$$

where $\hat{\beta}_{i,US,y}$ is the beta estimated in the first-stage regression, $CD_{i,US,y-1}$, $Comp_{i,US,y-1}$, $DT_{i,US,y-1}$, and $XP_{i,y-1}$ are the trade measures of year $y-1$ as defined in the main text. There are a total of 831 observations in the second-stage panel.

	Uncontrolled		Currency control	
	Model 1	Model 2	Model 3	Model 4
$Comp(i, US)$	−2.330	−2.274	−2.980	−2.399
	(−2.29)	(−2.84)	(−2.38)	(−3.68)
$CD(i, US)$	0.406	−1.309	0.085	−0.891
	(0.88)	(−3.52)	(0.11)	(−2.58)
$DT(i, US)$		0.329		0.223
		(4.07)		(3.62)
$XP(i)$		0.194		0.166
		(2.36)		(1.76)
R-Sq	0.274	0.335	0.231	0.283

Table 6
Supply vs Demand Shock

This table summarizes the results of the two-stage panel regression with country cluster-robust standard errors, where top upstream and bottom downstream US returns are used instead of the US value-weighted portfolio returns in the first stage regression. Upstream industries are US industries that are classified as suppliers in the supply chain and downstream industries are those that are classified as close to the end users of the product in the supply chain. The first stage regression is

$$R_{i,t} = \alpha + \beta_{i,u} R^u_{US,t} + \beta_{i,d} R^d_{US,t} + \beta_{i,G} R^*_t + \beta_{i,q} \Delta q_{i,t+1} + \epsilon_{i,t},$$

where $R^u_{US,t}$ and $R^d_{US,t}$ refers to the upstream and downstream industry returns of the US. The second stage regression is identical to Table 5, but the dependent variable is $\hat{\beta}_{i,u}$ in Models 1-4, and $\hat{\beta}_{i,d}$ in Models 5-8, respectively. There are a total of 831 observations in the second-stage panel as in the previous regression with year fixed effects.

	Upstream				Downstream			
	Uncontrolled		Currency control		Uncontrolled		Currency control	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Mode 7	Model 8
$Comp(i, US)$	−1.314	−1.516	−1.348	−1.579	0.022	0.094	0.001	0.065
	(−5.12)	(−5.49)	(−5.73)	(−6.24)	(0.09)	(0.39)	(0.01)	(0.31)
$CD(i, US)$	0.510	0.055	0.192	−0.121	0.144	−0.349	0.289	−0.026
	(4.09)	(0.25)	(1.85)	(−0.58)	(1.12)	(−1.62)	(2.96)	(−0.15)
$DT(i, US)$		0.080		0.097		0.110		0.022
		(2.37)		(3.39)		(3.55)		(0.87)
$XP(i)$		0.104		0.050		0.039		0.072
		(3.21)		(1.50)		(1.14)		(2.66)
R-Sq	0.281	0.301	0.240	0.264	0.130	0.152	0.120	0.136

Table 7
Common Demand and Competition across Continents

This table summarizes the statistics of the common demand and competition measures across countries. These two measures are computed for every country pair, then we take the simple average of the trade measures depending on which continent the country pair belongs to. Panel A summarizes the result for the common demand share and Panel B is for competition.

Panel A. Common demand across continents

	Africa	Asia	Europe	N America	Oceania	S America
Africa	0.670	0.545	0.530	0.477	0.542	0.556
Asia	0.542	0.697	0.342	0.479	0.548	0.479
Europe	0.548	0.338	0.620	0.344	0.406	0.404
N America	0.455	0.464	0.331	0.719	0.613	0.526
Oceania	0.614	0.681	0.402	0.555	0.853	0.582
S America	0.570	0.514	0.395	0.572	0.571	0.733

Panel B. Competition across continents

	Africa	Asia	Europe	N America	Oceania	S America
Africa	0.058	0.076	0.109	0.120	0.023	0.040
Asia	0.023	0.184	0.116	0.176	0.033	0.023
Europe	0.033	0.113	0.171	0.143	0.028	0.043
North Am.	0.022	0.120	0.108	0.129	0.033	0.037
Oceania	0.047	0.062	0.096	0.116	0.103	0.033
South Am.	0.026	0.055	0.059	0.133	0.050	0.071

Table 8
Global Competition and Stock Market Return Correlations

This table summarizes the results of the two stage panel regression with country cluster-robust standard errors. The first stage is a regression of

$$R_{i,t}^{j\$} = \alpha + \beta_{i,j,S} R_{j,t} + \beta_{i,j,G} R_t^{*,j\$} + \beta_{i,j,q} \Delta q_{i,j,t+1} + \epsilon_{i,j,t},$$

where $R_{i,t}^{j\$}$ is the weekly stock returns of country i denominated in currency of country j, $R_{j,t}$ is the weekly stock returns of country j in currency j, $R_t^{*,j\$}$ is the weekly global value-weighted index denominated in currency j, $\Delta q_{i,t+1}$ is the currency returns of country i relative to country j. The regressions are estimated annually using non-overlapping observation. Currency uncontrolled refers to the specification where $\beta_{i,j,q}$ is assumed to be zero. The second stage panel regression is

$$\hat{\beta}_{i,j,S,y} = \delta_1 Comp_{i,j,y-1} + \delta_2 CD_{i,j,y-1} + \delta_3 DT_{i,j,y-1} + \delta_4 XP_{i,j,y-1} + \text{Year}_y + \text{Same Continent}_{i,j} + I_j + e_{i,j,y},$$

where $\hat{\beta}_{i,US,y}$ is the beta estimated in the first-stage regression, $CD_{i,j,y-1}$, $Comp_{i,j,y-1}$, $DT_{i,j,y-1}$, and $XP_{i,y-1}$ are the trade measures of year $y-1$ as defined in the main text, and I_j is the country 2 (focal country) fixed effect. There are a total of 28,956 observations in the second-stage panel.

	Uncontrolled				Currency Control			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
$CD(i,j)$	0.490	0.248	0.361	0.361	0.465	0.274	0.219	0.141
	(13.97)	(6.27)	(7.73)	(7.73)	(12.56)	(5.79)	(4.76)	(6.28)
$Comp(i,j)$	−0.301	−0.483	−0.453	−0.453	−0.247	−0.392	−0.643	−0.016
	(−4.45)	(−6.86)	(−4.86)	(−4.86)	(−3.74)	(−5.92)	(−8.30)	(−2.41)
$DT(i,j)$				−0.038				−0.043
				(−8.28)				(−9.44)
$XP(i)$				0.014				0.006
				(0.72)				(0.30)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Same Continent FE	N	Y	Y	Y	N	Y	Y	Y
Country 2 Dummy	N	N	Y	Y	N	N	Y	Y
R-Sq	0.060	0.076	0.110	0.124	0.067	0.079	0.115	0.137

A. Data

1. Data

We collect our data from several different sources. The international stock index returns are obtained from the Daily World Indices provided by Wharton Research Data Services (WRDS). The database contains index returns from 36 countries from 1986 onward. Both developed and emerging economies are well covered in this database. From the dataset, we take four indices from North and South America (Brazil, Mexico, Chile, and Colombia), two indices from Oceania (Australia and New Zealand), 10 indices from Asia (China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Thailand, and Turkey), two indices from Africa (Egypt and South Africa), and 18 indices from Europe (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, and United Kingdom).

In addition to the data from Daily World Indices, we obtain additional index returns. For the US, we take the CRSP daily value-weighted index including dividends (US), and for Canada, which is excluded from the WRDS dataset, we take the S&P/TSX Composite Index (Canada). We employ the US as the focal country for the main analyses, and consider the global panel as our supplementary analysis. Also, among indices covered by the WRDS, we note that we remove Hong Kong from the analysis because firms listed in the Hong Kong stock exchange have a strong correlation with China's trade activities, probably even stronger than with Hong Kong's own trade activities. We also remove Taiwan since some of the Trade database detailed below is missing.

These country-level stock index returns are converted to USD terms, using daily exchange rates compiled by the International Monetary Fund (IMF) from reports provided by each central bank at the end of the day. For currencies not reported on the IMF website, we obtain them directly from the corresponding central bank websites.

2. The vertical position of industries

We use the Input-Output table of the Bureau of Economic Analysis (BEA) to quantify the vertical position of industries.

The BEA produces supply and use tables separately. Supply tables show the goods and services produced by each industry, while use tables show who uses these goods and services. The supply and use tables can be combined to produce a matrix of the flows of commodities to the final customer. We follow Antràs, Chor, Fally, and Hillberry (2012) to construct a measure of vertical position for each industry. The supply table ($M \times N$ matrix) shows how N different goods and services produced in each of the M industries. The use table ($N \times M + 1$ matrix) contains how these M industries, in addition to the end customer, use the N different produced products. To calculate the proportion of products produced in one industry that flows into another, we can combine the supply and use tables. The steps are detailed, e.g., in Ahern and Harford (2014).

The first step is to normalize these two matrices by dividing each element by its row mean such that each row has a sum of one. The next step is to multiply the normalized supply table (S) by the use table (U) to generate a M by $M + 1$ matrix. The last column of this matrix contains information about the proportion of industry output that is consumed by the end customer. If this proportion is high, the industry is more likely to be a downstream industry. If this is low, the industry is more likely to be an upstream industry.

The vertical position (VP) is defined as in Antràs, Chor, Fally, and Hillberry (2012). That is,

$$VP_{M\times 1} = (I_{M\times M} - S_{M\times N} \times U_{N\times M})^{-1} 1_{M\times 1}, \tag{10}$$

where $I_{M \times M}$ is a M-dimensional identity matrix and $1_{M \times 1}$ is a vector of ones. Note that the last column of the user matrix is removed from the computation but is redundant after the normalization. The M-vector VP is the vertical position of each industry. If this is high the industry is more likely to be downstream and vice versa.

3. Control for the degree of economic development

One may also conjecture that competitors of the US are likely to be countries that are more developed and also comparable to the US in size. It is also possible that their capital markets are more advanced and more subject to their own economic shocks. As a result, the equity returns of these two countries may seem as if they move independently. To test this feasibility, we repeat the analysis after adding Gross Domestic Product (GDP) per capita and the total GDP as control variables that proxies for economic development and size, respectively. Since the relative level economic development should matter, we take the absolute difference of the logarithms of GDP and GDP per capita.

Panels A of the Table A1 summarize the results of this alternative specification. Even after controlling for GDP per capita and GDP, we find no difference in the magnitude and significance of our trade linkage variables in explaining the cross-country dynamics of stock index returns. Panel B shows the weekly US panel and global panel results. Overall, we find that competition is negatively related to stock return comovement and common demand is positively related to comovement consistent with our main findings.

Table A1
Regressions Controlling for the level of economic development

This table summarizes the slope coefficients, Newey-West adjusted t-statistics, and the average R^2s of the two-stage regressions using different controls. The first stage is a regression of

$$R_{i,t+k} = \alpha + \beta_{i,0}R_{US,t} + \beta_{i,1}R_{US,t-1} + \beta_{i,2}R_{US,t-2} + \beta_{i,3}\sum_{\tau=3}^{5} R_{US,t-\tau} + \epsilon_{i,t+k}$$

estimated annually, where $k = 1$ for countries outside of the continent of America and $k = 0$ for countries in America. The reported parameter estimates are from the second stage cross-sectional regressions of each of these $\beta_{i,\cdot}$s on common demand and competition measures, controlling for direct trade and export share.

Panel A. Cross-sectional Regressions using Daily Data

	$CD(i, US)$	$Comp(i, US)$	GDP Diff (i, US)	GDPC Diff (i, US)
$\hat{\beta}_{i,0}$	0.820***	−0.916***	0.009*	−0.037***
	(7.37)	(−7.01)	(1.68)	(−5.22)
			0.409	
$\hat{\beta}_{i,1}$	0.247***	−0.344***	−0.002	0.012**
	(2.86)	(−3.49)	(−0.53)	(2.00)
			0.306	
$\hat{\beta}_{i,2}$	0.065	−0.107**	0.003	0.010***
	(2.23)	(−2.97)	(0.73)	(3.15)
			0.232	
$\hat{\beta}_{i,3}$	0.045	−0.036	0.002	0.007***
	(2.32)	(−0.34)	(0.68)	(3.52)
			0.253	

Panel B. Panel Regressions using Weekly Data

	US Panel		Global Panel	
	Model 1	Model 2	Model 3	Model 4
$CD(i, US)$	0.534	0.477	0.298	0.156
	(1.09)	(1.42)	(5.29)	(3.41)
$Comp(i, US)$	−1.901	−2.037	−0.356	−0.454
	(−1.89)	(−2.67)	(−3.29)	(−4.82)
GDP Cap Diff	−0.001	−0.041	−0.008	0.009
	(−0.03)	(1.00)	(−1.58)	(1.16)
GDP Diff	−0.018	0.042	0.024	−0.009
	(−0.34)	(0.87)	(2.39)	(−2.32)
Currency Control	N	Y	N	Y
Year FE	Y	Y	Y	Y
Country1 FE	N	N	N	N
Country2 FE			Y	Y
Same Continent Dummy			Y	Y
R-Sq	0.292	0.244	0.091	0.186