Import Competition and the Cost of Capital[†]

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Abstract

We investigate how the displacement risk associated with import competition is reflected in the cost of capital. We sort U.S. industries based on exposure to import competition based on shipping costs. We find that the output and employment in high exposure industries is more sensitive to tariff cuts than in low exposure industries, consistent with the idea that they face a higher risk of being displaced by import competition. Finally, we show that high exposure industries have a higher cost of capital. We confirm displacement risk of import competition is priced and covaries with the marginal utility of the representative agent.

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Contents

1 Introduction

The dramatic increase in import penetration is among the most important changes that affected the U.S. economy over the past decades. The share of imports in the consumption of manufacturing goods in the U.S. has increased almost fivefold between 1975 and 2005, reaching 25%[1]. This fact has attracted a lot of scrutiny but its implications are still debated. Among the benefits of increased import competition are the availability of more product variety (Broda and Weinstein, 2006) at lower prices. In addition, recent evidence suggests that domestic firms respond to the threat of import competition by investing in innovation (Amiti and Khandelwal, 2013; Bloom, Draca, and Van Reenen, 2011).

A stream of research has emphasized the adverse consequences of import competition for U.S. employment. In particular, the increase in China's exports, which accelerated after its admission to the World Trade Organization is estimated to account for up to 25% of the drop in U.S. manufacturing employment (Acemoglu et al., 2014; Autor, Dorn, and Hanson, 2013; Pierce and Schott, 2012). Frictions on the labor market seem to have prevented a quick reallocation of the workforce, so that U.S. regions most exposed to Chinese imports experienced higher employment, lower wages, and lower participation rates. Detailed studies at the worker level even show that Chinese import competition affected long-term earning trajectories (Artuç, Chaudhuri, and McLaren, 2010; Autor, Dorn, Hanson, and Song, 2014). Whether the benefits of import competition outsize these costs is thus an open question, with important implications for policy making.

We contend we can learn about the implications of import competition by observing asset prices. If firms that face a larger displacement risk from import competition also have different risk premia than non exposed firms, then asset prices inform us about how and how much do investors care about that risk of import competition. We find firms with greater exposure to that risk also command higher risk premia, suggesting the price of import competition risk is negative. States of the world where firms suffer from import competition are also states where consumption is dear for investors. Hence our result sheds light on the perceived benefits of openness to trade.

Within a standard model of trade flows we propose a mechanism through which investors may suffer from import competition rather than just benefiting from it through lower good prices. Investors' home bias limits their ability to do risk sharing efficiently and let them exposed to import risk: as a foreign firm enters a domestic market and con-

[1] Authors' computations based on Census data and NBER CES data.

quers market shares, investors' home bias prevents them from the natural risk sharing of a globally diversified portfolio.

We start by sorting industries with respect to their exposure to displacement risk. We hypothesize that firms are less likely to be displaced if the shipping costs incurred to replace their products with foreign ones are larger. We follow Bernard, Jensen, and Schott (2006b) and exploit import data which allows us to compute the various costs associated to shipments, called Cost-Insurance-Freight as a percentage of the price paid by the importer (CIF). We document substantial cross-sectional variation and timeseries persistence in CIF, consistent with the idea that this proxy captures structural and slow-moving barriers to import competition.

We then show that sectors with high CIF, and therefore a low exposure to import competition, are much less sensitive to changes in tariffs. We measure tariff changes as the annual change in tariff rates, defined as the ratio of collected duties to the total value of imports in any given industry and year. We show that a drop in tariffs by 1 percentage point, increases import penetration by 1 percentage point over the next five years, but only in sectors with low CIF. These sectors experience a drops in employment, shipment, and value added growth by respectively 2%, 2.3% and 3% over the subsequent five years. At the firm level, stock returns drop by 4% following an drop by 1 percentage points in tariffs, but again only in low CIF sectors. The intuition for this result is straightforward: imports are less elastic to changes in tariffs in sectors with high CIF mark-ups. As a result, firms and employment are less displaced in these sectors.

Motivated by these results, we develop additional pricing predictions within the standard Melitz-Chaney model of trade. First we derive the elasticities of industry profit to the cost of bilateral trade. Then we characterize the effect of a change in that cost on domestic households' utility. Under our limited risk sharing assumption, we show their utility is subject to two competing effects: a positive price effect where the price of the final consumption index decreases as import competition intensifies; a negative income effect due to the decrease in households' wealth since the value of the domestic portfolio drops after an increase in import competition. The sum of both effects on final utility is ambiguous: the sign of the risk premium associated with the risk of import competition would determine if the price or the income effect dominates.

We compute monthly four factor alpha of five stock portfolios based on their industry CIF in the previous year. We find that the lowest CIF portfolio has an abnormal returns of 50 basis points, and that the hedge portfolio (high minus low CIF) generates abnormal returns of 60 basis points per month, or over 7% in annualized terms. Following the guidance of the model, we split the sample further into tertiles of size, return on asset, and fixed costs intensity. We proxy for the intensity of fixed costs using three alternative proxies, namely the correlation of sales growth and cost growth in the past five to ten years, the ratio of fixed assets to total assets, and the ratio of sales, general, and administrative expenses (SGA) to sales. Consistent with the theoretical predictions, we find that the abnormal returns are concentrated among small firms with low return-on-assets and high fixed costs. We also run Fama-McBeth regressions of monthly stock returns on the value of CIF (rather than quintiles of CIF), and we find similar effects. Taken together, the results indicate that stocks more exposed to import competition earn higher returns. This suggests that displacement risk covaries positively with the marginal utility of the representative investor.

Related Literature — We contribute to the literature, which starting with Melitz (2003) and Bernard, Jensen, Eaton, et al. (2003), has taken into account firm heterogeneity to analyze the gains from trade.[2] A common prediction of these models is that international trade elevates productivity through the contraction and exit of low-productivity firms and the expansion and entry into export markets of high productivity firms. In this framework, globalization generates both winners and losers among firms within an industry, as better-performing firms expand into foreign markets, while worse performing firms contract in the face of foreign competition. Consistent with this idea, Pavcnik (2002) finds that roughly two-thirds of the 19 percent increase in aggregate productivity following Chiles trade liberalization of the late 1970s and early 1980s is due to the relatively greater survival and growth of high-productivity plants. Bernard and Jensen (2004) find that almost half of all U.S. manufacturing productivity growth during 1983-1992 is explained by the reallocation of resources towards exporters. Trefler (2004) shows that 12 percent of the workers in low-productivity firms lost their jobs after the Canada-U.S. free trade agreement.

We also build on recent work that points out the displacement risk associated with imports. Bernard, Jensen, and Schott (2006a) find that exposure to low-wage country imports is negatively associated with plant survival and employment growth, and Bernard, Jensen, and Schott (2006b) find that the probability of plant death is higher in industries experiencing declining trade costs. Our results also relate to recent studies of the effect

[2]For recent reviews, see Bernard, Jensen, Redding, et al. (2007), Melitz and Trefler (2012), Melitz and Redding (2014)

on the labor market of the acceleration of Chinese import penetration (Acemoglu et al., 2014; Autor, Dorn, and Hanson, 2013; Autor, Dorn, Hanson, and Song, 2014; Pierce and Schott, 2012), or of trade shocks more generally (Artuç, Chaudhuri, and McLaren, 2010; Ebenstein et al., 2014). Our contribution is to show that displacement risk is reflected in the cost of capital, which suggests that the marginal utility of the representative investor covaries positively with this risk.

Finally, we add to a growing literature in finance that focuses on the implications of product market dynamics, including international trade for asset pricing. Recent contributions include Hou and Robinson (2006), Tian (2011), Loualiche (2013), Ready, Roussanov, and Ward (2013). A common result in these papers is that the threat of entry tends to be priced in the cross-section of expected returns. In addition, a series of papers have used tariff cuts to instrument for import competition and have found that it affects firms capital budgeting decisions (Bloom, Draca, and Van Reenen, 2011; Fresard and Valta, 2014), and capital structure Valta (2012) and Xu (2012). Firms have also been found to suffer less from import competition if they have larger cash holdings (Fresard, 2010) and R&D expenses (Hombert and Matray, 2014). In relation to these papers, we show that the mere threat of import competition has an effect on firms through their higher cost of capital.

Outline — The remainder of the paper is organized as follows. Section 2 presents the effect of tariff cuts on industry outcomes conditional on shipping costs. In Section 3, we lay-out the theoretical framework. Section 4 describes the relationship between shipping costs and risk premia, and Section 5 concludes.

2 Shipping costs, tariff changes and real outcomes

2.1 Measuring shipping costs

We start by sorting industries with respect to their exposure to displacement risk. We hypothesize that firms are less likely to be displaced if the shipping costs incurred to replace their products with imported ones are larger. As a first path, we measure these costs using the actual shipping cost paid by importers. More precisely, we follow Bernard, Jensen, and Schott (2006b) and measure ad valorem Cost-Insurance-Freight costs from underlying product-level U.S. import data complied by Feenstra (1996), available from 1975 to 2005. Our proxy for trade costs (CIF) is the markup of the Cost-Insurance-Freight value over the Free-on-Board value.

An alternative strategy to estimate the exposure of sectors to import competition would be to directly sort sectors on import penetration, or to compare industries with and without U.S. imports. However, there may be other drivers of import penetration than shipping costs which explain import penetration. In particular, it could be that other forms of displacement risks threaten domestic firms, and also lead to larger import penetration. Given that we are interested in capturing the covariance of the risk of import competition with the marginal utility of the representative investor, we want to avoid that our measure of exposure to import competition is driven by other risk exposure.

Instead, guided by prior work, we argue that CIF is a structural characteristic rooted in the nature of the output produced by any given industry. According to Hummels (2007), CIF depends on distance, quality, and weight/value ratio, which are persistent and vary a lot across industries. To check whether CIF is indeed slow moving, we sort sectors by quintiles of CIF each year, and look at the transition across quintiles over time. We present this analysis in Table 1. The first panel highlights the transition from year $t-1$ to year t, while the second panel shows the transition from year $t-5$ to year t. Overall, sectors in the top or bottom quintile of CIF remain in the same quintile 85% of the time. To document the substantial heterogeneity of CIF across industry in our sample, we compute the mean CIF for the top and bottom quintiles of CIF. As evidenced from Figure 1, the CIF mark-up on the Free-on-Board value is 15% in high CIF industries, and approximately 2% in low CIF industries.

The main limitation of CIF is that it does not take into account unobserved shipping costs. As argued by Anderson and Wincoop (2004) those include direct costs such as information barriers and contract enforcement, as well as indirect costs such as holding cost for the goods in transit, inventory cost due to buffering the variability of delivery dates, or preparation costs associated with shipment size. Unless these costs are correlated in systematic ways with CIF, they are likely to introduce noise in our estimation of the exposure of industries to displacement risk, which should generate an attenuation bias in our results.[3]

2.2 Empirical strategy

Next we confirm CIF is a relevant proxy for the exposure to the displacement risk associated to import competition. To do so, we isolate plausibly exogenous shocks to the attractiveness of imported goods relative to domestically produced goods, which should affect import penetration and ultimately shipments, employment, and value added, depending on the level of CIF. Such shocks are hard to come by. As a first path, we rely on tariff changes. If indeed CIF acts as a protection against displacement risk, then import penetration and other outcomes should be less responsive to tariff changes in high than in low CIF sectors.

The key identification threat is tariff changes might be endogenous to industry outcomes. Unfortunately, this is probably to be the case. Tariff changes likely depend on past and expected industry outcomes. First, past performance could trigger tariff changes. Policymakers might decide to decrease tariffs in industries that have done particularly well in the past, because they are unlikely to be harmed much by tariff cuts. Alternatively, policymakers could instead give up on industries that have been doing poorly and reduce tariff barriers in those. Fortunately, we can check that tariff changes are not correlated with past industry penetration and output growth.

Alternatively, policymakers might change tariffs in anticipation of future investment opportunities. For instance, they might cut tariffs in industries that they expect will do great in the future. If anything, this should bias estimates against finding an negative effect of tariff changes on import penetration, output and employment. If, instead, policymakers cut tariffs when they expect industries to do poorly irrespective of import penetration, then this might be a concern. However, in order to fully explain our results, it should be the case that they cut tariffs when the expect poor outcomes in low CIF sectors, but not in high CIF ones. An important identifying assumption of our estimates is therefore that the

[3]For recent contributions to the literature that adopts a structural approach to measure trade costs and estimate their effect on trade, see for instance Hummels and Skiba (2004), Das, Roberts, and Tybout (2007), or Irarrazabal, Moxnes, and Opromolla (2013).

way in which expectations of future sector outcomes motivate tariff changes is the same for high and low CIF industries.

Finally, for our identification to be valid, it needs to be the case that the exclusion restriction is satisfied, namely that tariff changes affect import penetration and sector outcomes only through their effect on imports. In particular, it should not be the case that tariff changes in the U.S. are matched abroad in a way that would also affect the exports of U.S. firms, and differentially so for high and low CIF sectors. Fortunately, we check and find that tariff changes do not significantly affect the exports of domestic firms, and not differentially so for high and low CIF sectors. In addition, if it was the case that tariff changes also affect exports, it would probably go against finding the results that we document here: following a bilateral tariff cut, low CIF sectors should be exposed to higher imports, but should also benefit from the ease of entry into foreign markets.

Subject to this identifying assumption, we measure tariffs in each sector and year following Bernard, Jensen, and Schott (2006b) and Fresard (2010), as the ratio of customs duties to the Free-on-Board value of imports. A key variable of interest, *Tariff change*, is defined as the difference in tariffs with respect to the previous year. A great advantage of using actual import data is that we are capturing effective tariff changes. One obvious limitation of this approach is that we do not observe variations in non-tariff barriers. However, unless these barriers are correlated in systematic ways with tariffs, they are likely to introduce noise in our estimation of the effect of tariff changes on sector outcomes, which should generate an attenuation bias in our results.

Another important concern with the construction of the tariff change variable is that variations in the composition of products or importers within industries could in theory induce variation in effective tariffs even if the statutory tariffs remain constant. This would be a concern if, for instance, there are goods with different tariffs in a given industry, and that consumers shift to lower tariff goods when they expect the domestic production to worsen. Again, in order to fully explain our results, it would have to be the case that consumers only behave this way in low CIF industries, but not in high CIF ones. However, we try to go one step further to assuage this concern. We first build another variable called *Large tariff change* which is equal to the tariff change if it is larger than twice the median absolute tariff change in the sample, and zero otherwise. This variable is probably more likely to capture abrupt statutory tariff changes triggered by policy decisions, rather than gradual effective tariff changes due to the evolving composition of the bundle of imported goods. Moreover, we check that we find similar results when we run our specifications using exclusively the tariff cuts induced by the Uruguay round of the World Trade Organization (WTO) in the late nineties.

With these concerns in mind, we estimate the following panel regressions where i indexes sectors and t indexes years:

$$
\begin{aligned}
Y_{i,t+1,t+6} \;=\; & \alpha + \beta \cdot \text{High-CIF}_{i,t} \cdot \Delta\text{Tariff}_{i,t} \;+\; \gamma \cdot \text{High-CIF}_{i,t} + \delta \cdot \Delta\text{Tariff}_{i,t} \;+ \\
& \eta \cdot X_{i,t} \;+\; \theta_i \;+\; \kappa_t \;+\; \epsilon_{i,t},
\end{aligned}
$$

where $Y_{i,t+1,t+6}$ is the change between year $t+1$ and year $t+6$ in sector i in the variables of interest, including import penetration, log employment, log shipment and log value added. High-CIF$_{i,t}$ is a dummy equal to one if the sector's CIF lies in the top quintile of the distribution in year t, and zero if it lies in the bottom quintile. ΔTariff$_{i,t}$ is the change in tariff between year $t-1$ and t. $X_{i,t}$ is a vector of sector level time-varying characteristics including the level of tariffs, import penetration , log employment, log value added and log shipments. θ_i and κ_t are sector and time fixed effects, respectively. Finally, $\epsilon_{i,t}$ is an error term. Standards errors are corrected for clustering at the sector level. Import penetration is measured at the industry-year level as the ratio of the Free-on-Board value of imports and the sum of total shipments and imports minus exports. Employment, shipments, value added, are obtained from the NBER CES files. The coefficient of interest are δ., which measures the effect of the tariff change on low CIF sectors, and β, which captures the differential effect of the tariff change on high CIF sectors.

2.3 Results

Table 2 presents the summary statistics for the high and low CIF sectors respectively, where the former are those which CIF lies in the top quintile of the distribution in a given years, and the latter are those which CIF lies in the bottom one. As already noted, high CIF sectors have a mark-up of 15% above the Fee-on-Board price, almost eight times larger than low CIF sectors. The level of tariffs is only slightly higher in high CIF industries. Unsurprisingly, both penetration and changes in penetration are lower in less exposed sectors. This validates our idea that CIF protects from import competition. Low CIF sectors are larger than high CIF ones, and experience a lower employment and output growth over the sample period.

In Table 3, we present the effect of tariff shocks on sector outcomes, conditional on the level of CIF. The results presented in Column 1 of the first panel show that a 1 percentage point increase in tariffs leads to a 1 percentage point decrease in import penetration over the next five years. However, tariffs have no effect on the import penetration of high CIF sectors. This confirms that CIF act as a protection against import penetration. In Columns 2, 3, and 4, we consider the effect of tariff changes on employment, shipment and value added growth. We find that a 1 percentage point increase in tariffs leads to an increase by 2% in employment growth, by 2.3% in shipments growth, and by 2.9% in value added growth, but only in low CIF industries. Instead, high CIF sectors do not experience any significant change in these outcomes.

As mentioned above, a concern with our identification strategy is that tariff changes might be triggered by long-term trends. However, we show in Table B.1 in the Appendix that if we replace the tariff change from year $t-1$ to t with the tariff change from year $t+4$ to $t+5$, it has no predictive power for the evolution of import penetration, employment, output or value added. Hence, tariff changes do not seem to be responding to trends in any systematic ways, for either high or low CIF sectors.

We face another concern related to the measurement of tariff changes. If these are triggered differential endogenous recomposition of the import bundle in high and low CIF sectors, then our estimates might be biased. We attempt to address this concern in two ways. We first identify the elasticities of sector outcomes to large tariff changes only, which are more likely to be due to abrupt statutory tariff changes. We define a large tariff change as a variation at least as large as two times the median absolute change over the sample period. The result of this experiment is presented in the second panel of Table 3. Reassuringly, the estimates remain unaffected. The other test we do to make sure that what we are picking up are statutory tariff changes is to contrast CIF with a dummy taking the value of one in the years 1995 to 1998, when most of the tariff cuts associated to the Uruguay round of the World Trade Organization took place. Table B.2 in the Appendix lays out the results. Column 1 shows that in these three years, the average tariff change is -0.2% across sectors, and that there is no difference between high and low CIF sectors. Relative to the most exposed sectors, less exposed ones are found to experience much better outcomes in the subsequent five years years. Import penetration increases by 4.5 percentage points less, and employment, shipments and value added grow by 7 to 8% more.

Finally, we also ask whether the adverse effects that we document on industry dynamics translate into cash-flow losses, by looking at stock returns. If firms which experience a displacement shock due to import competition cannot instantaneously reallocate their inputs to other uses, they should experience negative returns when the shock materializes. This is exactly what we test in Table 4, where we run the same regressions than earlier at the firm level. The coefficient on the tariff change variable indicates that a 1 percentage point increase in tariffs leads to an increase by 0.4% in monthly stock returns in the year of the announcement, or nearly 5% in annualized terms. When we introduce stock fixed effects, the coefficient remains highly significant and the point estimates increases slightly. Yet these results only hold for low CIF sectors, that are exposed to import competition. We fail to find any significant effect of tariff changes on stock returns in high CIF industries. As placebo test, we replace tariff change from year $t-1$ to t with the tariff change from year $t+4$ to $t+5$. Reassuringly, Table B.3 in the Appendix shows that this variable has no or very little predictive power for stock returns in year t.

3 Model

To build intuition about the role of the risk of import competition, we analyze the role of changes in trade costs within a standard model of trade flows. We follow the trade literature and develop our ideas in the workhorse model of Chaney (2008) and Melitz (2003). The model is static and we derive all our implications from comparative statics.

3.1 Setup

We solve the model in appendix (A). We start by setting up the model. As in Chaney (2008), there are N countries that produce goods using labor as sole input. Each country has a labor force L_n, that determines the size of its economy. In each country consumers derive utility from the consumption of goods across $H+1$ industries. Industry serves as a numeraire; there is a single good produced in industry 0, and it is freely tradable such that its price is unique across countries. In the H other industries multiple firms coexist and produce differentiated varieties of the same good. Households' utility of consuming the set $q_n^h(\cdot)$ of differentiated variety in industry h is summarised according to a constant elasticity of substitution (CES) aggregator:

$$Q_n^h = \left[\int_{\Omega_n^h} q_n^h(\omega)^{\frac{\sigma_h}{\sigma_h - 1}} \mathrm{d}\omega \right]^{\frac{\sigma_h}{\sigma_h - 1}},$$

where σ_h represents the industry specific elasticity of substitution across varieties, and Ω_n^h is the set of varieties available to households in industry h of country n. Finally the upper-tier utility $\mathcal{U}$ over the $H+1$ industries is of the Cobb-Douglas form:

$$\mathcal{U}_n = q_0^{\mu_0} \prod_{h=1}^{H} (Q_n^h)^{\mu_h},$$

where μ_h represents the expenditure shares of each industry, when we impose $\sum_{h \geq 0} \mu_h = 1$.

Supply Side — The homogenous good, in industry 0, is traded freely and serves as the numeraire in the global economy. Hence the relative productivity of each country for the good pins down the local wage rate w_n. For the other H industries, production is simple as firms operate a linear technology in labor. Within an industry firms differ by their productivity φ. Firms can produce so as to export into another country. We define a market as a triplet $\{j, i, h\}$ of firms from country j exporting into country i in industry h. Firms face two types of costs, variable *iceberg* costs, τ and fixed costs f that are both market specific. Thus the cost of producing q units of a good in market $\{j, i, h\}$ is:

$$c^h_{ji}(q; \varphi) = \frac{w_j}{\varphi} \tau^h_{ji} q + f^h_{ji}.$$

Iceberg costs are such that for each unit of the good produced only a fraction $1/\tau$ makes it to the importing country. The fixed costs are market specific as they represent the overhead of a firm forin a market.[4].

Within each industry firms operate in a monopolistically competitive environment: they take households' demand curve as given and set their prices accordingly. Given households' constant elasticity of subsittution, σ_h, across varieties, firm prices are set at a constant markup over marginal cost:

$$p^h_{ji}(\varphi) = m_h w_j \tau^h_{ji} / \varphi,$$

where $m_h = \sigma_h / (\sigma_h - 1)$ is the markup in industry h.

Firm productivity is random; firms draw their productivity level φ upon entry into an industry from a Pareto distribution with tail parameter γ_h:[5] the probability of a draw below a given level φ, is:

$$\Pr\{\tilde{\varphi} < \varphi\} = G_h(\varphi) = 1 - \varphi^{-\gamma_h}.$$

Our framework is static. We do not allow for firm entry that could be endogenous to the industry structure or profits.[6] Hence we assume there is a fixed supply of entrants at the industry level; as in Chaney (2008) or Eaton and Kortum (2002) we assume the supply of entrants is proportional to the size of the domestic economy. Hence firms earn profits from their monopolistic position. We are interested in higher frequency movements where the supply of entrants is relatively inelastic. So movements in profits are largely due to entry and exit of existing firms into a market.

[4]We rule out triangular arbitrage by imposing $\tau_{ik} \leq \tau_{ij} \cdot \tau_{jk}$

[5]The Pareto distribution assumption follows Chaney (2008); it reflects the actual distribution of firm sizes in the U.S.

[6]See Loualiche (2013) for a dynamic analysis in a domestic economy.

Equilibrium Quantities — Our main interest lies in the firms' profit functions and how they respond to changes in the competitive structure. Firm profits depend directly on the elasticity of substitution across goods in an industry and their idiosyncratic productivity φ. The building block is the local firm profit from operating in market $\{j, i, h\}$:

$$\pi_{ji}^h(\varphi) = \frac{\mu_h}{\sigma_h} Y_i \cdot \left[\frac{\sigma_h}{\sigma_h - 1} \frac{w_j \tau_{ji}^h / \varphi}{P_i} \right]^{1-\sigma_h} - f_{ji}^h.$$

where P_i^h is the price index of all varieties in industry h of country i. The equilibrium price index is simply $P_i^h = \kappa_1^h \cdot \theta_i^h \cdot Y_i^{\frac{1}{\gamma_h} - \frac{1}{\sigma_h - 1}}$. κ_1^h is a constant defined in appendix A.1. The coefficient θ_i^h represents an index of the remoteness of country i, it is expressed as a function of the weighted trade costs on market $\{k, i, h\}$, ϑ_{ki}^h as

$$\theta_i^{-\gamma_h} = \sum_k \vartheta_{ki}^h,$$
$$\text{where} \quad \vartheta_{ki}^h = w_k L_k (w_k \tau_{ki}^h)^{-\gamma_h} f_{ki}^{1 - \frac{\gamma_h}{\sigma_h - 1}}$$

From the profit function we understand why firms get in and out of markets. If φ is too low a firm's profit cannot cover the fixed cost of operation in the market. Hence a firm's productivity level determines if they enter a market or not. We define the productivity cutoff for market $\{j, i, h\}$ as $\underline{\varphi}_{ji}^h = (\pi_{ji}^h)^{-1}(0)$. We detail the full expression of the productivity cutoff in the appendix. The cutoff productivity $\underline{\varphi}_{ji}^h$ is such that only firms with productivity above it choose to enter the market. That cutoff represents a second margin of adjustment of trade flows to changes in trade costs: the extensive margin. If a market's cutoff becomes larger because of an increase in trade costs than all supramarginal firms stop their operation on that market.

However the key quantity of interest for us is the average profit in an industry as it is what we observe empirically (see table 3). To get the average profit we integrate over all the productivity levels φ:

$$\pi_{ji}^h = \int \pi_{ji}^h(\varphi) \mathrm{d}G_h(\varphi) = \frac{\mu_h}{\gamma_h} \cdot \frac{\sigma_h}{\sigma_h - 1} \cdot Y_i \cdot (w_j \tau_{ji}^h)^{-\gamma_h} \ (f_{ji}^h)^{1 - \frac{\gamma_h}{\sigma_h - 1}} \ (\theta_i^h)^{\gamma_h},$$

such that total aggregate profits is simply:

$$w_j L_j \pi_{ji}^h = \frac{\mu_h}{\gamma_h m_h} \cdot \frac{\vartheta_{ji}^h}{\sum_k \vartheta_{ki}^h} \cdot Y_i.$$

Profit is higher in larger export markets (large Y_i) and whenever both countries are "relatively" close to each other as summarised by ϑ_{ji}^h compared to the other distances.

3.2 Consequences of a Change in Trade Costs

In section (2) we detailed empirically the consequences of a shock in tariffs for domestic firms. We reevaluate the results theoretically in the light of the Melitz-Chaney model. Then we explore which economic characteristics affect the elasticity of profits to a change in the cost of trading in market $\{j, i, h\}$.[7]

$$-\frac{\partial \log \pi_{ii}^h}{\partial \log \tau_{ji}^h} = -\gamma_h \cdot \alpha_{ji}^h,$$

$$\text{where,} \quad \alpha_{ji}^h = \frac{\vartheta_{ji}^h}{\sum_k \vartheta_{ki}^h}$$

In industry h, the distance weighted share of country j for country i is α_{ji}^h. For example, if h is say the energy sector and country j is the largest world gas producer, then its contribution to industry h in country i will be large and α_{ji}^h will be closer to one. So the effect of a decrease in tariffs from country i to country j has adverse effects on the average firm's profit in country i. The elasticity of average profits to tariffs is increasing in γ_h, the tail parameter of the firms' productivity distribution: if γ_h is large, the industry is more homogeneous and a larger share of the output is concentrated among less productive firms. In that case the displacement from import competition is strongest. To understand the heterogeneous effect of a decline in tariffs on firms of country i, we estimate the change of the productivity threshold for domestic production $\underline{\varphi}_{ii}^h$. Movements in the productivity threshold correspond to displacement at the extensive margin, i.e. firms shutting down their operation in a specific market. We estimate the elasticity of the extensive margin to

[7] We compute all the elasticities with respect to variable costs τ_{ij}^h. Their interpretation is actual tariffs or any other per unit costs of trading the cost on the $\{i, j, h\}$ market. In the interest of space we do not compute elasticities with respect to fixed costs f_{ij}^h or exporter country productivity w_j. The resultant elasticities are similar.

trade costs:

$$-\frac{\partial \log \underline{\varphi}_{ii}^h}{\partial \log \tau_{ji}^h} = \alpha_{ji}^h.$$

Hence whenever variable costs decrease, the productivity threshold increases. The extent of this movement depends on the relative importance of country j for production of good h in country i, α_{ji}^h. Now a decrease in tariffs also effect the intensive margin, and even though firms above the productivity threshold stay in business, they lose market shares. The effects on profits at the individual firm level are:

$$-\frac{\partial \log \pi_{ii}^h(\varphi)}{\partial \log \tau_{ji}^h} = (\sigma_h - 1)\alpha_{ji}^h \cdot \left(1 + \frac{f_{ii}^h}{\pi_{ii}(\varphi)}\right). \tag{3.1}$$

The effects are strongest when the households' demand curve is elastic, that is whenever the elasticity of substitution σ_h is high. Moreover the elasticity is decreasing with profitability but increasing with the fixed costs at the industry level. Thus firms with low productivity and high fixed costs have more exposure to the risk from import competition.

Last we confirm the elasticity of profits to trade costs depend itself to the costs of market $\{i, j, h\}$. Both the elasticity of the extensive ($\underline{\varphi}_{ii}^h$) and intensive margin ($\pi_{ii}^h$) depend on the relative importance of country's j for i, α_{ji}^h. These two elasticities confirm the empirical results of Section 2.3. We exploited a difference in difference approach to examine the impact of tariff shocks on firms' cash flow. We have established firms in high shipping costs industries are less impacted than in low shipping costs industries. The role of shipping costs in the elasticity of profits appear through α_{ji}^h. As shipping costs increase the role of country j in exporting into country i becomes less relevant. We simply summarise the result looking at the elasticity of the market share of j in the $\{i, h\}$ market:

$$-\frac{\partial \log \alpha_{ji}^h}{\partial \log \tau_{ji}^h} = \gamma_h \cdot \left(1 - \frac{\vartheta_{ji}^h}{\sum_k \vartheta_{ki}^h}\right)$$

The effect of trade costs on profits is itself decreasing in the variable cost on market $\{j, i, h\}$.

3.3 Role of trade shocks for aggregate risk

In a perfect risk sharing economy, a decrase in trade costs is welfare improving. However the assumption of openness to trade as uniformly welfare improving have come under increasing scrutiny in the recent literature (see for example Autor, Dorn, and Hanson (2013)).

In this section, we propose a mechanism through which households might suffer from import competition, even though it improves their consumption basket. We assume households suffer from home bias when deciding on their stock portfolio investments: they do not invest in foreign firms. Under this assumption there is only limited risk sharing in the global economy. We show households are ambivalent about an increase in import competition: on the one hand it lowers the price of consumption good $(-\partial P_i^h/\partial \tau_{ji}^h < 0)$. On the other hand, it displaces incumbent domestic firms by stealing their market shares, hence it lowers the total wealth of domestic households $(-\partial Y_i/\partial \tau_{ji}^h < 0)$

To understand the trade-off faced by households, we estimate the change in domestic utility, $\mathcal{U}_i$, after a increase in import competition.[8] We decompose the total effect on utility between a price effect (positive) and an income effect (negative):

$$-\frac{\partial \log \mathcal{U}_i}{\partial \log \tau_{ji}^h} = \mu_h \alpha_{ji}^h - \mu_h \alpha_{ji}^h \cdot (\sum_l \mu_l (1 - \frac{1}{\gamma_l})) \cdot \frac{\frac{1}{m_h \gamma_h} \alpha_{ii}^h}{1 - \sum_l \frac{\mu_l}{m_l \gamma_l} \alpha_{ii}^l}$$

The income effect dominates whenever the industries being displaced constitute a large part of country i economy, that is if α_{ii}^h is large enough. Furthermore the income effect is strongest whenever γ_h and σ_h are big. That is whenever displacement is severe at the intensive and at the extensive margin.

To summarise, within a standard Melitz-Chaney model of trade flows, we are able to formulate two main predictions about asset prices: first we confirm the results of section 2, that firms in industries with higher trade barriers are insulated from potential tariff shocks or any other shocks that would affect import competition. Second import competition affects domestic aggregate consumption. Hence firms with lower trade barriers will be have a higher exposure to the aggregate risk of import competition. The sign of the price of risk depends on the sign of the impact of import competition on the contemporaneous utility. If the (negative) income effect dominates, then import competition has an adverse effect and the price of risk is negative. In that case investors will command higher risk premia for holding stocks in firms within industries with low trade barriers. The risk premia would be of the opposite sign were the price effect to dominate. In the subsequent

[8] For consistency we estimate the elasticity with respect to variable costs between i and j, τ_{ji}^h but any variable affecting import competition would have the same effect here.

section, we build on our theoretical framework to understand the sign of the risk of import competition.

4 CIF and the cost of capital

4.1 The Cross-Section of Industry Returns

In this section we explore the asset pricing predictions from the model that industry level heterogeneity in trade costs are associated with differences in risk premia. First to test this hypothesis we form stock portfolios, value and equally weighted, based on the firms' industries shipping costs (CIF) in the previous year. In table (5) we present summary statistics for the returns on the five portfolios. We find firms in industries with low shipping costs have average returns that are 4.2 percent higher (annually) than average returns in the high shipping costs industry. The Sharpe ratio of the long-short portfolio (column 6) is 21 percent. Once we adjust the portfolio for risk using the four factor model, we find the different in alpha is 6.24 percent and the risk adjusted Sharpe ratio is 45 percent. These results show that firms in high shipping costs industries have lower returns than in low shipping cost industries. This accredits our theory that firms when exposed to the risk of import competition earn higher risk premia.

In tables 6, we present results for value-weighted returns. In this case the point estimate of the risk adjusted return for the long-short portfolio is lower. The discrepancy between the value and equally weighted returns table is due to an overweighting of larger firms. In our later more detailed analysis we find firms with higher productivity and size are less exposed to displacement risk such that it biases our estimates downwards.

Further we use the model's predictions to dissect the source of cross-sectional risk premia. Within industries already sorted by their level of shipping costs, we separate firms based on a measure of their productivity and a measure of the level of fixed costs in the industry. From equation (3.1) we have shown firms with the lowest productivity have the most to fear from import competition, be it because of displacement at the intensive or extensive margin. Moreover the elasticity of profits to import competition is also increasing with the level of fixed costs in the industry. Hence we should observe firms in high fixed costs industries or with low productivity should have the highest exposure to the import competition risk.

We proxy productivity using size and return-on-assets (ROA). For the intensity of fixed costs, we use three measures: the correlation of sales growth and cost growth in the past five to ten years, the ratio of fixed assets to total assets, and the ratio of sales, general, and administrative expenses (SGA) to sales. We present results for our double-sorted portfolios in Table 7. We report the four factor alpha for each of the portfolio. For the size sorted portfolios, we find in the lowest size tercile, a portfolio that goes long high shipping costs and short low shipping costs has an alpha of -112 basis point monthly. This different decreases to -42 basis point for the highest size tercile. Similarly across terciles of ROA, we find the long-short portfolio alpha is -94 basis point while it falls to -30 basis point for firms with high ROA. Hence firms that are larger or more productive have a higher exposure to the risk of import competition. Regarding the fixed costs results, we confirm the predictions from the model and find that firms in industries with the highest level of fixed costs have higher exposure to import competition: the four factor alpha on the long-short portfolio is systematically higher for within high-fixed industries.

We test the robustness of these results in various ways. We first use quintiles of firms' characteristics and find comparable results that we present in Table B.5. We run the same analysis on value-weighted portfolios. We find in Table B.4 that high CIF firms have significantly lower abnormal returns in the bottom tertile of firm size and return-on-assets. We also run Fama-McBeth regressions of monthly stock returns on the value of CIF (rather than quintiles of CIF). The results of this analysis are presented in Table 8. A one percentage point increase in CIF leads to a drop by 0.04% in monthly expected returns. This is consistent with the estimates obtained in Table 5. The effect of CIF on expected returns is the largest for stocks that lie in the lowest tertile of size, return-on-assets, and in the highest tertile of fixed costs. Taken together, the results indicate that stocks more exposed to import competition earn higher returns. This suggests that displacement risk covaries positively with the marginal utility of the representative investor.

4.2 Pricing of the Risk of Import Competition

Finally the model, even static, suggests a linear pricing model of the form

$$m = a - b^{\text{MKT}} R^{\text{MKT}} - b^{\text{Import}} \Delta \text{Import}.$$

We estimate the price of risk of the import competition shock implied by our model.

In Table 9, we report the result of the second stage GMM estimates of b^{MKT} and b^{Import}. We use the pricing errors on our set of test assets as moment conditions. Industry portfolios are natural test assets as our economic characteristics are industry based rather than at the firm level. Furthermore, industry returns do not display a strong factor structure (see Lewellen, Nagel, and Shanken (2010)), hence they have a fair amount of heterogeneity.

To measure the shock to import competition we use the returns on the CIF portfolio as a proxy: the portfolio that is long high-shipping costs industries and short low-shipping costs industries.

Our estimates of the price of risk are negative and significant. We find the price of risk is -0.61 when we estimate a two factor model. When we estimate a four-factor model, with the three Fama-French factors and the CIF portfolio, the price of risk is -0.369, inline with the Sharpe ratio of the long-short portfolio of Table 5. Both of our estimates are strongly statistically significant. We conclude that import competition risk is priced in the cross-section of industry returns, and its price is economically significant. Import competition displaces firms' cashflows at times where consumption seems to be desirable.

5 Conclusion

The dramatic increase in import penetration is among the most important changes which affected the U.S. economy over the past decades. However, whether the benefits of import competition outsize these costs is an open question, with important implications for policy making. We content that we can learn about the implications of import competition by observing its impact on asset prices. Our simple argument is that if the marginal utility of the representative investor goes up at times when import competition intensifies, then assets facing a larger displacement risk should command higher returns, and conversely. Unless the representative investor holds the global portfolio, measuring the excess returns on sectors highly exposed to displacement risk can tell us whether the covariance between this risk and marginal utility is positive or negative.

We investigate how the displacement risk associated with import competition is indeed reflected in the cost of capital. We sort U.S. industries based on exposure to import competition based on shipping costs. We find that the output and employment in high exposure industries is more sensitive to tariff cuts than in low exposure industries, consistent with the idea that they face a higher risk of being displaced by import competition. Finally, we show that high exposure industries have a higher cost of capital. We can thus confirm that displacement risk of import competition is priced and covaries with the marginal utility of the representative agent.

6 Figures

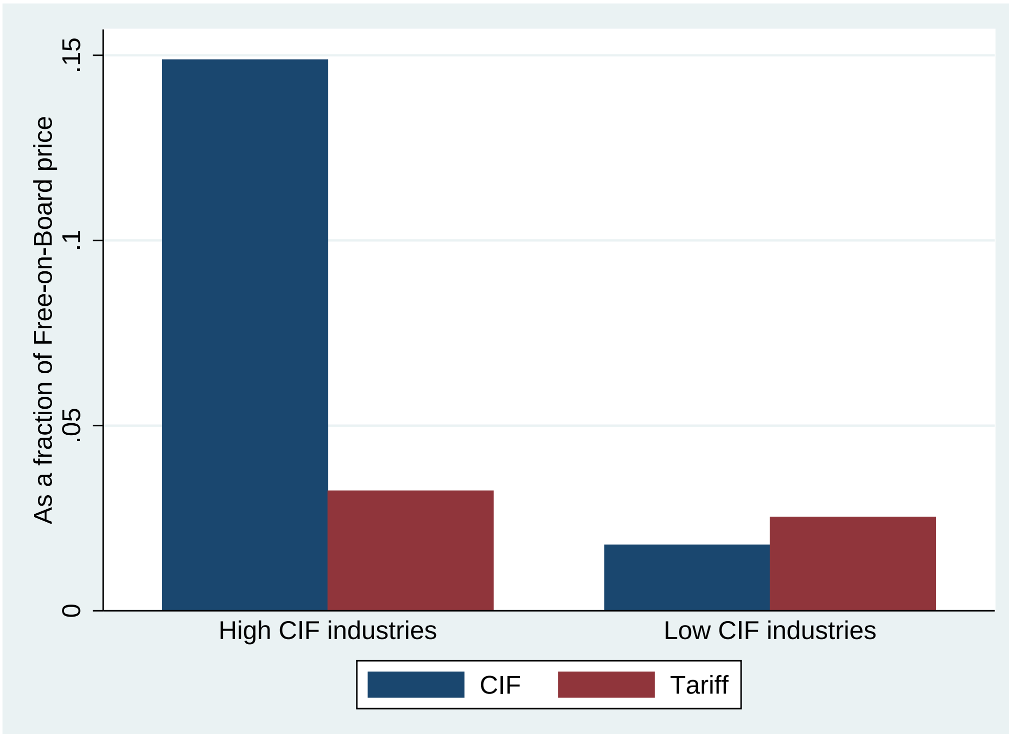

Figure 1

CIF and tariffs This figure presents shipping costs (CIF) and tariffs for high and low CIF industries. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. Tariffs are measured at the industry-year level as the ratio of customs duties to the Free-on-Board value of imports. High (low) CIF industries are those in the top (bottom) tertile of the distribution of CIF in any given year.

7 Tables

Table 1
CIF persistence

This table presents the frequency of transition across shipping cost quintiles from year $t-1$ to t and $t-5$ to t in the sample. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. High (low) CIF industries are those in the top (bottom) tertile of the distribution of CIF in any given year.

	Transitions from year $t-1$ to year t				
	Q1 (t)	Q2 (t)	Q3 (t)	Q4 (t)	Q5 (t)
Q1 (t-1)	2217	316	41	15	19
Q2 (t-1)	315	1892	349	40	11
Q3 (t-1)	34	349	1752	425	45
Q4 (t-1)	17	36	421	1841	289
Q5 (t-1)	18	19	39	285	2229
	Transitions from year $t-5$ to year t				
	Q1 (t)	Q2 (t)	Q3 (t)	Q4 (t)	Q5 (t)
Q1 (t-5)	1875	252	30	13	13
Q2 (t-5)	253	1660	296	24	8
Q3 (t-5)	24	288	1531	355	32
Q4 (t-5)	11	25	348	1605	242
Q5 (t-5)	13	13	28	240	1921

Table 2
Summary statistics

This table presents the summary statistics for the industry-year sample. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. Tariffs are measured at the industry-year level as the ratio of customs duties to the Free-on-Board value of imports. Import penetration is measured at the industry-year level as the ratio of the Free-on-Board value of imports and the sum of total shipments and imports minus exports. Tariff change is the difference in tariffs with respect to the previous year. Large tariff change is a variable equal to the tariff change if it is larger than twice the median absolute tariff change in the sample, and zero otherwise. Employment, shipments, value added, are obtained from the NBER CES files.

	Low CIF		High CIF	
	Mean	Std. dev.	Mean	Std. dev.
CIF	0.018	0.008	0.149	0.077
Tariff	0.025	0.035	0.032	0.048
Tariff change	-0.002	0.006	-0.001	0.009
Large tariff change	-0.001	0.006	-0.001	0.009
Penetration	0.231	0.227	0.143	0.198
Log employment	3.299	1.143	2.713	1.160
Log shipments	8.329	1.347	7.766	1.320
Log value added	7.658	1.388	6.948	1.260
$\Delta_{t,t+5}$ CIF	0.004	0.018	-0.018	0.046
$\Delta_{t,t+5}$ Tariff	-0.007	0.016	-0.007	0.020
$\Delta_{t,t+5}$ Penetration	0.055	0.090	0.027	0.062
$\Delta_{t,t+5}$ Log employment	-0.103	0.254	-0.078	0.208
$\Delta_{t,t+5}$ Log shipments	0.175	0.315	0.182	0.249
$\Delta_{t,t+5}$ Log value added	0.183	0.331	0.208	0.288

Table 3
Effects of tariff changes on cash-flows at the sector level

This table presents the result of industry-year panel regressions assessing the effect of tariff cuts on various outcomes, conditional on the level of shipping costs. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. High (low) CIF industries are those in the top (bottom) quintile of the distribution of CIF in any given year. Tariffs are measured at the industry-year level as the ratio of customs duties to the Free-on-Board value of imports. Import penetration is measured at the industry-year level as the ratio of the Free-on-Board value of imports and the sum of total shipments and imports minus exports. Tariff change is the difference in tariffs with respect to the previous year. Large tariff change is a variable equal to the tariff change if it is larger than twice the median absolute tariff change in the sample, and zero otherwise. Employment, shipments, value added, are obtained from the NBER CES files. Standard errors are clustered at the industry level and reported in parentheses. *, ** and *** means statistically different from zero at 10%, 5% and 1% level of significance.

	Delta (t+1, t+6)			
	Import penetration	Log employment	Log shipments	Log value added
	All tariff changes			
Tariff change × High CIF	1.1***	-2.0**	-2.8*	-3.1**
	(0.4)	(1.0)	(1.4)	(1.5)
Tariff change	-1.0***	1.9**	2.3*	2.9**
	(0.4)	(0.9)	(1.4)	(1.4)
High CIF	0.0	0.1**	0.1**	0.1**
	(0.0)	(0.0)	(0.0)	(0.1)
Tariff	0.1	-0.5	-0.7	-0.5
	(0.1)	(0.4)	(0.6)	(0.5)
Penetration	-0.3***	-0.3***	-0.3**	-0.4***
	(0.1)	(0.1)	(0.1)	(0.1)
Log employment	-0.0	-0.4***	0.2*	0.1
	(0.0)	(0.1)	(0.1)	(0.1)
Log value added	-0.0*	-0.0	-0.1	-0.6***
	(0.0)	(0.0)	(0.1)	(0.1)
Log shipments	0.1**	-0.1	-0.5***	-0.0
	(0.0)	(0.1)	(0.1)	(0.1)
Year FE	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes
Observations	2893	2893	2893	2893
R^2	0.348	0.548	0.536	0.469
	Large tariff changes			
Large tariff change × High CIF	1.0**	-2.0*	-2.8**	-3.0**
	(0.4)	(1.0)	(1.4)	(1.5)
Large tariff change	-0.9**	1.9**	2.3*	2.7**
	(0.4)	(0.9)	(1.4)	(1.3)
High CIF	0.0	0.1**	0.1**	0.1**
	(0.0)	(0.0)	(0.0)	(0.1)
Tariff	0.1	-0.5	-0.7	-0.5
	(0.1)	(0.4)	(0.6)	(0.5)
Penetration	-0.3***	-0.3***	-0.3**	-0.4***
	(0.1)	(0.1)	(0.1)	(0.1)
Log employment	-0.0	-0.4***	0.2*	0.1
	(0.0)	(0.1)	(0.1)	(0.1)
Log value added	-0.0*	-0.0	-0.1	-0.6***
	(0.0)	(0.0)	(0.1)	(0.1)
Log shipments	0.1**	-0.1	-0.5***	-0.0
	(0.0)	(0.1)	(0.1)	(0.1)
Year FE	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes
Observations	2893	2893	2893	2893
R^2	0.347	0.548	0.536	0.469

Table 4
Effects of tariff changes on stock returns at the firm level

This table presents the result of firm-level regressions assessing the effect of tariff cuts on the average monthly return in any given year, conditional on the level of shipping costs. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. High (low) CIF industries are those in the top (bottom) quintile of the distribution of CIF in any given year. Tariffs are measured at the industry-year level as the ratio of customs duties to the Free-on-Board value of imports. Import penetration is measured at the industry-year level as the ratio of the Free-on-Board value of imports and the sum of total shipments and imports minus exports. Tariff change is the difference in tariffs with respect to the previous year. Large tariff change is a variable equal to the tariff change if it is larger than twice the median absolute tariff change in the sample, and zero otherwise. Employment, shipments, value added, are obtained from the NBER CES files. Standard errors are clustered at the industry level and reported in parentheses. *, ** and *** means statistically different from zero at 10%, 5% and 1% level of significance.

Dependent variable:	Average monthly return (t)	
	All tariff changes	
Tariff change × High CIF	-0.41	-0.56*
	(0.37)	(0.32)
Tariff change	0.42***	0.46***
	(0.12)	(0.15)
High CIF	0.00	0.00
	(0.00)	(0.00)
Tariff	-0.02	-0.06
	(0.03)	(0.05)
Penetration	-0.00	-0.02*
	(0.01)	(0.01)
Log employment	0.00**	-0.00
	(0.00)	(0.01)
Log value added	0.00	-0.00
	(0.00)	(0.01)
Log shipments	-0.01*	-0.00
	(0.00)	(0.01)
Year FE	Yes	Yes
Firm FE	No	Yes
Observations	25817	25817
R^2	0.085	0.277
	Large tariff changes	
Large tariff change × High CIF	-0.46	-0.59*
	(0.37)	(0.32)
Large tariff change	0.40***	0.45***
	(0.12)	(0.14)
High CIF	0.00	0.00
	(0.00)	(0.00)
Tariff	-0.02	-0.06
	(0.03)	(0.05)
Penetration	-0.00	-0.02*
	(0.01)	(0.01)
Log employment	0.00**	-0.00
	(0.00)	(0.01)
Log value added	0.00	-0.00
	(0.00)	(0.01)
Log shipments	-0.01*	-0.00
	(0.00)	(0.01)
Year FE	Yes	Yes
Firm FE	No	Yes
Observations	25817	25817
R^2	0.085	0.277

Table 5

Average Returns by CIF – Equally Weighted

The table reports summary statistics for simple excess returns over the 30-day Treasury-bill rate for 5 portfolios of industries sorted on CIF. We report mean excess returns over the risk-free rate (μ) and volatilities (σ). We also report exposures of these portfolios to common risk factors (excess returns on the market, high-minus-low, small-minus-big and momentum portfolios) along with the intercept of the factor regressions (α) and their R-squared. We report standard-errors in parenthesis using Newey-West standard errors. Returns are multiplied by 1200 as to make the magnitude comparable to annualized percentage returns.

Portfolio Quintile	Low	2	3	4	High	High — Low
Average Shipping Cost (CIF)	0.0117	0.0218	0.0309	0.0431	0.0899	–
Portfolio Moments						
Mean excess return (μ)	14.3	12.4	6.27	11.3	10.1	−4.2
Volatility (σ)	8.13	7.43	6.75	5.96	5.04	5.73
Sharpe ratio (μ/σ)	50.9	48.1	26.8	54.7	58	−21.2
Four Factor Model						
α	6.28	2.68	−2.57	−0.00956	−0.917	−7.2
	(2.76)	(1.89)	(2.38)	(1.82)	(1.53)	(3.23)
β^{MKT}	1.04	1.04	1.02	1.05	0.983	−0.0559
	(0.0583)	(0.0478)	(0.0437)	(0.0415)	(0.0423)	(0.0845)
β^{SMB}	1.32	1.27	1.06	0.814	0.666	−0.649
	(0.112)	(0.0615)	(0.0679)	(0.088)	(0.0955)	(0.194)
β^{HML}	−0.423	−0.196	−0.0338	0.243	0.546	0.969
	(0.069)	(0.0567)	(0.0853)	(0.1)	(0.0791)	(0.131)
β^{UMD}	−0.195	−0.13	−0.207	−0.0386	−0.108	0.087
	(0.0641)	(0.0529)	(0.0521)	(0.111)	(0.0649)	(0.115)
$R^2(\%)$	84.6	88.5	83.6	80.9	81.4	52.6
Sharpe ratio (μ/σ)	36.4	14.1	−49	−4.81	−27.4	−45.5

Table 6

Average Returns by CIF – Value Weighted

The table reports summary statistics for simple excess returns over the 30-day Treasury-bill rate for 5 portfolios of industries sorted on CIF. We report mean excess returns over the risk-free rate (μ) and volatilities (σ). We also report exposures of these portfolios to common risk factors (excess returns on the market, high-minus-low, small-minus-big and momentum portfolios) along with the intercept of the factor regressions (α) and their R-squared. We report standard-errors in parenthesis using Newey-West standard errors. Returns are multiplied by 1200 as to make the magnitude comparable to annualized percentage returns.

Portfolio Quintile	Low	2	3	4	High	High — Low
Average Shipping Cost (CIF)	0.0117	0.0218	0.0309	0.0431	0.0899	–
Portfolio Moments						
Mean excess return (μ)	7.59	8.81	5.13	8.41	8.97	1.38
Volatility (σ)	5.6	6.3	6.12	5.13	4.53	4.46
Sharpe ratio (μ/σ)	39.1	40.4	24.2	47.3	57.2	8.96
Fama-French 3 Factor Model						
α	3.6	0.811	−1.09	−1.34	−0.26	−3.86
	(1.71)	(2.23)	(1.78)	(1.65)	(1.63)	(2.35)
β^{MKT}	0.975	1.07	1.07	1.05	0.952	−0.0234
	(0.0595)	(0.0523)	(0.0513)	(0.0445)	(0.0518)	(0.0802)
β^{SMB}	−0.0632	0.153	0.216	0.0845	0.00382	0.067
	(0.0649)	(0.086)	(0.0904)	(0.0597)	(0.0736)	(0.113)
β^{HML}	−0.416	−0.384	−0.25	0.183	0.413	0.829
	(0.0561)	(0.0905)	(0.116)	(0.073)	(0.101)	(0.124)
β^{UMD}	−0.195	−0.13	−0.207	−0.0386	−0.108	0.087
	(0.0641)	(0.0529)	(0.0521)	(0.111)	(0.0649)	(0.115)
$R^2(\%)$	76.8	75.9	74.6	73	67.8	31
Sharpe ratio (μ/σ)	21.8	17.9	−25.5	−7.88	−3.51	−18.5

Table 7
Equally weighted CIF portfolios, conditional on cross-sectional characteristics

This table presents the equally weighted monthly excess returns (Alpha) over a four factor model of portfolios constructed based on the shipping costs (CIF) in their industry. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. In any given month, stocks are sorted into five portfolios based on their industry CIF in the previous year. Firms are then sorted in tertiles based on their market capitalization (SIZE), return on assets (ROA), as well as three measures of fixed costs, namely the correlation of sales growth and cost growth in the past five to ten years, the ratio of fixed assets to total assets, and the ratio of sales, general, and administrative expenses (SGA) to sales. We regress a given portfolio's return in excess of the risk free rate on the market portfolio minus the risk-free rate, the size factor (small minus big), the value factor (high minus low), and the momentum factor (up minus down), all obtained from Kenneth French's websites. Estimates are presented in percentage points. ***, **, and * indicate significance at the 1, 5, and 10% level, respectively.

	CIF					
	Low	2	3	4	High	Hedge
			SIZE			
Q1	1.18***	0.69***	-0.05	0.44**	0.06	-1.12***
	(0.25)	(0.23)	(0.23)	(0.21)	(0.17)	(0.25)
Q2	0.15	0.07	-0.43**	-0.18	-0.23*	-0.37
	(0.21)	(0.16)	(0.18)	(0.14)	(0.13)	(0.26)
Q3	0.24	-0.01	-0.23*	-0.10	-0.18	-0.42*
	(0.17)	(0.13)	(0.13)	(0.13)	(0.13)	(0.23)
			ROA			
Q1	0.60**	0.23	-0.37*	0.20	-0.34**	-0.94***
	(0.26)	(0.22)	(0.22)	(0.18)	(0.15)	(0.28)
Q2	0.57***	0.51***	-0.15	-0.00	0.10	-0.48*
	(0.19)	(0.14)	(0.16)	(0.13)	(0.13)	(0.25)
Q3	0.33***	0.37***	0.02	0.05	0.03	-0.30*
	(0.12)	(0.13)	(0.14)	(0.12)	(0.11)	(0.17)
			FIXED COSTS (correlation of sales growth and cost growth)			
Q1	0.30	0.29**	-0.10	0.12	-0.09	-0.39
	(0.19)	(0.13)	(0.15)	(0.11)	(0.12)	(0.24)
Q2	0.69***	0.28*	-0.14	0.04	0.05	-0.64***
	(0.16)	(0.15)	(0.17)	(0.14)	(0.13)	(0.22)
Q3	0.55***	0.41**	-0.26	0.06	-0.16	-0.70***
	(0.20)	(0.19)	(0.20)	(0.17)	(0.14)	(0.24)
			FIXED COSTS (fixed assets over total assets)			
Q1	0.46**	0.31*	-0.18	0.13	-0.01	-0.48*
	(0.22)	(0.17)	(0.20)	(0.15)	(0.13)	(0.26)
Q2	0.49**	0.42***	-0.07	0.05	-0.01	-0.50**
	(0.20)	(0.16)	(0.16)	(0.13)	(0.13)	(0.25)
Q3	0.56***	0.31**	-0.26	0.06	-0.15	-0.71***
	(0.15)	(0.15)	(0.16)	(0.14)	(0.13)	(0.21)
			FIXED COSTS (SGA over sales)			
Q1	0.23*	0.23	-0.10	-0.05	-0.07	-0.30
	(0.14)	(0.14)	(0.17)	(0.13)	(0.13)	(0.19)
Q2	0.69***	0.38***	-0.13	0.17	0.01	-0.67***
	(0.15)	(0.14)	(0.15)	(0.14)	(0.13)	(0.21)
Q3	0.76***	0.41**	-0.14	0.19	-0.16	-0.92***
	(0.20)	(0.19)	(0.21)	(0.16)	(0.14)	(0.24)

Table 8
Fama-MacBeth Return Regressions, cross-sectional sorts by month×sector

This table reports the Fama-MacBeth coefficients from monthly return-weighted cross-sectional regressions of individual stock returns on CIF and controls. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. Firms are then sorted in tertiles based on their market capitalization (SIZE), return on assets (ROA), as well as three measures of fixed costs, namely the correlation of sales growth and cost growth in the past five to ten years, the ratio of fixed assets to total assets, and the ratio of sales, general, and administrative expenses (SGA) to sales. Size is the logarithm of last month stock market capitalization. Turnover is the logarithm of last month volume scaled by shares outstanding. All independent variables are trimmed at the 1^{st} and 99^{th} percentiles. RET(-1) is last month stock return. RET(-2,-12) is the cumulative stock return over the 11 months ending at the beginning of the previous month. (Simple) standard errors are reported in parentheses. *, ** and *** means statistically different from zero at 10%, 5% and 1% level of significance.

	Monthly stock returns										
						Fixed costs					
		Size		ROA		Correlation		Fixed assets		SGA	
	Low	High	Low	High	Low	High	Low	High	Low	High	
CIF	-0.04**	-0.07***	-0.03**	-0.11***	-0.01	-0.04**	-0.07***	-0.04	-0.05***	-0.04**	-0.06**
	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)
Size	-0.00**	-0.00***	-0.00	-0.00***	-0.00	-0.00**	-0.00*	-0.00***	-0.00*	-0.00*	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Turnover	0.00**	0.01***	0.00	0.00***	0.00	0.00***	0.00	0.00***	0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln(B/M)	0.00***	0.01***	0.00***	0.01***	0.00***	0.00***	0.01***	0.01***	0.00***	0.00***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Sales margin	0.00	0.01	0.00	0.01*	0.00	0.00	0.01	0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
RET(-1)	-0.06***	-0.08***	-0.04***	-0.06***	-0.06***	-0.07***	-0.04***	-0.06***	-0.04***	-0.05***	-0.06***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
RET(-2,-12)	0.01***	0.01***	0.01***	0.01***	0.01***	0.00***	0.01***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.03***	0.06***	0.02**	0.04***	0.02***	0.03***	0.03***	0.04***	0.03***	0.03***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	403921	114720	158410	121284	144328	138246	130227	128469	136344	128993	119861
R^2	0.064	0.074	0.109	0.079	0.091	0.091	0.076	0.077	0.088	0.081	0.082

Table 9
GMM Estimate of a Linear Factor Model

Factor Price	(CAPM)	(CAPM + CIF)	(FF + CIF)
R^e_{MKT}	1.08	1.23	0.826
	(0.126)	(0.138)	(0.15)
$\Delta\{R^e\|\text{CIF}\}$ eq. weighted		-0.61	-0.369
		(0.165)	(0.118)

Standard Errors are estimated using Newey-West with 12 lags.

Appendix

A Model - Derivation

A.1 Solution

The price index is given by summing over all the prices for the varieties produced in country j, industry h:

$$(P_j^h)^{1-\sigma_h} = \sum_{k=1}^{N} w_k L_k \int_{\underline{\varphi}_{ki}^h}^{\infty} \left(\frac{\sigma_h}{\sigma_h - 1} \frac{w_k \tau_{kj}^h}{\varphi} \right)^{1-\sigma_h} \mathrm{d}G_h(\varphi)$$

The remoteness index is given by:

$$(\theta_i^h)^{-\gamma_h} = \sum_{k=1}^{N} w_k L_k \cdot (w_k \tau_{ki}^h)^{-\gamma_h} \ (f_{ki}^h)^{1-\frac{\gamma_h}{\sigma_h - 1}}$$

The price index solved for gives:

$$P_i^h = \left(\frac{\sigma_h}{\mu_h} \right)^{\frac{1}{\sigma_h - 1} - \frac{1}{\gamma_h}} \left(\frac{\gamma_h}{\gamma_h - (\sigma_h - 1)} \right)^{-\frac{1}{\gamma_h}} \frac{\sigma_h}{\sigma_h - 1} \cdot \theta_i^h Y_i^{\frac{1}{\gamma_h} - \frac{1}{\sigma_h - 1}}$$

The productivity cutoff is:

$$\underline{\varphi}_{ji}^h = \left(\frac{\sigma_h}{\mu_h} \right)^{\frac{1}{\sigma_h - 1}} \frac{\sigma_h}{\sigma_h - 1} \cdot \left(\frac{f_{ji}^h}{Y_i} \right)^{\frac{1}{\sigma_h - 1}} \cdot \frac{w_j \tau_{ji}^h}{P_i^h}$$

A.2 Notations

Hereafter we define some of the constants we use in the derivation of the model:

$$\kappa_1^h = \frac{\sigma_h}{\sigma_h - 1} \cdot \left(\frac{\gamma_h}{\gamma_h - (\sigma_h - 1)} \right)^{-\frac{1}{\gamma_h}} \cdot \left(\frac{\sigma_h}{\mu_h} \right)^{\frac{1}{\sigma_h - 1} - \frac{1}{\gamma_h}} .$$

B Robustness tables

Table B.1
Effects of tariff changes on cash-flows at the sector level, placebo

This table presents the result of industry-year panel regressions assessing the effect of tariff cuts on various outcomes, conditional on the level of shipping costs. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports.High (low) CIF industries are those in the top (bottom) quintile of the distribution of CIF in any given year. Tariffs are measured at the industry-year level as the ratio of customs duties to the Free-on-Board value of imports. Import penetration is measured at the industry-year level as the ratio of the Free-on-Board value of imports and the sum of total shipments and imports minus exports. Tariff change is the difference in tariffs with respect to the previous year. Large tariff change is a variable equal to the tariff change if it is larger than twice the median absolute tariff change in the sample, and zero otherwise. Employment, shipments, value added, are obtained from the NBER CES files. Standard errors are clustered at the industry level and reported in parentheses. *, ** and *** means statistically different from zero at 10%, 5% and 1% level of significance.

	Delta (t+1, t+6)			
	Import penetration	Log employment	Log shipments	Log value added
	All tariff changes			
Tariff change (t+5) × High CIF	0.0	2.2*	1.1	2.2
	(0.5)	(1.2)	(1.9)	(1.9)
Tariff change (t+5)	-0.0	-1.1	-1.0	-1.2
	(0.5)	(1.0)	(1.6)	(1.7)
High CIF	0.0	0.1**	0.1**	0.1**
	(0.0)	(0.0)	(0.0)	(0.1)
Tariff	0.1	-0.6*	-0.8	-0.8*
	(0.1)	(0.3)	(0.5)	(0.5)
Penetration	-0.3***	-0.3***	-0.3**	-0.4***
	(0.1)	(0.1)	(0.1)	(0.1)
Log employment	-0.0	-0.3***	0.1	0.1
	(0.0)	(0.1)	(0.1)	(0.1)
Log value added	-0.0*	0.0	-0.1	-0.5***
	(0.0)	(0.0)	(0.1)	(0.1)
Log shipments	0.1**	-0.1	-0.5***	-0.0
	(0.0)	(0.1)	(0.1)	(0.1)
Year FE	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes
Observations	3061	3061	3061	3061
R^2	0.339	0.551	0.542	0.471
	Large tariff changes			
Large tariff change (t+5) × High CIF	0.2	1.9	0.7	1.8
	(0.5)	(1.2)	(1.9)	(1.9)
Large tariff change (t+5)	-0.2	-0.7	-0.4	-0.7
	(0.5)	(1.0)	(1.7)	(1.7)
High CIF	0.0	0.1**	0.1**	0.1**
	(0.0)	(0.0)	(0.0)	(0.1)
Tariff	0.1	-0.6*	-0.8	-0.8*
	(0.1)	(0.3)	(0.5)	(0.5)
Penetration	-0.3***	-0.3***	-0.3**	-0.4***
	(0.1)	(0.1)	(0.1)	(0.1)
Log employment	-0.0	-0.3***	0.1	0.1
	(0.0)	(0.1)	(0.1)	(0.1)
Log value added	-0.0*	0.0	-0.1	-0.5***
	(0.0)	(0.0)	(0.1)	(0.1)
Log shipments	0.1**	-0.1	-0.5***	-0.0
	(0.0)	(0.1)	(0.1)	(0.1)
Year FE	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes
Observations	3061	3061	3061	3061
R^2	0.339	0.551	0.542	0.471

Table B.2
Effects of WTO-induced tariff changes on cash-flows at the sector level

This table presents the result of industry-year panel regressions assessing the effect of tariff cuts on various outcomes, conditional on the level of shipping costs. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports.High (low) CIF industries are those in the top (bottom) quintile of the distribution of CIF in any given year. Tariffs are measured at the industry-year level as the ratio of customs duties to the Free-on-Board value of imports. Import penetration is measured at the industry-year level as the ratio of the Free-on-Board value of imports and the sum of total shipments and imports minus exports. Tariff change is the difference in tariffs with respect to the previous year. Large tariff change is a variable equal to the tariff change if it is larger than twice the median absolute tariff change in the sample, and zero otherwise. Employment, shipments, value added, are obtained from the NBER CES files. WTO is a dummy equal to one in years 1995 to 1998, when most of the tariff cuts associated with the Uruguay Round were passed. Standard errors are clustered at the industry level and reported in parentheses. *, ** and *** means statistically different from zero at 10%, 5% and 1% level of significance.

		Delta (t+1, t+6)			
	Tariff change	Import penetration	Log employment	Log shipments	Log value added
WTO × High CIF	0.000	-0.045***	0.084***	0.076**	0.071*
	(0.001)	(0.011)	(0.031)	(0.038)	(0.042)
WTO	-0.002***				
	(0.000)				
CIF	-0.010	0.200**	-0.033	0.134	0.121
	(0.008)	(0.088)	(0.174)	(0.212)	(0.237)
Tariff	0.087***	0.076	-0.528	-0.729	-0.752
	(0.019)	(0.127)	(0.356)	(0.509)	(0.471)
Penetration	0.002	-0.313***	-0.279***	-0.302**	-0.381**
	(0.002)	(0.050)	(0.093)	(0.129)	(0.152)
Log shipments	0.003*	0.044*	-0.059	-0.464***	-0.002
	(0.002)	(0.026)	(0.069)	(0.072)	(0.075)
Log value added	-0.000	-0.021	-0.009	-0.063	-0.538***
	(0.001)	(0.019)	(0.047)	(0.072)	(0.080)
Log employment	-0.002*	-0.002	-0.347***	0.128	0.100
	(0.001)	(0.025)	(0.074)	(0.096)	(0.106)
Year FE	No	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes
Observations	2893	3061	3061	3061	3061
R^2	0.138	0.347	0.552	0.542	0.469

Table B.3
Effects of tariff changes on stock returns at the firm level, placebo

This table presents the result of firm-level regressions assessing the effect of tariff cuts on the average monthly return in any given year, conditional on the level of shipping costs. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. High (low) CIF industries are those in the top (bottom) quintile of the distribution of CIF in any given year. Tariffs are measured at the industry-year level as the ratio of customs duties to the Free-on-Board value of imports. Import penetration is measured at the industry-year level as the ratio of the Free-on-Board value of imports and the sum of total shipments and imports minus exports. Tariff change is the difference in tariffs with respect to the previous year. Large tariff change is a variable equal to the tariff change if it is larger than twice the median absolute tariff change in the sample, and zero otherwise. Employment, shipments, value added, are obtained from the NBER CES files. Standard errors are clustered at the industry level and reported in parentheses. *, ** and *** means statistically different from zero at 10%, 5% and 1% level of significance.

Dependent variable:	Average monthly return (t)	
	All tariff changes at t+5	
Tariff change (t+5) × High CIF	-0.33	-0.39
	(0.26)	(0.32)
Tariff change (t+5)	0.25	0.26
	(0.22)	(0.27)
High CIF	0.00	-0.00
	(0.00)	(0.01)
Tariff	-0.01	0.00
	(0.03)	(0.06)
Penetration	0.00	-0.03**
	(0.01)	(0.01)
Log employment	0.00	-0.00
	(0.00)	(0.01)
Log value added	0.01*	0.01
	(0.00)	(0.01)
Log shipments	-0.01**	-0.01
	(0.00)	(0.01)
Year FE	Yes	Yes
Firm FE	No	Yes
Observations	22270	22270
R^2	0.092	0.304
	Large tariff changes at t+5	
Large tariff change (t+5) × High CIF	-0.31	-0.36
	(0.27)	(0.32)
Large tariff change (t+5)	0.22	0.26
	(0.23)	(0.27)
High CIF	0.00	-0.00
	(0.00)	(0.01)
Tariff	-0.01	0.00
	(0.03)	(0.06)
Penetration	0.00	-0.03**
	(0.01)	(0.01)
Log employment	0.00	-0.00
	(0.00)	(0.01)
Log value added	0.01*	0.01
	(0.00)	(0.01)
Log shipments	-0.01**	-0.01
	(0.00)	(0.01)
Year FE	Yes	Yes
Firm FE	No	Yes
Observations	22270	22270
R^2	0.092	0.304

Table B.4
Value weighted trade cost portfolios, conditional on cross-sectional characteristics

This table presents the value weighted monthly excess returns (Alpha) over a four factor model of portfolios constructed based on the shipping costs (CIF) in their industry. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. In any given month, stocks are sorted into five portfolios based on their industry CIF in the previous year. Firms are then sorted in tertiles based on their market capitalization (SIZE), return on assets (ROA), as well as three measures of fixed costs, namely the correlation of sales growth and cost growth in the past five to ten years, the ratio of fixed assets to total assets, and the ratio of sales, general, and administrative expenses (SGA) to sales. We regress a given portfolio's return in excess of the risk free rate on the market portfolio minus the risk-free rate, the size factor (small minus big), the value factor (high minus low), and the momentum factor (up minus down), all obtained from Kenneth French's websites. Estimates are presented in percentage points. ***, **, and * indicate significance at the 1, 5, and 10% level, respectively.

	CIF					
	Low	2	3	4	High	Hedge
			SIZE			
Q1	0.88***	0.31	-0.25	0.08	-0.22	-1.10***
	(0.24)	(0.23)	(0.22)	(0.20)	(0.17)	(0.28)
Q2	0.10	0.09	-0.45**	-0.31*	0.04	-0.06
	(0.21)	(0.17)	(0.18)	(0.16)	(0.15)	(0.28)
Q3	0.18	0.18	0.01	-0.09	-0.03	-0.21
	(0.13)	(0.16)	(0.18)	(0.15)	(0.14)	(0.19)
			ROA			
Q1	0.20	0.07	-0.65**	-0.43**	-0.34*	-0.54*
	(0.23)	(0.25)	(0.28)	(0.19)	(0.19)	(0.30)
Q2	0.20	-0.03	-0.20	-0.22	0.09	-0.12
	(0.19)	(0.18)	(0.20)	(0.19)	(0.16)	(0.26)
Q3	0.18	0.34*	0.22	0.01	0.01	-0.18
	(0.17)	(0.21)	(0.20)	(0.17)	(0.15)	(0.22)
			FIXED COSTS (correlation of sales growth and cost growth)			
Q1	0.16	-0.04	-0.08	-0.00	0.09	-0.07
	(0.16)	(0.17)	(0.19)	(0.16)	(0.15)	(0.21)
Q2	0.15	0.37*	0.01	-0.28	-0.19	-0.34
	(0.18)	(0.22)	(0.24)	(0.18)	(0.15)	(0.23)
Q3	0.38	0.29	-0.09	-0.17	-0.08	-0.45
	(0.23)	(0.24)	(0.24)	(0.20)	(0.20)	(0.32)
			FIXED COSTS (fixed assets over total assets)			
Q1	0.16	0.40	0.11	-0.26	0.02	-0.14
	(0.26)	(0.28)	(0.28)	(0.22)	(0.18)	(0.33)
Q2	-0.01	0.41*	0.12	-0.09	-0.01	-0.01
	(0.20)	(0.22)	(0.23)	(0.17)	(0.17)	(0.28)
Q3	0.28*	-0.00	-0.12	-0.13	-0.05	-0.33
	(0.16)	(0.17)	(0.16)	(0.16)	(0.14)	(0.20)
			FIXED COSTS (SGA over sales)			
Q1	0.09	0.04	0.19	-0.25	-0.23	-0.33
	(0.18)	(0.22)	(0.22)	(0.18)	(0.16)	(0.23)
Q2	0.18	0.22	-0.09	0.10	0.09	-0.09
	(0.15)	(0.18)	(0.18)	(0.19)	(0.16)	(0.22)
Q3	0.40*	0.47*	0.07	-0.12	0.05	-0.35
	(0.22)	(0.25)	(0.26)	(0.19)	(0.18)	(0.29)

Table B.5
Equally weighted trade cost portfolios, conditional on cross-sectional characteristics

This table presents the equally weighted monthly excess returns (Alpha) over a four factor model of portfolios constructed based on the shipping costs (CIF) in their industry. CIF are measured at the industry-year level as the % difference of the Cost-Insurance-Freight value with the Free-on-Board value of imports. In any given month, stocks are sorted into five portfolios based on their industry CIF in the previous year. Firms are then sorted in quintiles based on their market capitalization (SIZE), return on assets (ROA), as well as three measures of fixed costs, namely the correlation of sales growth and cost growth in the past five to ten years, the ratio of fixed assets to total assets, and the ratio of sales, general, and administrative expenses (SGA) to sales. We regress a given portfolio's return in excess of the risk free rate on the market portfolio minus the risk-free rate, the size factor (small minus big), the value factor (high minus low), and the momentum factor (up minus down), all obtained from Kenneth French's websites. Estimates are presented in percentage points. ***, **, and * indicate significance at the 1, 5, and 10% level, respectively.

	CIF					
	Low	2	3	4	High	Hedge
			SIZE			
Q1	1.44***	1.01***	0.22	0.73***	0.24	-1.20***
	(0.30)	(0.27)	(0.26)	(0.26)	(0.21)	(0.28)
Q2	0.73***	0.24	-0.44**	-0.09	-0.22	-0.95***
	(0.26)	(0.21)	(0.22)	(0.18)	(0.16)	(0.30)
Q3	-0.02	0.10	-0.47**	-0.16	-0.29**	-0.27
	(0.21)	(0.18)	(0.20)	(0.15)	(0.14)	(0.27)
Q4	0.23	-0.22	-0.32*	-0.17	-0.14	-0.37
	(0.21)	(0.15)	(0.17)	(0.14)	(0.15)	(0.28)
Q5	0.27	0.10	-0.20	-0.11	-0.17	-0.44**
	(0.17)	(0.14)	(0.14)	(0.14)	(0.13)	(0.22)
			ROA			
Q1	0.50*	-0.05	-0.56**	0.12	-0.35*	-0.85***
	(0.28)	(0.25)	(0.26)	(0.22)	(0.19)	(0.30)
Q2	0.80***	0.75***	-0.08	0.23	-0.15	-0.94***
	(0.25)	(0.20)	(0.20)	(0.17)	(0.15)	(0.30)
Q3	0.47**	0.57***	-0.17	0.05	0.11	-0.37
	(0.22)	(0.16)	(0.17)	(0.14)	(0.14)	(0.28)
Q4	0.41**	0.33**	-0.02	-0.04	0.04	-0.37*
	(0.16)	(0.15)	(0.16)	(0.14)	(0.13)	(0.21)
Q5	0.32**	0.32**	0.00	0.07	0.04	-0.28
	(0.13)	(0.14)	(0.16)	(0.14)	(0.12)	(0.18)
			FIXED COSTS (correlation of sales growth and cost growth)			
Q1	0.26	0.31**	-0.10	0.11	-0.12	-0.39
	(0.26)	(0.15)	(0.16)	(0.12)	(0.13)	(0.32)
Q2	0.39***	0.24	-0.14	0.12	-0.07	-0.47**
	(0.15)	(0.16)	(0.16)	(0.14)	(0.13)	(0.19)
Q3	0.73***	0.27	-0.20	0.01	0.13	-0.60**
	(0.18)	(0.17)	(0.18)	(0.15)	(0.15)	(0.25)
Q4	0.72***	0.52**	-0.08	0.10	0.01	-0.71***
	(0.22)	(0.20)	(0.20)	(0.17)	(0.15)	(0.26)
Q5	0.48**	0.29	-0.31	0.00	-0.25	-0.73***
	(0.22)	(0.22)	(0.24)	(0.20)	(0.17)	(0.26)
			FIXED COSTS (fixed assets over total assets)			
Q1	0.57**	0.33*	-0.14	0.10	-0.01	-0.57**
	(0.23)	(0.19)	(0.22)	(0.18)	(0.15)	(0.28)
Q2	0.41*	0.37**	-0.12	0.09	0.03	-0.39
	(0.23)	(0.18)	(0.21)	(0.16)	(0.14)	(0.28)
Q3	0.55**	0.34*	-0.17	0.07	-0.09	-0.64**
	(0.22)	(0.18)	(0.17)	(0.14)	(0.14)	(0.28)
Q4	0.41**	0.49***	-0.20	0.08	-0.06	-0.47**
	(0.17)	(0.19)	(0.17)	(0.15)	(0.14)	(0.24)
Q5	0.59***	0.17	-0.21	0.04	-0.16	-0.75***
	(0.17)	(0.17)	(0.18)	(0.16)	(0.14)	(0.22)
			FIXED COSTS (SGA over sales)			
Q1	0.20	0.32*	-0.11	-0.14	-0.16	-0.36
	(0.17)	(0.18)	(0.18)	(0.14)	(0.14)	(0.22)
Q2	0.47***	0.16	-0.20	0.05	0.06	-0.41**
	(0.16)	(0.17)	(0.18)	(0.15)	(0.15)	(0.21)
Q3	0.71***	0.32**	-0.04	0.22	-0.06	-0.77***
	(0.17)	(0.16)	(0.17)	(0.17)	(0.14)	(0.23)

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