The Bright Side of Foreign Competition: Import Penetration and Default Risk

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Abstract

We examine the effect that foreign competition has on firms' default risk and document a strong and robust negative association. Utilizing a large sample of public U.S. manufacturing firms and industry-level import penetration data, we find that an increase in import penetration from the 25th to the 75th percentile leads to a reduction in corporate default risk of roughly 3%. These results hold after accounting for potential endogeneity concerns. Additional tests reveal that the reduction in default risk is attributable to import penetration reducing idiosyncratic decision making within firms, as well as inducing safer yet more myopic investments. Our results contrast with those of Platt (2020), who shows that the competitive environment increases the cost of debt. We argue that model selection is crucial in studies on the causal effects of competition, with more restrictive models to be preferred due to significant endogeneity concerns.

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Only when the tide goes out do you discover who has been swimming naked.

— Warren Buffet

1. Introduction

Are firms that have the luxury of operating in less competitive markets more likely to survive? Anecdotal evidence certainly suggests so. For example, the collapse of Chrysler and General Motors in 2009 can at least partly be attributed to tough competition from European and Japanese manufacturers.[1] Similarly, the threat of bankruptcy caused by foreign competitors is a commonly cited rationale for protectionist trade policies, such as former President Bush's tariffs on steel products in 2002 or former President Trump's tariffs on solar panels in 2018.[2] At the same time, intense foreign competition has the potential to force firms to make more disciplined (Hart, 1983; Schmidt, 1997) and less risky investment decisions (Fromenteau, Schymik, and Tscheke, 2019), which could increase their likelihood of survival. Those firms that have the luxury of operating in uncompetitive markets could be shown up as "swimming naked" when times get tough.

Our paper addresses the fundamental question cited above by examining whether firms exposed to greater foreign competitive threats are more or less likely to fail. We argue that foreign competition has the potential to affect the key determinants of default risk in Merton's (1974) distance-to-default (DD) model, namely, market value of equity, market value of debt, equity return volatility, and equity returns. It is not immediately clear, however, in what direction foreign

[1] Between 1998 and 2008, the Big Three U.S. car manufacturers (General Motors, Ford, and Daimler Chrysler) lost 17% in market share (from 70% to 53%) to European and Japanese producers, culminating in large and unsustainable losses. Other examples of domestic bankruptcies that have been conventionally blamed on "unfair" foreign competition include those of small steel mills in the early 2000s.

[2] Former President Bush introduced tariffs of up to 30% on a selected range of steel products in March 2002, citing rising bankruptcies in the steel industry as a core reason for the tariffs. Similarly, former President Trump imposed a 30% tariff on imported solar panels in January 2018, after strong petitioning by firms such as SolarWorld Americas and Suniva, which argued that jobs and their very existence were threatened by cheaper Chinese imports.

competition affects these individual determinants and what the overall effect of foreign competition on default risk is. On the one hand, prior research suggests that foreign competition can increase default risk by reducing stock returns and the market value of equity, as well as increasing firms' asset volatility. With respect to stock returns and the market value of equity, prior research shows that foreign competition reduces profits (Xu, 2012) and investment (Frésard and Valta, 2016) while promoting myopic investment behavior (Fromenteau, Schymik, and Tscheke, 2019). Furthermore, greater exposure to imports increases firms' risk premium (Barrot, Loualiche, and Sauvagnat, 2019) and cost of debt (Valta, 2012). Higher discount rates, in turn, depress asset values, reducing firms' market value. With respect to asset volatility, research suggests that foreign competition increases firms' idiosyncratic volatility (Gaspar and Massa, 2006; Irvine and Pontiff, 2009) as well as stock price crash risk (Li and Zhan, 2019).

A competing view is that foreign competition reduces default risk for at least three reasons. First, foreign competition can promote greater operational efficiencies, which could, in turn, lead to lower asset volatility and higher market valuations. The idea that competition checks management's ability to consume large amounts of resources in an inefficient manner dates back to Alchian (1950) and Stigler (1958).[3] Recent studies support this proposition, showing that foreign competition contributes to the departure of incompetent chief executive officers (CEOs; see Dasgupta, Li, and Wang, 2018), reduces value-destroying acquisitions (Alimov and Officer, 2017), pressures firms to pay out excess cash as dividends (Grullon, Larkin, and Michaely, 2018), and reduces agency problems and the need for compensation incentive alignment (Lie and Yang, 2022). Import competition should therefore promote greater organizational efficiencies and limit

[3] This intuition is formalized in various formal models (Hart, 1983; Schmidt, 1997; Aghion, Dewatripont, and Rey, 1999). However, not all theoretical models agree that competition disciplines managers. For example, Scharfstein (1988) argues that competition reduces managerial effort because of lower profits in competitive industries.

idiosyncratic decision making.[4] Second, foreign competition can directly reduce firms' asset volatility by promoting myopic investment behavior (Fromenteau, Schymik, and Tscheke, 2019), which, in turn, can lead to a reduction in cash flow risk by reducing the duration of cash flows. Third, Xu (2012) finds that firms reduce leverage after experiencing an increase in foreign competition. More recently, Boubaker, Saffar, and Sassi (2018) find that large import tariff reductions lead to a reduction in rollover risk as firms extend the maturity of their debt.

The directional relation between foreign competition and default risk therefore amounts to an empirical question that we test using a large sample of 2,578 public U.S. manufacturing firms between 1989 and 2012.[5] Following Frésard (2010) and Xu (2012), we measure foreign competition using import penetration (i.e., the value of imports as a percentage of total domestic consumption) into an industry.[6] We use Bharath and Shumway's (2008) measure of expected default frequency as our main dependent variable. The measure is a simplified version of Merton's (1974) structural DD model.[7] In all our baseline ordinary least squares (OLS) specifications, we include firm and year fixed effects, as well as a comprehensive set of firm-level control variables.

Our results reveal a strong and robust negative association between import penetration and corporate default risk, suggesting that firms operating in more competitive industries have a higher

[4] To the extent that foreign competition–induced managerial discipline is a substitute for conventional forms of corporate governance, Baghdadi, Nguyen, and Podolski (2020) show that more effective corporate governance mechanisms reduce default risk by decreasing idiosyncratic decision making.

[5] The start date of our sample is dictated by the availability of fluidity data (a key control variable), whereas the end date of our sample is dictated by the availability of the import penetration data.

[6] Measures of import penetration have many advantages over more conventional measures of competition. In particular, common proxies for competition, such as industry-level concentration ratios or profit margins, are problematic due to the endogeneity of industry structure and firms' financial and investment policies (Schmalensee, 1989). Foreign competition, in contrast, is arguably a more exogenous measure of the competitive environment (Xu, 2012; Alimov, 2014; Frésard and Valta, 2016). Exploiting industry-level import competition therefore allows us to more convincingly gauge the causal effects of product market competition on default risk.

[7] A key benefit of relying on the expected default frequency measure as opposed to bankruptcy events is that expected default frequencies provide cross-sectional and time-varying probabilities of default. Bharath and Shumway (2008) show that the measure performs exceptionally well at forecasting bankruptcies out of sample.

chance of survival. The effect is not only statistically significant, but also economically meaningful, with an increase in import penetration from the 25th to the 75th percentile resulting in an almost 3% reduction in default risk. The magnitude of this effect is substantial, given that the unconditional probability of default is around 8% for the average U.S. firm. In additional robustness tests, we find that the results are not sensitive to the inclusion of CEO characteristics, corporate governance characteristics, financial constraints, litigation risk, or CEO fixed effects or the exclusion of non-surviving firms. To further validate our results and ensure that they are not driven by chance, we randomize the import penetration variable 100 times and simulate 100 regressions with the randomized import penetration variables as the independent variable of interest. The average coefficient estimate from these regressions does not load even at the 10% level, helping dispel the concern that our baseline results occur by chance.

To overcome concerns that either omitted factors are driving our results or that our results are determined by reverse causality, we conduct three additional tests in which we utilize exogenous variation in import penetration. First, we follow Xu (2012) and perform a two-stage least squares regression using industry-specific tariff rates as an instrument. Second, we utilize the granting of the permanent normal trade relations (PNTR) status to China in 2001 as an exogenous shock to competitive threats from China. Third, we follow Frésard and Valta (2016) and perform a difference-in-differences (DiD) test by employing large tariff reductions in an industry as a quasi-natural experiment. In all additional tests which more formally address endogeneity concerns, we find results consistent with our baseline findings. Although endogeneity concerns can never be eliminated in our setting, the fact that our baseline results are consistent across a wide array of specifications fills us with confidence regarding the reliability of the documented effect.

As a final validation test, we relate import penetration to credit default swap (CDS) spreads and the incidence of bankruptcies. To measure the incidence of defaults, we utilize bankruptcy data from Chava (2014) and Chava, Stefanescu, and Turnbull (2011). Our results show that import penetration is negatively associated with CDS spreads and the incidence of bankruptcies. Taken in their entirety, our results show a strong and robust negative association between foreign competition and default risk.

We conclude our analysis by examining the underlying mechanism underpinning the negative association between foreign competition and default risk. Theoretically, foreign competition can reduce default risk by (i) decreasing asset riskiness (by inducing greater managerial discipline in decision making and/or inducing shorter-term investments), (ii) increasing the equity value of the firm (by promoting more efficient decision making), or (iii) by reducing the firm's debt obligations. We attempt to pin down the channel through which foreign competition negatively affects default risk by relating import penetration to each of the variables in Merton's (1974) distance-to-default model, namely, the market value of equity, the market value of debt, stock return volatility, and stock returns. We find that import penetration is unrelated to the market value of equity or the market value of debt but is negatively associated with stock return volatility. To pin down the source of the reduction in stock return volatility, we decompose return volatility into its systematic and idiosyncratic components. Our results show that foreign competition reduces both systematic risk and idiosyncratic risk, supporting both the managerial disciplining and investment myopia explanations. Consistent with the observation that import penetration reduces systematic risk, we also find a weak negative association between import penetration and stock returns.

Our finding that foreign competition decreases default risk contrasts with prior literature documenting a positive association between competition and the cost of debt (Valta, 2012; Platt, 2020). Valta (2012) offers evidence that large tariff cuts increase default risk, whereas Platt (2020) shows that product market fluidity (a measure capturing the degree of competitive threat and product market change surrounding a firm) and large tariff cuts increase bond yields. We investigate this issue and find that these apparent discrepancies are attributable to differences in model specification. Specifically, the positive association between large tariff cuts and default risk documented by Valta (2012) are obtained from a univariate analysis, whereas Platt's (2020) results utilize a model with industry and year fixed effects (to establish a link between product market fluidity and bond yields) or just industry fixed effects (to establish a link between tariff cuts and bond yields). In contrast, our results are based on a more rigorous model specification that is consistent with the methodology of Frésard and Valta (2016) in which we include not only firm-level controls, but also firm and year fixed effects. The benefit of including firm and year fixed effects, especially in the context of our research question, is that firm fixed effects ensure that all time-invariant firm-level characteristics are held constant. This is important, since there is great intra-industry heterogeneity between firms, giving rise to significant endogeneity problems. Given that endogeneity concerns are of primary importance in examining the causal effects of foreign competition on firm outcomes, more restrictive model specifications are to be preferred.

Our paper makes a major contribution to two strands of the literature. First, our paper contributes to the literature on the economic consequences of foreign competition at the corporate level.[8] Prior studies have painted a mixed view of the consequences of foreign competition on

[8] Our emphasis on foreign competition is motivated by the fact that domestic U.S. firms face increasingly more severe competition from foreign rivals. For example, U.S. two-way trade with the rest of the world increased more than 500% between 1980 and 2017, from $500 billion to $3 trillion.

corporate outcomes (Lin, Officer, and Zhan, 2015; Dasgupta, Li, and Wang, 2018; Grullon, Larkin, and Michaely, 2018; Li and Zhan, 2019; Lie and Yang; 2022). Examining the association between foreign competition and default risk, our paper contributes to this debate by showing that foreign competition increases firms' likelihood of survival by reducing the riskiness of corporate assets.

Second, our paper contributes to the literature that relates structural default models of bankruptcy to corporate finance. Our finding that import penetration influences default risk complements the results of Brogaard, Li, and Xia (2017) and Baghdadi, Nguyen, and Podolski (2020). Their studies document the negative effects that stock liquidity and board independence have on default risk, primarily through the governance channel. Our paper explores the disciplining effect of another, arguably more exogenous factor affecting the corporate environment, namely, foreign competition. Read in conjunction with Brogaard, Li, and Xia (2017) and Baghdadi, Nguyen, and Podolski (2020), our paper highlights the importance of effective governance mechanisms in preventing corporate default.

2. Data and Descriptive Statistics

2.1. Sample Selection and Variable Definitions

2.1.1. The Sample

We collect data from various sources. Industry-level import data are obtained from Schott's International Economics Resource Page, supplemented with industry-level domestic production data from the National Bureau of Economic Research–U.S. Census Bureau's Center for Economic Studies (NBER–CES) Manufacturing Industry Database.[9,10] Stock price data are from the Center

[9] Industry-level import data can be downloaded from Peter K. Schott's webpage at https://faculty.som.yale.edu/peterschott/international-trade-data/. Import data are available until 2012.

[10] The NBER–CES Manufacturing Industry Database contains U.S. manufacturing sector from 1958 to 2011. The data used come from various sources, including the U.S. Census Bureau, the U.S. Bureau of Economic Analysis and the U.S. Bureau of Labor Statistics.

for Research in Security Prices (CRSP). Firm-level financial and accounting data are from the Compustat database. Product market fluidity data are obtained from the Hoberg–Phillips data library.[11] Our sample consists of all firms for which industry-level import penetration data are available. We exclude observations missing accounting data unless otherwise stated. Our final sample covers the 1989–2012 period and includes 2,578 unique manufacturing firms.[12]

2.1.2. Expected Default Frequency

We construct our first measure of the expected default frequency following Bharath and Shumway's (2008) modified version, which is based on Merton's (1974) structural DD model. The expected default frequency (*EDF*) is calculated as follows:

$$DD_{i,t} = \frac{\ln\left(\frac{Equity_{i,t} + Debt_{i,t}}{Debt_{i,t}}\right) + \left(r_{i,t-1} - 0.5\,\sigma_{Vi,t}^{2}\right)T_{i,t}}{\sigma_{Vi,t}\sqrt{T_{i,t}}}, \quad (1)$$

$$\sigma_{Vi,t} = \frac{Equity_{i,t}}{Equity_{i,t} + Debt_{i,t}} \times \sigma_{Ei,t} + \frac{Debt_{i,t}}{Equity_{i,t} + Debt_{i,t}} \times \left(0.05 + 0.25 \times \sigma_{Ei,t}\right), \quad (2)$$

and

$$EDF_{i,t} = N\left(-DD_{i,t}\right), \quad (3)$$

where $Equity_{i,t}$ is the market value of equity, calculated as the product of the number of shares outstanding and the stock price at the end of the year, and $Debt_{i,t}$ is the face value of debt, calculated, following Duffie, Saita, and Wang (2007), as the sum of short-term debt, defined as

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[11] Data can be downloaded from https://hobergphillips.tuck.dartmouth.edu/industryconcen.htm.
[12] Our sample starts in 1989, given that the product market fluidity data are available only from 1989. The sample ends in 2012, given that import penetration data from Peter Schott's webpage are unavailable after 2012.

the larger of debt in current liabilities and total current liabilities and one-half of long-term debt.[13] If the measures of debt are missing from the Compustat quarterly file but available in the annual file, the missing data are replaced by the associated annual debt observation. The variable r_{it-1}, firm i's past annual return, is calculated from monthly stock returns over the previous year; $\sigma_{Ei,t}$, is the annualized stock volatility for firm i during year t, estimated from the monthly stock return over the previous year; $\sigma_{Vi,t}$, is an approximation of the volatility of firm assets, calculated from $\sigma_{Ei,t}$; $T_{i,t}$, is set to one year; and N(.) is the cumulative standard normal distribution function.

Our second measure of default risk, denoted *Merton-EDF*, is the expected default frequency generated as a result of solving Merton's DD model using the iterative procedure described by Bharath and Shumway (2008). By expressing the value of a firm's equity as a function of the value of the firm and relating the volatility of the firm's value to the volatility of its equity, the model can simply predict the probability of default. Merton's expected default frequency (*Merton-EDF*) can then be calculated by applying the following equation:

$$Merton\ DF = N\left(-\left(\frac{\ln\left(\frac{V}{F}\right) + (\mu - 0.5\sigma_V^2)\ T}{\sigma_V\ \sqrt{T}}\right)\right) = N(-DD), \qquad (4)$$

where V and σ_V are the total value of the firm and the volatility of firm value, respectively, estimated by using the firm's equity value E and stock volatility σ_E; F is the face value of debt, calculated as debt in current liabilities plus one-half of long-term debt, similar to the calculation of Vassalou and Xing (2004); r, is the risk-free rate, gathered from the one-year Treasury constant

[13] Notwithstanding that the horizon is only one year, there are two reasons to include long-term debt (or at least a portion of it) in the calculations of default risk. First, firms need to service their long-term debt, the interest payments being part of their short-term liabilities. Second, the size of the long-term debt affects firms' ability to roll over their short-term debt. The precise portion of long-term debt that should be included in the calculations of default risk is nevertheless arbitrary, and the literature has settled on 50%.

maturity rate obtained from the Board of Governors of the Federal Reserve System; μ, is the expected return on the firm's assets, calculated from monthly stock returns over the previous year by estimating the annualized geometric mean; T is set to one year; and N(.) is the cumulative standard normal distribution function.

2.1.3. Import Penetration Measure

Following Bertrand (2004) and Xu (2012), we calculate the import penetration for each industry as the industry-level imports divided by the sum of industry-level domestic production and imports. We measure domestic production as the total dollar value of an industry's gross domestic product. We define industries at the three-digit Standard Industrial Classification (SIC) code level, with data limited to only those industries that reported imports for at least one year over the entire sample period. Import data are from Schott's International Economics Resource Page, which provides information about the total value of imports into the United States for each industry. Domestic production is measured as the value of domestically produced shipments. The values of the shipments for each industry are obtained from the NBER–CES Manufacturing Industry Database (Becker, Gray, and Marvakov, 2016).

2.1.4. Control Variables

Following Bharath and Shumway (2008), we control for the leverage ratio (*Leverage*), the inverse of annualized stock volatility ($1/\sigma E$), the difference between the stock's annual return and the CRSP value-weighted return (*Excess Return*), and the ratio of net income to total assets (*ROA*). Following Platt (2020), who documents a positive association between product market fluidity and costs of debt (measures as bond yields), we control for Hoberg, Phillips, and Prabhala's (2014) product market fluidity measure (*Fluidity*) in our baseline regressions. We also control for stock liquidity, since Brogaard, Li, and Xia (2017) show a strong negative relation between stock liquidity and firm bankruptcy risk. We utilize Amihud's (2002) annual illiquidity measure. This measure is defined as the natural logarithm of the annual average of the daily ratio of the absolute value of the stock return divided by the dollar trading volume, multiplied by 1 million, according to Amihud (2002). Finally, following Platt (2020), we include in all the regressions the firm size, *Size*; Tobin's Q, *Q*; the tangibility ratio, *Tangibility*; Altman's Z-score, *Z Score*; an investment-grade indicator, *Investment grade*; and the indicator *Rated*. All continuous variables are winsorized at the first and 99th percentiles to alleviate the effects of outliers, except for the expected default frequency, since its values are naturally bounded between zero and one. Detailed variable definitions are presented in Appendix A1.

2.2. Descriptive Statistics

Table 1 presents the descriptive statistics of our full sample. An average firm has an average expected default risk, *EDF*, of 8%, with a standard deviation of 20%. Merton's expected default frequency, *Merton-EDF*, has an average of 15%, with a standard deviation of 24%. The variable *Import penetration* has a mean value of 23% and a standard deviation of 11%, which implies that a large portion of average industry production is made up of imported products. An average firm in our sample has a total asset value of $2 billion, a leverage ratio of 22%, and an average excess return of 7%. The average ratio of income to assets in our sample is 3%. On average, our sample firm has a fluidity mean of 6.62, a tangibility ratio of 24%, a Q ratio of 1.94, a Z-score of 16.16, and an Amihud value of –6.12.

[Insert Table 1]

3. Empirical Results

3.1. Baseline Regression Results

We begin our empirical analysis by testing the relation between import penetration and expected default risk. In our main specification, we regress expected default risk measures on import penetration and the full set of control variables, as follows:

$$EDF_{it} = \beta_0 + \beta_1 Import\ penetration_{\ ijt-1} + \beta_z Controls_{it-1} + \phi_i + \psi_t + \varepsilon_{it}, \qquad (5)$$

where *i*, *j*, and *t* refer to the firm, industry, and year, respectively. The dependent variable is either the expected default frequency (*EDF*) or Merton's expected default frequency (*Merton-EDF*). Our key independent variable of interest is import penetration (*Import Penetration*). The control variables are the fluidity measure (*Fluidity*), the leverage ratio *Leverage*, the tangibility ratio *Tangibility*, the return-on-assets ratio *ROA*, the market-to-book ratio (*Q*), the natural logarithm of total assets *(Size*), Altman's Z-score (*Z Score*), the indicators *Investment Grade* and *Rated*, the inverse of annualized stock return volatility ($1/\sigma_E$), the difference between the stock's annual return and the value-weighted return (*Excess Return)*, and Amihud's illiquidity measure (*Amihud*). All the independent variables are lagged by one year to mitigate the issue of reverse causality. Standard errors are clustered at the firm level.[14] The detailed variable definitions are presented in Appendix A1.

We run two separate specifications for each dependent variable and report our results in Table 2. For each dependent variable, the only difference between the two specifications is that, in the second specification, we control for product market fluidity. All regressions include firm and year fixed effects. Firm fixed effects account for endogeneity concerns stemming from time-invariant

[14] Our results remain qualitatively unchanged when correcting standard errors for clustering at the industry level.

firm-specific omitted variables. Year fixed effects help account for common macroeconomic shocks.

[Insert Table 2]

Columns (1) and (2) of Table 2 report the regression results of the naïve expected default frequency on import penetration. Similarly, columns (3) and (4) report the regression results of Merton's expected default frequency on import penetration. The results in Table 2 show that foreign competition has a negative effect on default risk. Specifically, across all columns in Table 2, the coefficient estimate on import penetration is negative and significant at the 1% level. These results are not only statistically significant, but also economically meaningful. For example, taking the coefficient on *Import penetration* from column (2) of –0.18, we find that an increase in import penetration from the 25th to the 75th percentile of its distribution is associated with a reduction in default risk of approximately 0.03 (i.e., 3%).

Interestingly, the coefficients on product market fluidity in columns (2) and (4) of Table 2 are statistically nonsignificant. This is despite Platt (2020) showing that product market fluidity is positively associated with bond yields and, by implication, the cost of debt. In Appendixes A3 and A4, we replicate Platt's (2020) results and show that, although we can reproduce the same results when employing the same model specification (i.e., specification with firm-level control variables plus industry and year fixed effects in Appendix A3 and industry fixed effects in Appendix A4), the results disappear when we include firm and year fixed effects in both sets of results (with respect to the results documented in Appendix A4, the results disappear after including year fixed effects on top of industry fixed effects). We thus conclude that Platt's (2020) results are highly susceptible to model choice.

3.2. Robustness Checks

We supplement the baseline results with a battery of robustness tests, in which we try to validate the main results. We report the robustness results in Table 3. The robustness tests are based on the model specification that includes product market fluidity (columns (2) and (4) in Table 2). For brevity, we report only the coefficients on the variables of interest.

[Insert Table 3]

In Panel A of Table 3, we control for a large set of CEO characteristics. CEOs play a central role in corporate decisions with respect to investment and financing (Bertrand and Mullainathan, 2003; Malmendier and Tate, 2005), and therefore their characteristics can significantly influence corporate default risk. Furthermore, certain types of CEOs can self-select to be in certain types of industries, causing CEO characteristics to be correlated with import penetration. We therefore control for those CEO characteristics that prior literature documents have implications for corporate outcomes (Malmendier and Tate, 2008; Hirshleifer, Low, and Teoh, 2012). These variables include CEO overconfidence, CEO age, CEO tenure, and incentive variables, including equity compensation delta and vega.

We measure CEO overconfidence following Malmendier and Tate (2008). Specifically, we define an overconfident CEO as one who postpones the exercise of vested options that are at least 67% in the money (*Holder 67*), which can take the value of one when the CEO is identified as overconfident, and zero otherwise. Since we do not have detailed data on CEOs' option holdings or exercise prices for each option grant, we follow Campbell et al. (2011).[15] We capture CEO

[15] For each CEO–year, the average realizable value per option is calculated as the total realizable value of the options divided by the number of options held by the CEO. The average realized value is then used to estimate the strike price of an option by subtracting it from the stock price. The average moneyness is found by dividing the stock price by the strike price. Since are only interested in options that the CEO can exercise, we include only the vested options held by the CEO.

incentives using the CEO delta (*Ln(Delta)*) and vega (*Ln(Vega)*). The delta measure is defined as the dollar change in a CEO's stock and option portfolio for a 1% change in stock price, and it measures the CEO's incentives to increase the stock price; vega is the dollar change in a CEO's option holdings for a 0.01-unit change in stock return volatility. Panel A of Table 3 shows that our results remain qualitatively consistent across both default risk measures after controlling for CEO overconfidence, age, tenure, delta, and vega, indicating that the negative association is not driven by omitted CEO-level control variables.

In Panel B of Table 3, we replace firm fixed effects with CEO fixed effects, which can absorb all time-invariant CEO-level characteristics. This approach further allows us to ensure that unobserved CEO characteristics are not driving our baseline results. Again, we obtain consistent results after including CEO fixed effects, further supporting our main findings.

In Panel C of Table 3, we control for corporate governance. Corporate boards play an important role in shaping corporate strategy and therefore can have a significant effect on default risk (Baghdadi, Nguyen, and Podolski, 2020). We therefore control for the governance index (*G-index*) developed by Gompers, Ishii, and Metrick (2003), the proportion of independent directors serving in the boardroom, and an indicator that equals one if the CEO and chairperson are the same person. The results show that the coefficient estimates on import penetration remain negative and statistically significant.

In Panel D of Table 3, we account for the fact that corporate bankruptcies are cyclical events, with the number of bankruptcies jumping rapidly during economic crises. For example, Figure 1 shows a significant spike in the number of bankruptcies around the savings and loan crisis (1986–1995) and the dot-com bubble (2001–2002) and a slightly lower spike during the global financial crisis (2007–2009).[16] It is therefore possible that our results are largely driven by financial crises, when default risk is expected to increase. We do not expect import penetration to be mechanically related with default risk, since imports tend to fall during recessions (thus going against our findings). Nevertheless, we examine this possibility by re-examining the association after dropping the affected years from the sample to make sure that our results are not affected by recessions. The relation between import penetration and default risk remains consistent after dropping the final crisis years.

[Insert Figure 1]

In Panel E of Table 3, we repeat our analysis and control for financial constraints. Firms facing more intense competition can be expected to be more financially constrained, since foreign competitive pressures will severely reduce firms' profit margins (Xu, 2012). Financial constraints could therefore be an important omitted variable. We follow Lamont, Polk, and Saaá-Requejo (2001) and include the Kaplan–Zingales (KZ) index in the baseline regression model from Table 2.[17] Our results remain qualitatively unchanged.

In Panel F of Table 3, we control for litigation risk, since variation in litigation risk can significantly contribute to a firm's default risk. Prior studies in accounting show that foreign competition is associated with lower disclosure (Atawnah et al., 2018) and more aggressive tax avoidance (Chen, Lin, and Shao, 2021; Atawnah et al., 2020), which have the potential to increase litigation risk. It is therefore possible that litigation risk is a key omitted variable in our analysis.

[16] Interestingly, Figure 1 separately shows the bankruptcies of firms in competitive and uncompetitive industries, with the number of firms defaulting as a portion of total firms in the industry being greater among uncompetitive industries, as opposed to competitive industries.

[17] Our results remain qualitatively unchanged if we use alternate measures of financial constraint.

We follow Kim and Skinner (2012) and estimate the litigation risk score.[18] Our results remain qualitatively unchanged after controlling for litigation risk.

In Panel G of Table 3, we conduct a placebo test to help dispel the concern that our baseline results occur by chance. Specifically, we generate a pseudo-import penetration variable 100 times and re-estimate 100 unique regressions. The pseudo-import penetration variables are randomly generated following the same statistical distribution as the real import penetration variable. After running 100 regressions using 100 unique randomized import penetration variables, we average the coefficient estimates and the *t*-statistics from the resulting regressions and report the evidence in Panel G. The average coefficient estimate on the randomized import penetration variable is 0.00 and not significant at the 10% level. In Panel H of Table 3, we employ an alternate placebo test. Specifically, we use import penetration at t+1 relative to the dependent variable. Since future import penetration should not have any causal effect on default risk, we would expect the variable to be insignificantly related with default risk. This indeed what we find.

Finally, in Panel I, we address the issue of survivorship bias more formally, by adding an additional firm-year observation for those firms that exit the sample due to bankruptcy. The key concern is that with the weakest firms existing the sample, the remaining firms will have lower default risks. This can affect our results if import penetration results in the weakest firms dying off.[19] To address this issue, we add a firm-year observation in the year when the defaulting firm exists the sample, and use the predicted value of *EDF*. To calculate the predicted value of *EDF*, we use the coefficient estimates from Table 2 and the values from the final year of the remaining

[18] We follow Kim and Skinner (2012) and define litigation risk as a function of industry and firm characteristics, such as size, growth, and stock return and volatility.

[19] This concern is somewhat alleviated by the fact that in unreported results, we do not find that firms are more likely to exit the sample due to bankruptcy due to import penetration. In fact, we find that when import penetration is greater, firms are less likely to exit the sample due to bankruptcy.

control variables other than import penetration. Once again, we find that our core results stay unchanged in this specification.

Overall, the results presented in Tables 2 and 3 suggest that a negative and robust relation exists between import penetration and expected default risk. These results are consistent with the notion that foreign competition disciplines managers, which, in turn, decreases default risk.

3.3. Endogeneity

The results presented up to this point suggest that import penetration decreases the likelihood of default. Although we attempt to address the omitted variable problem in the previous subsections, we cannot be certain that we have identified all the possible omitted variables. Furthermore, although we do not suspect reverse causality to be a major problem in our setting, we cannot exclude this possibility. We attempt to address these issues by identifying a more exogenous component of foreign competition and relating it to default risk. Toward this goal, in this subsection, we exploit three identification strategies: (i) an instrumental variable (IV) approach, (ii) the granting of the PNTR status to China, and (iii) a DiD analysis around tariff reductions.

3.3.1. IV Approach

In this subsection we employ an IV approach to estimate the exogenous component of import penetration. This approach requires us to first identify an instrument that is related with import penetration but unrelated to default risk. Prior studies on international trade emphasize that trade barriers reduce import competition (e.g., Helpman and Krugman, 1989). One of the most important forms of trade barriers are tariffs, which prior literature shows has a significant effect on the level of imports. For example, Bernard, Jensen, and Schott (2006) show that a reduction in tariffs results in significant intensification of foreign competition. We therefore follow Xu (2012) and use lagged tariff rates as our instrument for import penetration.[20] Our instrument meets the exclusion restriction, since changes in entry barriers are exogenous to individual firms, in the sense that they do not reflect choices by those firms.

We use the U.S. import data set of Feenstra, Romalis, and Schott (2002) and Schott (2010) and calculate the annual ad valorem tariff rate as the duties collected by U.S. Customs and Border Protection divided by the total free-on-board custom value of imports. In the first stage, we regress import penetration on tariff rates and the entire set of control variables from the baseline regression, together with firm and year fixed effects. In the second stage, we regress default risk on the predicted value of import penetration from the first-stage regression. We report our results in Table 4.

[Insert Table 4]

The first-stage results are reported in columns (1) and (3) of Table 4, whereas the second-stage results are presented in columns (2) and (4). The dependent variables are *EDF* and *Merton-EDF*. The second-stage results are based on the most rigorous specification from Table 2, in which we include product market fluidity (*Fluidity*), in addition to the full set of control variables, as well as firm and year fixed effects. We correct standard errors for clustering at the firm level.

The first-stage regressions result in Table 4 show that the tariff rate is strongly and negatively related to *Import Penetration,* with the coefficient estimate being significant at the 1% level in both columns (1) and (3). Our second-stage results are consistent with those reported in Table 2. Specifically, the coefficient estimate on *Predicted Import Penetration* in column (2) is negative and significant at the 5% level. This result shows that, even after accounting for endogeneity

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[20] Our IV is lagged by two years. However, our results remain qualitatively unchanged if we lag tariff rates by either one year or three years.

concerns, we observe a negative association between the level of exposure to foreign competition and *EDF*. We show similar results in column (4), where the dependent variable is *Merton-EDF*.

3.3.2. Granting of the PNTR Status to China

In this subsection, we utilize the granting of the PNTR status to China, effective from 2001 (Pierce and Schott, 2016). This test exploits an exogenous shock to import penetration from China, which accounts for a large portion of overall imports into the United States.[21] Conferral of the PNTR status on China was unique, in that it did not change the import tariff rate the United States applied to Chinese products, but it did remove any uncertainty that Chinese products would have attracted from the non-normal trade relations (NTR) tariff rate. The granting of the PNTR status to China therefore removed any uncertainty associated with annual renewals by permanently setting U.S. trade duties on Chinese imports at a more favorable rate.

We measure the transition from annual to permanent normal trade by estimating the NTR gap, which is the difference between the non-NTR rates to which tariffs would have risen if the annual renewal had failed and the NTR tariff rates were locked in by the PNTR status. Pierce and Schott (2016) report that, in 1999, the mean and standard deviation of the NTR gap were 33 and 14 percentage points, respectively, indicating substantial variation across industries. We expect to find that default risk responded to the granting of the PNTR status to China more aggressively in industries with larger NTR gaps prior to 2001.

We follow Pierce and Schott (2016) and use DiD regressions that exploit such cross-sectional variations in the NTR gap to test whether default risk in industries with higher NTR gaps (first difference) is lower after the change in policy relative to default risk in the pre-PNTR status

[21] China was the largest supplier of goods into the United States. In 2018, Chinese imports accounted for 21.2% of total imports.

era (second difference). We collect data on the NTR gap from Peter Schott's webpage and construct a dummy variable, *Post*, equal to one for the years from 2001 onward, and zero otherwise. In our empirical analysis, we use the NTR gap for 1999, which is the year before the passage of China's PNTR status in the United States. We follow Pierce and Schott (2016) and interact *NTR Gap* with *Post*, which gives us the DiD coefficient. In addition to the DiD coefficient, we include *NTR Gap*, *Post*, and the standard set of firm-level control variables. We further follow Pierce and Schott (2016) and include industry and year fixed effects in columns (1) and (3) of Table 5. For completeness, we also include firm and year fixed effects in columns (2) and (4).

[Insert Table 5]

The results in Table 5 are consistent with our baseline results reported in Table 2. The DiD estimate (*Post*NTR Gap*) is negative and statistically significant in columns (1) and (3), where industry fixed effects are included. Upon including firm and year fixed effects in columns (2) and (4), we find that (*Post*NTR Gap*) is only related to *EDF*, and not to *Merton-EDF*. Specifically, the DiD estimate (*Post*NTR Gap*) is negative and significant at the 10% level in relation to *EDF* in column (2) and statistically unrelated to *Merton-EDF* in column (4). We note that the inclusion of firm fixed effects is a highly restrictive model, and the entirety of our results suggests that the granting of the PNTR status decreased firms' default risk.

3.3.3. DiD Analysis

Our final identification strategy utilizes the DiD approach of Frésard and Valta (2016). Specifically, we attempt to address potential endogeneity problems by examining how default risk responds to situations in which the threat of entry by new competitors suddenly increases. We measure increases in entry threat using large reductions in import tariffs, which we define as reductions occurring in an industry–year when the negative tariff reduction is three times larger than the industry's absolute mean tariff change. Consistent with Frésard and Valta (2016), we define an industry at the four-digit SIC code level. We follow the same filtering criteria as Frésard and Valta (2016) and exclude non-transitory tariff cuts where a large tariff cut was followed by a large tariff increase over the subsequent three years and exclude tariffs below 1%. We define firms in industries affected by a large tariff reduction as treated firms. Our sample thus contains 39 unique industry–year events.[22] Panel A of Table 6 presents the distribution of the large tariff cuts across our sample years.

[Insert Table 6]

To conduct our DiD analysis, we match treated firms with a set of control firms. From the set of non-treated firms, we construct a sample of control firms that are similar to the treatment firms except for the change in entry threat they experience. Control firms are matched using propensity score matching where we choose the three nearest-neighbor firms with replacement on the set of control variables from Table 2. Specifically, we apply the following filtering criteria. First, control firms cannot be treated during the three-year period leading up to and following the event. Second, control firms must have valid observations one year prior to and following the event. Third and finally, the difference in the propensity score cannot exceed 0.01.[23]

We present the univariate mean comparisons between treatment and control firms' characteristics and their corresponding *t*-statistics in Panel B of Table 6. Overall, the treatment and control firms are not statistically different, suggesting that the two sets of firms are well matched.

[22] Frésard and Valta (2016) identify 91 events between 1974 and 2005. However, since our sample period runs from 1989 to 2012, we are left with only 39 events.

[23] It is important to recognize that an inherent weakness of the empirical design utilizing large tariff cuts as a quasi-natural experiment is that it utilizes control firms from industries other that the treatment firm. This is an inherent problem that all studies employing the methodology from Frésard and Valta (2016) are plagued by. Although we are unable to overcome this underlying issue with this particular methodological approach, we would like to point out that out results are consistent across a large number of alternative methodological designs, strengthening the reliability of our results. We thank an anonymous reviewer for this observation.

Specifically, the Wilcoxon test for the difference in means for any of the firm-level variables does not reject the null hypothesis that the firm characteristics in the two subsamples are the same.

We present the DiD test results in Panel C of Table 6. We use the following specification on a sample comprising only treatment and control firms:

$$Default\ Risk_{it} = \alpha + \beta\ CUT_{it} + \delta\ X_{it-1} + Year_t + Firm_i + \varepsilon_{it}, \quad (6)$$

where, for firm *i* and time *t*, *Default Risk* refers to our two measures of default risk, *EDF* and *Merton-EDF*; the variable of interest, *CUT*, is a dummy variable equal to one if a given industry has experienced a tariff cut by time *t*; and the vector ***X*** contains control variables used in the baseline regressions. We consider only the years that surround each event and exclude the year of the event, to better isolate the effect of the entry threat engendered by tariff cuts from that of actual entry. Since our sample size is relatively small, we use two event periods. The first runs from two years before the event to two years after the event (–2/+2), while the second runs from three years before the event to three years after the event (–3/+3). In addition, we include firm and year fixed effects. We correct standard errors for clustering at the firm level.

The results reported in Table 6 suggest that default risk responds negatively to tariff cuts. Specifically, the coefficient estimate on the *CUT* variable is negative and significant at the 5% level for both measures of expected default risk and the (–2/+2) and (–3/+3) windows. Our results therefore show that large tariff reductions, which exogenously increase foreign competition, are associated with a reduction in default risk. These results support the baseline results we obtained in our OLS analysis reported in Table 2.[24]

[24] The results in this section should be interpreted with caution, because this is not the first paper that examines the impact of tariff reductions on economic variables. Thus, our test represents the issue of testing multiple hypotheses within the same family. While adjustments such as the Romano–Wolf multiple hypothesis correction are available, such an exercise is challenging in our setting, given the requirement to specify all variables that have been examined

It is worth pointing out that our results are qualitatively different from those of Valta (2012), who utilizes large tariff cuts and finds that default risk increases after such cuts. A primary reason for the difference in results is that Valta (2012) examines the effect of tariff cuts on affected firms by comparing the univariate averages of default risk before and after the event. In contrast, we follow the methodology of Frésard and Valta (2016), where control firms are utilized to capture the counterfactual of tariff cuts. Furthermore, our empirical design controls for a large set of firm-level controls and fixed effects. Consequently, our identification strategy with respect to default risk is more robust compared to that employed by Valta (2012).

3.4. Alternate Dependent Variables

In this subsection, we utilize two additional measures of default risk. While there are various benefits to using Merton's distance-to-default model to capture the expected default frequency as a proxy for default risk, relating import penetration to actual defaults is important in establishing whether foreign competition contributes toward bankruptcy in reality. We use the bankruptcy data of Chava (2014) and Chava, Stefanescu, and Turnbull (2011), which capture all the bankruptcy events of publicly listed firms over our sample period.[25] For each firm–year, we define a dummy variable equal to one in the year when the firm defaults. In our logistic regression model, we include the full set of control variables used in the baseline analysis, as well as firm and year fixed effects.[26] We correct standard errors for clustering at the firm level. We present our results in column (1) of Table 7.

[Insert Table 7]

in prior studies, as well as the different sets of control variables and fixed effects used in these studies. We thank the referee for highlighting this important limitation of our work.

[25] We thank Sudheer Chava for sharing the updated bankruptcy data with us.

[26] Since a large set of fixed effects cannot be included in a logistic regression, we include industry fixed effects in our model rather than firm fixed effects.

The results obtained from the logistic regression are consistent with those presented in Table 2. The coefficient estimates on import penetration are negative and statistically significant at the 5% level of significance. These results confirm that firms exposed to foreign competition have a lower incidence of default.

In addition to bankruptcies, we explore the link between import penetration and CDS spreads. CDSs are a form of debt insurance product, with the value of the contract directly related to the firm's default risk. CDS spreads therefore offer a useful alternative to the measure of default risk employed in our baseline results. Consistent with expectations, we find that the coefficient estimate on import penetration in column (2) of Table 7 is negative and statistically significant at the 5% significance level. These results further support the baseline results documented in Table 2.

4. Additional Analysis

In this section, we attempt to identify the channel through which foreign competition affects default risk. We note that standard models of default risk are a function of four key variables: equity returns, equity return volatility, the market value of debt, and the market value of equity.[27] In our analysis, we relate import penetration to each of the key determinants of default risk. We present our results in Table 8.

[Insert Table 8]

In Table 8, we replace default risk as the dependent variable with the key determinants of default risk (market equity, leverage, volatility, and returns). We follow our baseline model specification, where we include the full set of control variables (including *Fluidity*) together with

[27] Time to maturity is a fifth variable that forms Merton's (1974) distance-to-default model. However, the standard approach is to assume a time to maturity of one year, meaning that there is no variation in this variable and it therefore plays no role in our analysis.

firm and year fixed effects. Since some of the control variables, such as leverage, size, the inverse of equity volatility, and excess returns, are similar to the dependent variables that we use in this subsection, we remove these control variables from our model. All standard errors are clustered at the firm level.

In Panel A of Table 8, we relate import penetration to the market value of equity (*MCap*), measured as the share price at the fiscal year-end multiplied by the number of shares outstanding. The coefficient estimate is statistically nonsignificant, suggesting that the negative effect that our paper documents between import competition and default risk is not explained by import penetration impacting firm equity value. In Panel B, we relate import penetration to leverage. We follow Xu (2012) and define market leverage as the ratio of interest-bearing debt divided by the sum of total assets and market equity minus book equity. Book leverage is defined as the ratio of interest-bearing debt divided by total assets. Our results show that import penetration is not statistically related to either market or book leverage, suggesting that the baseline results cannot be explained by firms reducing their debt levels in response to more intense competition.

In Panel C of Table 8, we relate import penetration to stock return volatility. We calculate the variable *Volatility* by first calculating for each firm the monthly standard deviation of daily stock returns multiplied by the square root of the number of trading days in that month (Han and Lesmond, 2011; Hou and Loh, 2016, and Fu, 2021). We then average the monthly volatility to the annual level. In addition to total volatility, we are interested in distinguishing between idiosyncratic and systematic volatility. We follow Cao, Chordia, and Zhan (2021) and Fu (2021), and regress daily excess stock returns (daily return minus the daily risk-free rate) on the three Fama–French factors. The monthly idiosyncratic volatility for an individual stock is the standard deviation of the residual from this regression multiplied by the square root of the number of trading days in that month. We then average the monthly idiosyncratic volatility to the annual level. Systematic volatility, in turn, is defined as the square root of the difference between total volatility squared and idiosyncratic volatility squared.

The results presented in Panel C of Table 8 indicate that import penetration has a strong negative effect on equity volatility. In column (1), the coefficient on import penetration is negative and statistically significant at the 1% level. This finding indicates that our baseline results are explained by foreign competition reducing the volatility of firm's equity. There are two possible explanations for this negative association between import penetration and stock return volatility. One explanation is that foreign competition disciplines managers, reducing idiosyncratic decision making and, by implication, idiosyncratic volatility. Another explanation is that foreign competition induces managerial myopia, which has the practical effect of reducing asset betas and therefore systematic volatility. The results in columns (2) and (3) indicate that import penetration is negatively associated with both systematic as well as idiosyncratic volatility. In untabulated tests, we employ the portion of total volatility explained by idiosyncratic volatility as the dependent variable and find a weak (*t*-statistic of 1.70) positive coefficient on import penetration. This observation suggests that import competition reduces the systematic component of volatility relatively more than the idiosyncratic component. Nevertheless, this effect is statistically weak, and we can conclude that import competition decreases default risk through both the managerial disciplining and myopic investment channels.

Finally, in Panel D of Table 8, we relate import penetration to annual stock returns. The coefficient on import penetration is marginally negative and significant (at the 10% level). This finding is consistent with the results reported in Panel C, namely, that import penetration reduces systematic risk.

5. Reconciling Results with Prior Research

We conduct additional tests to reconcile our results with prior literature, particularly the works of Valta (2012) and Platt (2020). We start with replicating the results in Table 5 of Valta (2012) pertaining to *EDF*. In Appendix A2, when we employ the same univariate setting as Valta (2012), we find that *EDF* increases around large tariff cuts. We are therefore able to qualitatively replicate Valta's (2012) results. However, as we have shown, the association between large tariff cuts and default risk becomes negative after we control for firm and year fixed effects, as well as for numerous firm specific controls. We therefore conclude that, in a more robust model specification, the positive association between large tariff cuts and *EDF* does not hold.

We also compare our results to those presented by Platt (2020), who shows that product market competition as measured by product market fluidity and large tariff cuts increases bond yield spreads. In Appendix A3, we examine the results reported in Table 4 of Platt (2020), where a positive association between product market fluidity and bond yield spreads is reported. Our results reveal that, when we employ the same model specification as Platt (2020), a positive association is established between important penetration as well as product market fluidity and bond yield spreads. When both import penetration and product market fluidity are included in the same specification, import penetration dominates product market fluidity. However, when we employ a more restrictive model specification that replaces industry fixed effects for either firm or bond fixed effects, the results disappear. Once again, due to the significant endogeneity concerns associated with any empirical design striving to capture the causal effect of product market competition, more restrictive models that hold a greater number of factors constant are preferred. Our analysis therefore suggests that neither product market competition nor import penetration has a material effect on bond yield spreads when accounting for time invariant firm- or bond-level factors.

In Appendix A4, we revisit the results from Table 5 of Platt (2020), where large tariff cuts are related to bond yield spreads. In column (1), we utilize the same model specification as documented by Platt (2020), namely, a regression where the independent variable of interest is an indicator variable equal to one if a large tariff cut took place, together with firm-level controls and industry fixed effects. Consistent with the results presented by Platt (2020), the coefficient on the variable of interest is positive and statistically significant. However, once we include either year or firm fixed effects into the model specification, the results disappear. To reiterate, more restrictive specifications that hold a greater number of factors constant are preferred, since such models are more likely to isolate the causal effect that large tariff cuts have on corporate outcomes. In contrast, less restrictive specifications are more likely to be plagued by omitted variables issues that can bias the results.

6. Conclusion

Utilizing a large sample of U.S. manufacturing firms, we document a strong and robust negative association between import penetration and corporate default risk. The effect is not only statistically significant, but also economically meaningful. These results are robust to the inclusion of various controls, CEO fixed effects, and additional tests that formally address endogeneity concerns. Overall, our results suggest that firms exposed to foreign competition have a substantially lower risk of failure compared with firms exposed to lower levels of foreign competition. Although these results contrast with prior studies showing a positive association between the competitive environment and the cost of debt, we find that the results in these studies—primarily Platt's (2020)—are highly sensitive to model choice and disappear in a more robust specification with firm and year fixed effects.

Appendix A1
Variable Definitions

Dependent Variables	
EDF	Expected default frequency, computed as N(-DD), where DD is the distance-to-default calculated following Merton (1974) and Bharath and Shumway (2008), and N(.) is the cumulative standard normal distribution function.
Merton-EDF	Merton's expected default frequency is calculated following Merton (1974), by solving Equation (4) in Section 2.
Bankruptcy	An indicator variable that equals one if a firm files either a Chapter 7 or Chapter 11 during the period 1964–2017.
CDS	The CDS is the annualized premium that is needed to compensate the counterparty for the default risk, on an actuarial basis, of the reference company. It is equivalent to the physical CDS par spread. It has contract terms ranging from one year to five years. Data on CDS spread are retrieved from the Credit Research Initiative–Risk Management Institute database of the National University of Singapore and available at http://nuscri.org.
Independent Variables	
Import Penetration	Import penetration is defined as the proportion of imports to the total domestic and foreign production for a specific industry. We compute import penetration as $Imports_{s,y}/(Imports_{s,y} + Domestic\ production_{s,y})$.
Control Variables	
Fluidity	The fluidity measure, which is proposed by Hoberg, Phillips, and Prabhala (2014), is a measure of how intensively the product market around a firm is changing in each year. Measures of fluidity are customized to each firm based on each firm's unique product market vocabulary.
Leverage	Total debt (long-term debt + short-term debt) divided by the book value of assets.
Tangibility	Tangibility is calculated as net property, plant, and equipment (Compustat PPENT) divided by total assets (Compustat AT).
ROA	Ratio of net income (Compustat quarterly NIQ) to total assets (Compustat quarterly ATQ).
Q	Market-to-book ratio, calculated as the ratio of the market value of equity (Compustat PRCCF*CSHO) to the book value of equity (Compustat CEQ).
Size	Firm size, calculated as the natural logarithm of total assets (Compustat AT).
Z Score	Altman's Z-score, calculated as follows: 1.2*(current assets – current liabilities)/total assets + 1.4*(retained earnings/total assets) + 3.3*(pre-tax income/total assets) + 0.6*(market capitalization/total liabilities) + 0.9*(sales/total assets).
Investment Grade	An indicator variable that takes the value of one if the Standard & Poor's (S&P) long-term issue rating (Compustat item splticrm) for a firm is BBB or higher, and zero otherwise.
Rated	An indicator variable that takes the value of one if a given firm in our sample has an S&P long-term issue rating (Compustat item splticrm), and zero otherwise.
σ_E	Annualized standard deviation of returns, estimated from monthly stock returns over the previous year.
Excess Return	Annual excess return, which is the difference between a firm's annual stock return calculated from monthly returns (CRSP item ret) over the previous 12 months and the returns on the CRSP value-weighted index (CRSP item vwretd) over the same period.
Amihud	Amihud measure of illiquidity. The natural logarithm of the annual average of the daily ratio of the absolute value of stock return divided by dollar trading volume, multiplied by 1 million, following Amihud (2002).
Additional Variables	
Tariff	Annual ad valorem tariff rate computed as the duties collected by U.S. Customs divided by the total free on-board custom value of imports.

Holder 67	CEO overconfidence dummy, which equals one if a CEO postpones the exercise of vested options that are at least 67% in the money, following Malmendier and Tate (2008) and Campbell et al. (2011).
CEO age	The age of the CEO.
Ln(Tenure)	The natural logarithm of the number of years the CEO has been at the firm's helm.
Ln(Delta)	The natural logarithm of delta, which is the dollar change in a CEO's stock and option portfolio for a 1% change in stock price.
Ln(Vega)	The natural logarithm of vega, which is the dollar change in a CEO's option holdings for a 0.01 unit change in stock return volatility.
G-index	The governance index as defined by Gompers, Ishii, and Metrick (2003).
% of independent directors	The percentage of independent directors sitting on the board.
CEO duality	A dummy that equals one if the CEO and chairperson of the board are the same person, and zero otherwise.
KZ Index	Following Lamont, Polk, and Saaá-Requejo (2001), we define the KZ index as the outcome of applying the following regression: –1.001909[(IB + DP)/PPENT t–1] + 0.2826389[(AT + PRCC_F×CSHO – CEQ – TXDB)/AT] + 3.139193[(DLTT + DLC)/(DLTT + DLC + SEQ)] – 39.3678[(DVC + DVP)/PPENT t–1] – 1.314759[CHE/PPENT t–1], where all involved variables are Compustat data items.
Litigation Risk Score	We follow Kim and Skinner (2012) and define litigation risk as a function of industry and firm characteristics, such as size, growth, and stock return and volatility.
ML	Market leverage is calculated as total debt (long-term debt + short-term debt) divided by the market value of equity plus total debt.
Loan Spreads	The natural logarithm of spread over the London Interbank Offered Rate, or LIBOR (non–LIBOR-based loans are excluded from the sample), paid on drawn amounts on credit lines.
Yield Spread	Bond yield based on the last price for a bond in the month minus the relevant end-of-month Treasury yield for the bond.
Coupon	Bond issue coupon rates (%).
Bond Size	The amount outstanding of a bond issue.
Maturity	Bond maturity measured in days.
Term Spread	The difference between a 10-year Treasury bond yield and a one-year Treasury bond yield.
Credit Spread	The difference between the yields of a long-term Baa bond index and a long-term Aaa bond index.
High Yield	A dummy variable for a non–investment-grade rating.

Appendix A2
Large Tariff Reduction and Firm Characteristics

Description: This table presents firm characteristics before and after large tariff reductions. Firm characteristics include expected the default frequency, loan spreads, and leverage, in line with Valta (2012). The sample period is 1993–2005. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table replicates the results of Table 5 of Valta (2012) by studying the effect of tariffs on corporate default risk, loan spreads, and total leverage. The methodology involves comparing default risk before a large tariff reduction to the default risk after the large tariff reduction in a univariate setting. The analysis is conducted on a sample of firms affected by large tariff reductions.

Variable	*Before*	*After*	*Difference*
EDF	0.03	0.06	0.03***
Loan spread	4.43	4.71	0.28***
Leverage	0.20	0.22	0.02***

Appendix A3
Import Penetration and Bond Yield

Description: This table presents the regression results on the relation between import penetration and bond yield. The dependent variable is the yield spread. The independent variable is import penetration. Detailed variable definitions are provided in Appendix A1. Standard errors are corrected for clustering at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table replicates Platt's (2020) main results by studying the relation between import penetration and bond yield spread, including firm-level control variables. Increased foreign competition appears to lead to higher bond yield spreads only when we use industry fixed effects. The effect disappears when using firm or bond fixed effects.

	Yield Spread				
	(1)	(2)	(3)	(4)	(5)
Import Penetration	0.27**		0.29***	0.07	0.05
	(2.23)		(2.34)	(0.34)	(0.19)
Fluidity		0.02***	–0.00	0.00	–0.00
		(3.84)	(–0.28)	(0.42)	(–0.11)
Leverage	0.44**	0.28***	0.47**	0.64***	0.53**
	(2.36)	(2.66)	(2.34)	(2.98)	(2.41)
Q	0.00	0.00	0.00	0.01*	0.01**
	(0.33)	(0.33)	(0.19)	(1.67)	(1.99)
Size	–0.00	–0.04**	0.00	–0.09	–0.04
	(–0.15)	(–2.55)	(0.01)	(–1.32)	(–0.64)
Tangibility	–0.09	0.00	–0.15	–0.56	–0.16
	(–0.49)	(0.02)	(–0.82)	(–1.26)	(–0.44)
ROA	–0.56**	–0.78***	–0.56**	–0.75**	–0.54*
	(–2.57)	(–6.14)	(–2.11)	(–2.25)	(–1.74)
Coupon	0.11***	0.14***	0.12***	0.09***	
	(9.95)	(18.30)	(9.64)	(9.87)	
Ln Bond Size	–0.05***	–0.05***	–0.04***	–0.04***	–0.04
	(–3.49)	(–5.69)	(–3.26)	(–4.24)	(–1.09)
Ln Maturity	0.18***	0.16***	0.19***	0.21***	0.49***
	(12.98)	(11.61)	(12.47)	(13.90)	(7.76)
Term Spread	–0.11***	0.16***	–0.10***	–0.09**	–0.15***
	(–3.38)	(11.61)	(–3.00)	(–2.52)	(–4.81)
Credit Spread	1.29***	0.01***	1.24***	1.08***	1.29***
	(4.72)	(10.31)	(4.11)	(3.52)	(4.47)
High Yield	0.88***	0.72***	0.88***	0.64***	0.49***
	(15.53)	(17.29)	(14.03)	(5.91)	(2.93)
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	NO	NO
Firm FE	NO	NO	NO	YES	NO
Bond FE	NO	NO	NO	NO	YES
Adjusted R^2	0.77	0.77	0.77	0.85	0.89
Observation	3,585	12,684	3,211	3,211	3,211

Appendix A4
Import Penetration and Bond Yields: Import Tariff Cuts

Description: This table presents the regression results on the relation between import penetration and bond yields. The dependent variable is the yield spread. The independent variable is *Treat*, which equals one if a given industry has experienced a tariff cut by time *t*. A significant tariff reduction in an industry year is defined as a negative tariff change that is three times larger than the industry's average (median). Detailed variable definitions are provided in Appendix A1. Standard errors are corrected for clustering at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table replicates Platt's (2020) main results by studying the effect of the significant tariff reduction in an industry on the bond yield spread, as well as the firm-level control variables. Increased foreign competition appears to lead to higher bond yield spreads only when using industry fixed effects. The result disappears when using firm fixed effects.

	Yield Spread		
	(1)	(2)	(3)
Treat	0.19**	0.05	0.06
	(2.39)	(0.40)	(0.55)
Leverage	0.40***	0.31***	0.63***
	(3.49)	(2.70)	(3.15)
Q	–0.00	–0.00	0.01**
	(–0.99)	(–0.17)	(2.43)
Size	–0.04*	–0.04*	–0.09
	(–1.92)	(–1.96)	(–1.36)
Tangibility	–0.10	–0.06	0.27
	(–0.54)	(–0.29)	(0.62)
ROA	–0.63***	–0.56***	–0.42**
	(–2.72)	(–2.70)	(–2.50)
Coupon	0.12***	0.14***	0.09***
	(12.65)	(14.20)	(13.07)
Ln Bond Size	–0.03**	–0.04***	–0.04***
	(–2.60)	(–3.36)	(–3.40)
Ln Maturity	0.21***	0.20***	0.22***
	(13.02)	(12.82)	(16.08)
Term Spread	0.01**	0.01***	0.01***
	(2.17)	(6.08)	(3.92)
Credit Spread	0.29***	0.21***	0.18**
	(20.56)	(4.00)	(2.30)
High Yield	0.85***	0.86***	0.51***
	(15.49)	(17.08)	(6.19)
Year FE	NO	YES	YES
Industry FE	YES	YES	NO
Firm FE	NO	NO	YES
Adjusted R^2	0.72	0.75	0.85
Observation	6,096	6,096	6,069

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Figure 1
Corporate Defaults: High versus Low Foreign Competition

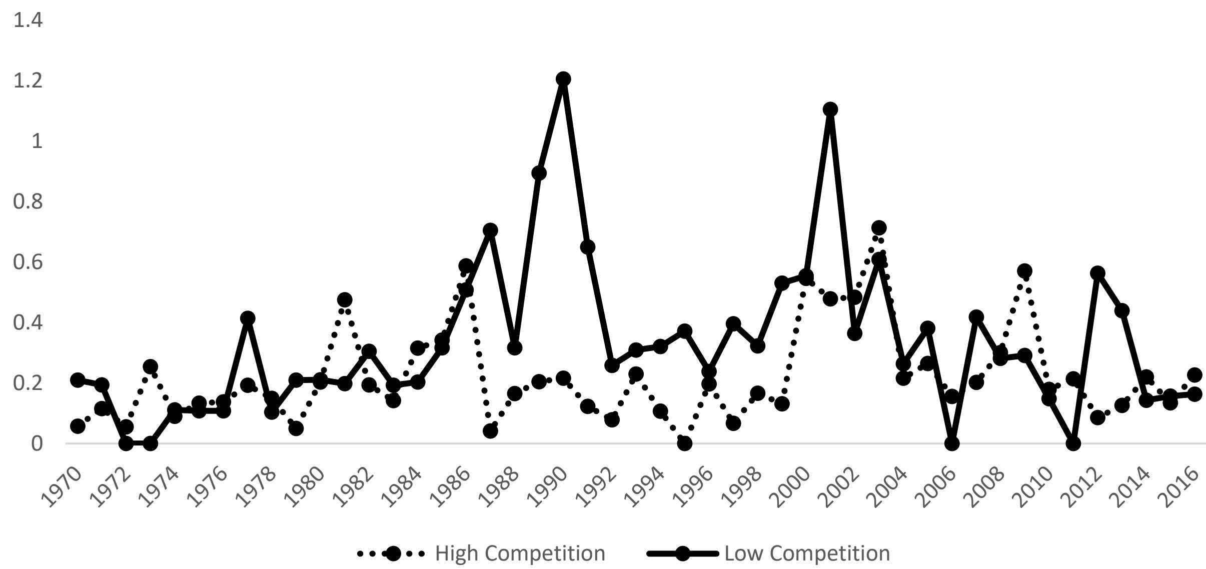

Table 1
Descriptive Statistics

Description: This table presents descriptive statistics for the variables used in this study. The sample consists of observations during the 1989–2012 period, representing 2,578 unique manufacturing firms (SIC codes 2000–3999). Detailed variable definitions are provided in Appendix A1.

Panel A: Average number of annual corporate defaults stratified by industry competitiveness

	High Import Penetration	Low Import Penetration
Average	2.0425	3.2765

	Mean	Std.	P25	Median	P75
Panel B: Dependent variables					
EDF	0.08	0.20	0.00	0.00	0.105
Merton-EDF	0.15	0.24	0.00	0.01	0.215
CDS (bps)	48.54	48.28	15.39	33.87	64.55
Bankruptcy	0.06	0.25	0.00	0.00	0.00
Panel C: Independent variables					
Import Penetration	0.23	0.11	0.15	0.22	0.30
Panel D: Control variables					
Fluidity	6.62	3.68	4.05	5.88	8.23
Leverage	0.22	0.21	0.07	0.19	0.32
Tangibility	0.24	0.16	0.11	0.20	0.32
ROA	0.03	0.36	0.02	0.11	0.17
Q	1.94	2.52	0.85	1.26	2.15
Size	5.40	2.08	3.81	5.18	6.79
Z Score	16.16	26.91	1.92	4.44	13.59
Investment Grade	0.14	0.35	0.00	0.00	0.00
Rated	0.26	0.44	0.00	0.00	1.00
$1/\sigma E$	2.55	1.47	1.49	2.21	3.24
Excess Return	0.07	0.54	–0.25	0.02	0.32
Amihud	–6.12	2.72	–8.16	–6.21	–3.99

Table 2
Import Penetration and Default Risk

Description: This table presents regression results on the relation between import penetration and expected default risk. The dependent variables are *EDF* and *Merton-EDF*, respectively. The independent variable is import penetration. Detailed variable definitions are provided in Appendix A1. Standard errors are corrected for clustering at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table studies the relation between import penetration and measures of expected default risk, as well as the firm-level control variables. Across all models, increased foreign competition appears to lead to lower corporate default risk, accentuating the notion that foreign competition is a substitute for effective corporate governance.

	EDF		*Merton-EDF*	
	(1)	(2)	(3)	(4)
Import Penetration	–0.16***	–0.18***	–0.24***	–0.29***
	(–2.65)	(–2.62)	(–2.98)	(–3.52)
Fluidity		–0.00		–0.00
		(–0.83)		(–0.57)
Leverage	0.11***	0.09***	0.22***	0.21***
	(6.50)	(5.80)	(8.87)	(8.43)
Tangibility	0.08***	0.08***	0.11***	0.11***
	(3.50)	(3.38)	(3.36)	(3.52)
ROA	–0.01	–0.01	–0.05**	–0.05**
	(–1.05)	(–0.98)	(–2.56)	(–2.51)
Q	0.00	0.00	–0.01***	–0.01***
	(0.77)	(0.78)	(–4.43)	(–4.31)
Size	0.00	0.00	0.03***	0.04***
	(1.41)	(1.08)	(7.19)	(7.16)
Z Score	0.00	0.00	–0.00	–0.00
	(1.41)	(0.76)	(0.21)	(–0.71)
Investment Grade	–0.01	–0.02*	–0.03**	–0.02
	(–1.17)	(–1.74)	(–2.26)	(–1.38)
Rated	0.00	0.02*	0.02*	0.02**
	(0.59)	(1.79)	(1.87)	(2.23)
$1/\sigma E$	–0.01***	–0.01***	–0.04***	–0.04***
	(–10.68)	(–8.74)	(–20.03)	(19.26)
Excess Return	–0.19***	–0.18***	–0.17***	–0.17***
	(–42.24)	(–39.21)	(–46.00)	(–43.69)
Amihud	0.02***	0.02***	0.02***	0.02***
	(8.43)	(8.42)	(9.47)	(8.79)
Firm and year FE	YES	YES	YES	YES
Observations	20,036	17,657	18,190	16,416
Adjusted R^2	0.49	0.49	0.60	0.60

Table 3
Import Penetration and Expected Default Risk: Robustness Tests

Description: This table presents robustness tests for the results from Table 2. The dependent variables are *EDF* and *Merton-EDF*, respectively. The independent variable is import penetration. Panel A provides the results after adding CEO-level characteristics. Panel B reports the results using CEO fixed effects. Panel C shows our findings after adding corporate governance metrics. Panel D shows the results after excluding the global financial crisis and dot-com bubble years. Panel E reports the results where we control for financial constraints. Panel F reports the results after controlling for litigation risk score. All regressions control for firm and year fixed effects, except where otherwise stated. Standard errors are corrected for clustering at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table further solidifies our finding that increased foreign competition leads to lower corporate default risk by adding more control variables, excluding certain years, or using a different specification.

	EDF	*Merton-EDF*
	(1)	(2)
Panel A: Controlling for CEO characteristics		
Import Penetration	–0.47***	–0.64***
	(–4.26)	(–4.49)
Holder 67	–0.00	0.01
	(–0.27)	(1.44)
CEO age	–0.02	–0.05
	(–0.68)	(–1.37)
Ln(Tenure)	0.00	0.01***
	(1.20)	(3.03)
Ln(Delta)	–0.02***	–0.01*
	(–3.75)	(–1.87)
Ln(Vega)	0.02***	0.02**
	(2.95)	(2.17)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Adjusted R^2	0.48	0.55
Observations	4,373	4,109
Panel B: Controlling for CEO fixed effects		
Import Penetration	–0.18**	–0.30***
	(–2.50)	(–3.47)
Other controls	Yes	Yes
CEO and year FE	Yes	Yes
Adjusted R^2	0.40	0.54
Observations	8,851	8,159
Panel C: Controlling for corporate governance		
Import Penetration	–0.33***	–0.48***
	(–2.81)	(–3.10)
G-index	0.00	0.00
	(1.06)	(1.09)
% of independent directors	–0.02	0.00
	(–0.88)	(0.13)
CEO duality	0.00	0.01
	(0.44)	(1.58)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Adjusted R^2	0.46	0.56
Observations	3,524	3,326

Table 3 (continued)

Panel D: Excluding the global financial crisis and dot-com bubble years		
Import Penetration	–0.20**	–0.30***
	(–2.55)	(–3.19)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Adjusted R^2	0.46	0.59
Observations	13,070	12,139
Panel E: Controlling for financial constraints		
Import Penetration	–0.21***	–0.32***
	(–2.77)	(–3.45)
KZ Index	0.01***	0.00
	(2.65)	(1.08)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Adjusted R^2	0.49	0.61
Observations	14,017	13,058
Panel F: Controlling for litigation risk		
Import Penetration	–0.20***	–0.28***
	(–2.80)	(–3.18)
Litigation Risk Score	–0.00**	–0.00***
	(–2.24)	(–4.76)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Adjusted R^2	0.48	0.60
Observations	16,501	15,370
Panel G: Placebo test – randomized import penetration		
Randomized Import Penetration	0.00	0.00
	(0.07)	(0.02)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Panel H: Placebo test – next year import penetration		
Next Year Import Penetration	-0.06	-0.14
	(-0.74)	(-1.60)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Adjusted R^2	0.49	0.60
Observations	17,657	16,416

Table 3 (continued)

Panel I: Add firm-year observation for firms that drop-out		
Adj. Import Penetration	-0.19*** (-2.67)	-0.29*** (-3.49)
Other controls	Yes	Yes
Firm and year FE	Yes	Yes
Adjusted R^2	17,670	16,429
Observations	0.48	0.60

Table 4
Import Penetration and Default Risk: IVs

Description: This table presents the results of import penetration on expected default risk and control variables, using a two-stage least squares approach. The dependent variables in the second stage of the results are *EDF* and *Merton-EDF*, respectively. The dependent variable in the first-stage regressions is import penetration. The IV is the two-year-lagged tariff rate (*Tariff*). Detailed variable definitions are provided in Appendix A1. All regressions control for firm and year fixed effects. Standard errors are corrected for clustering at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table addresses endogeneity concerns by using tariffs as an IV to estimate the exogenous component of import penetration. Increased tariff levels reduce import penetration in the first stage, and the predicted value of import penetration appears to be negatively related to both measures of corporate default risk.

	EDF		*Merton-EDF*	
	1st Stage	2nd Stage	1st Stage	2nd Stage
	(1)	(2)	(3)	(4)
Tariff	–0.003***		–0.003***	
	(–16.38)		(–15.79)	
Import Penetration		–1.09**		–1.18**
		(–2.43)		(–2.43)
Fluidity	–0.00	–0.00	–0.00	–0.00
	(–0.14)	(–0.67)	(–1.01)	(–0.77)
Leverage	–0.00	0.09***	–0.00	0.21***
	(–1.28)	(10.89)	(–0.88)	(22.61)
Tangibility	–0.01***	0.08***	–0.01***	0.11***
	(–4.27)	(4.06)	(–5.02)	(5.15)
ROA	–0.00	–0.01*	–0.00	–0.05***
	(–0.57)	(–1.88)	(–0.53)	(–7.76)
Q	–0.00	0.00	–0.00	–0.01***
	(–0.71)	(0.88)	(–0.72)	(–7.06)
Size	0.00**	0.00	0.00***	0.03***
	(2.36)	(1.62)	(3.17)	(10.67)
Z Score	0.00	0.00	0.00	–0.00
	(0.83)	(0.40)	(0.41)	(–0.55)
Investment Grade	0.01***	–0.01*	0.01***	–0.01
	(4.95)	(–1.75)	(4.92)	(–1.15)
Rated	–0.01***	0.01	–0.01***	0.02**
	(–7.19)	(1.57)	(–7.58)	(2.03)
$1/\sigma E$	0.00**	–0.01***	0.00	–0.04***
	(2.41)	(–10.18)	(1.63)	(–29.45)
Excess Return	–0.00	–0.18***	–0.00	–0.17***
	(–0.12)	(–74.68)	(–0.15)	(–64.89)
Amihud	0.00**	0.02***	0.00***	0.02***
	(1.97)	(12.51)	(3.04)	(12.69)
Firm and year FE	YES	YES	YES	YES
Observations	17,436	17,436	16,210	16,210
Adjusted R^2	0.81	0.34	0.81	0.42

Table 5
Granting of the PNTR status to China and Expected Default Risk

Description: This table presents the DiD results that utilize the granting of the PNTR status to China as an exogenous shock to import competition from China. The variable *NTR Gap* is defined as the difference between the non-NTR rates to which tariffs would have risen if annual renewal had failed and the NTR tariff rates. The dummy variable *Post* equals one for the years 2001 and later, and zero otherwise. The coefficient of interest is the interaction between *Post* and *NTR Gap*. Detailed variable descriptions can be found in the Appendix A1. Standard errors are corrected for clustering at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table addresses endogeneity concerns by utilizing the granting of the PNTR status to China, effective from 2001, following Pierce and Schott (2016). This test exploits an exogenous shock to import penetration from China, which accounts for a large portion of overall imports into the United States. The findings remain unchanged and further support our main findings in Tables 2 and 3.

	EDF		*Merton-EDF*	
	(1)	(2)	(3)	(4)
*Post*NTR Gap*	–0.07**	–0.06*	–0.09***	–0.04
	(–2.39)	(–1.70)	(–2.68)	(–1.06)
Post	–0.03	0.01	–0.01	–0.00
	(–1.06)	(0.32)	(–0.36)	(–0.03)
NTR Gap	0.02	–0.01	0.05*	–0.03
	(0.84)	(–0.17)	(1.69)	(–0.55)
Fluidity	0.00**	0.00	0.00***	0.00
	(2.06)	(0.26)	(3.73)	(0.57)
Leverage	0.15***	0.12***	0.25***	0.22***
	(7.93)	(4.78)	(11.88)	(8.07)
Tangibility	0.01	0.01	0.04*	0.09*
	(0.62)	(0.23)	(1.84)	(1.87)
ROA	–0.01	0.00	–0.02**	0.00
	(–1.61)	(0.01)	(–2.28)	(0.21)
Q	–0.00	0.00	–0.01***	–0.01**
	(–0.54)	(1.39)	(–4.94)	(–2.30)
Size	0.01**	0.01	–0.00	0.00
	(2.37)	(1.07)	(–0.13)	(0.14)
Z Score	0.00	0.00	0.00	0.00
	(1.60)	(0.54)	(0.77)	(1.58)
Investment Grade	–0.02***	–0.03**	–0.01	–0.02*
	(–2.77)	(–2.38)	(–1.09)	(–1.72)
Rated	0.03***	0.02	0.03***	0.03**
	(3.06)	(1.56)	(3.59)	(2.09)
$1/\sigma E$	–0.02***	–0.01***	–0.04***	–0.03***
	(–12.11)	(–4.21)	(–18.62)	(–11.52)
Excess Return	–0.17***	–0.16***	–0.15***	–0.15***
	(–24.30)	(–22.36)	(–25.64)	(–24.04)
Amihud	0.01***	0.03***	0.01***	0.02***
	(6.82)	(6.44)	(4.56)	(5.59)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Adjusted R^2	0.392	0.494	0.491	0.596
Observations	7,602	7,602	7,177	7,177

Table 6
Import Penetration and Expected Default Risk: DiD Analysis

Description: This table presents the estimates from DiD regressions for the expected default risk around tariff reductions. The dummy variable *CUT* equals one if a given industry has experienced a tariff cut by time *t*. A significant tariff reduction in an industry year is defined as a negative tariff change that is three times larger than the industry's average (median). Industries are defined at the four-digit SIC code level. The sample comprises treated and control firms that experienced a significant import tariff reduction between 1989 and 2012. Detailed variable definitions are provided in Appendix A1. All regressions control for firm and year fixed effects. Standard errors are clustered at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table addresses potential endogeneity problems by examining how default risk responds to situations in which the threat of entry by new competitors suddenly increases (i.e., reductions occurring in an industry–year when the negative tariff reduction is three times larger than the industry's absolute mean tariff change). The results suggest that default risk responds negatively to tariff cuts.

Panel A: Distribution of large tariff cuts by year

Year	*Large Tariff Cuts*
1990	2
1991	0
1992	1
1993	4
1994	2
1995	20
1996	1
1997	2
1998	2
1999	0
2000	0
2001	0
2002	0
2003	1
2004	0
2005	0
2006	0
2007	1
2008	0
2009	2
2010	0
2011	0
2012	1
Total	39

Table 6 (continued)

Panel B: Comparison of treatment and control firms				
Variable	*Treated*	*Control*	*Differences*	*t-Statistics*
Fluidity	6.29	6.34	–0.05	–0.12
Leverage	0.21	0.21	0.00	0.15
Tangibility	0.27	0.26	0.01	0.42
ROA	0.12	0.13	–0.01	–1.01
Q	1.74	1.66	0.08	0.58
Size	5.84	5.90	–0.06	–0.25
Z Score	28.49	28.49	0.00	0.00
Investment Grade	0.23	0.23	0.00	0.00
Rated	0.38	0.38	0.00	0.00
$1/\sigma E$	2.96	2.76	0.20	1.17
Excess Return	0.02	0.06	–0.04	–0.83
Amihud	–6.34	–6.25	–0.09	–0.29

Table 6 (continued)

Panel C: Large tariff cuts and default risk

	EDF		*Merton-EDF*	
	(–2/+2)	(–3/+3)	(–2/+2)	(–3/+3)
	(1)	(2)	(3)	(4)
CUT	–0.05*	–0.05**	–0.07*	–0.08**
	(–1.79)	(–2.10)	(–1.85)	(–2.05)
Fluidity	–0.00**	–0.00***	–0.00	–0.00
	(–2.23)	(–2.82)	(–0.40)	(–1.08)
Leverage	0.12***	0.13***	0.19	0.19
	(3.76)	(3.95)	(1.57)	(1.60)
Tangibility	–0.02	–0.03	0.18	0.14
	(–0.29)	(–0.48)	(1.44)	(1.19)
ROA	–0.15*	–0.17*	–0.27	–0.31
	(–1.90)	(–1.75)	(–1.45)	(–1.68)
Q	0.01***	0.01***	–0.00	–0.00
	(3.21)	(3.67)	(–0.56)	(–0.51)
Size	0.01	0.01	0.04**	0.04**
	(0.72)	(0.80)	(2.60)	(2.21)
Z Score	0.00	0.00	0.00***	0.00***
	(0.72)	(0.88)	(3.40)	(3.07)
Investment Grade	0.01	0.01	0.05	0.05*
	(0.45)	(0.56)	(1.43)	(2.00)
Rated	–0.02	–0.01	–0.01	–0.02
	(–0.47)	(–0.35)	(–0.24)	(–0.56)
1/σE	–0.01*	–0.01**	–0.02**	–0.01*
	(–1.97)	(–2.32)	(–2.04)	(–1.98)
Excess Return	–0.13***	–0.13***	–0.08***	–0.08***
	(–5.99)	(–6.22)	(–6.51)	(–7.46)
Amihud	0.02***	0.02***	0.03**	0.02**
	(2.76)	(2.77)	(2.41)	(2.06)
Firm and year FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.46	0.47	0.40	0.41
Observations	1,251	1,336	1,211	1,287

Table 7
Import Penetration and Alternate Measures of Default Risk

Description: This table presents the logistic and OLS regressions results, respectively, on the effect that import penetration has on the likelihood of corporate bankruptcy and CDS spreads. The dependent variables are *Bankruptcy* and *CDS*, respectively. The independent variable is import penetration. Detailed variable definitions are provided in Appendix A1. All regressions control for industry and year fixed effects. The *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table shows that our main findings remain qualitatively the same when we use alternative measures default risk other than structural default models of bankruptcy. Import penetration appears to be negatively related to the likelihood of corporate bankruptcy and the CDS spread.

	Bankruptcy	*CDS*
	(1)	(2)
Import Penetration	–0.80**	–1.17**
	(–2.26)	(–2.12)
Fluidity	0.01	0.00
	(1.31)	(1.00)
Leverage	0.53***	1.36***
	(7.64)	(12.32)
Tangibility	–0.03	–0.05
	(–0.30)	(–0.34)
ROA	–0.19***	–0.33**
	(–4.05)	(–2.26)
Q	–0.00	–0.10***
	(–0.33)	(–10.54)
Size	–0.02	–0.05
	(–1.17)	(–1.60)
Z Score	–0.00	0.00*
	(–0.83)	(1.93)
Investment Grade	–0.40***	–0.43***
	(–5.59)	(–5.18)
Rated	0.32***	0.22***
	(6.06)	(3.67)
1/σE	–0.15***	–0.20***
	(–9.35)	(–19.47)
Excess Return	–0.19***	0.01
	(–6.65)	(0.47)
Amihud	0.03***	0.03**
	(2.90)	(2.33)
Year FE	YES	YES
Industry FE	YES	No
Firm FE	No	YES
Observations	17,606	9,313
Adjusted R^2/pseudo-R^2	0.14	0.70

Table 8
Channel Analysis: Foreign Competition and Determinants of Default Risk

Description: This table presents the regression results on the channel through which foreign competition affects expected default risk. The dependent variables are market capitalization, market and book leverage, volatility, and stock returns. The independent variable is import penetration. Detailed variable definitions are provided in Appendix A1. Standard errors are corrected for clustering at the firm level, and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Interpretation: This table discovers possible channels through which foreign competition affects expected default risk. The results show that foreign competition decreases default risk primarily through the equity volatility channel. We observe that import penetration has an equally significant effect on the systematic as well as idiosyncratic components of total volatility.

Panel A: Import penetration and equity value

	MCap
	(1)
Import Penetration	0.66
	(1.38)
Fluidity	0.01***
	(3.35)
Tangibility	–0.56***
	(–4.41)
ROA	0.70***
	(6.61)
Q	0.12***
	(8.43)
Z Score	0.00*
	(1.96)
Investment Grade	0.38***
	(5.96)
Rated	0.08
	(1.51)
Amihud	–0.41***
	(–29.85)
Firm and year FE	YES
Observations	16,887
Adjusted R^2	0.95

Table 8 (continued)

Panel B: Import penetration and leverage

	ML	*BL*
	(1)	(2)
Import Penetration	–0.02	–0.06
	(–0.22)	(–0.65)
Fluidity	0.00***	0.00***
	(3.18)	(3.32)
Tangibility	0.09***	0.11***
	(3.41)	(3.32)
ROA	–0.03***	–0.05***
	(–3.30)	(–3.03)
Q	–0.01***	–0.01***
	(–5.51)	(–3.15)
Z Score	–0.00	–0.00
	(–0.64)	(–0.40)
Investment Grade	–0.02*	–0.03**
	(–1.84)	(–2.19)
Rated	0.07***	0.08***
	(6.65)	(5.90)
Amihud	0.01***	0.00*
	(2.76)	(1.70)
Firm and year FE	YES	YES
Observations	16,876	16,880
Adjusted R^2	0.63	0.58

Table 8 (continued)

Panel C: Import penetration and return volatility

	Volatility	*Systematic Volatility*	*Idiosyncratic Volatility*
	(2)	(3)	(4)
Import Penetration	–0.18***	–0.05***	–0.16***
	(–3.64)	(–4.94)	(–3.33)
Fluidity	0.00	0.00	–0.00
	(0.01)	(0.92)	(–0.04)
Tangibility	0.04	–0.00	0.04
	(1.55)	(–0.12)	(1.64)
ROA	–0.04***	–0.01**	–0.04***
	(–4.00)	(–2.33)	(–4.00)
Q	–0.01*	0.01***	–0.00**
	(–1.81)	(4.94)	(–2.35)
Z Score	0.00	–0.00	0.00
	(0.27)	(–0.86)	(0.32)
Investment Grade	–0.02***	–0.01***	–0.02***
	(–3.97)	(–5.10)	(–3.83)
Rated	0.02***	0.01**	0.02***
	(3.29)	(2.28)	(3.18)
Amihud	0.01***	–0.01***	0.02***
	(8.95)	(–4.16)	(10.44)
Firm and year FE	YES	YES	YES
Observations	16,879	16,840	16,879
Adjusted R^2	0.53	0.69	0.55

Table 8 (continued)

Panel D: Import penetration and returns

	Return
	(1)
Import Penetration	–0.06*
	(–1.94)
Fluidity	–0.00
	(–1.06)
Tangibility	0.04**
	(2.15)
ROA	–0.03***
	(–3.45)
Q	–0.01***
	(–5.58)
Z Score	0.00
	(0.35)
Investment Grade	–0.01**
	(–2.29)
Rated	0.00
	(1.17)
Amihud	0.01***
	(10.90)
Firm and year FE	YES
Observations	16,879
Adjusted R^2	0.26