

**FROM VALUES TO VALUE: THE IMPACT OF CORPORATE CULTURE ON  
PRODUCT MARKET OUTCOME**

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**Abstract**

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## **Abstract**

We investigate how corporate culture relates to firm performance, focusing specifically on market share growth following an increase in competition in the product market. Using industry-level import tariff cuts in the United States as an exogenous shock, we find that firms with strong cultures tend to experience higher market share growth after a reduction in import tariffs. We also identify two distinct cultural values – the strong-people focus and the strong-technology focus – and find that only firms with a strong-people focus are likely to experience market share growth when faced with intensified competition. Our study provides new insights into how corporate culture can, as an intangible asset, help companies adapt to unexpected events.

## 1. Introduction

Recent literature demonstrates that intangible assets such as intellectual property, brands, and human capital play a crucial role in determining a firm's value and financial performance (Eisfeldt and Papanikolaou, 2013; Peters and Taylor, 2017<sup>1</sup>). Specifically, those firms with strong intangible assets tend to perform better (Chappell and Jaffe, 2018; Edmans, 2011; Edmans et al., 2023). Kreps (1990) argues that corporate culture, defined as a set of “principles and values that should inform the behavior of all the firms' employees” (Guiso, Sapienza, and Zingales, 2015), is also an intangible asset. Corporate culture includes shared values, a coordination mechanism, and a belief system that guides employees' behavior, helping them understand what is expected and valued (Graham et al., 2022; Kreps, 1990; O'Reilly and Chatman, 1996). Thus, prioritizing and investing in corporate culture can promote the creation and protection of intangible capital and lead to enhanced value in the long term.

The existing literature also emphasizes the significance of corporate culture in relation to a company's success and identity. Kreps (1990) suggests that corporate culture helps companies respond to unexpected events, while recent studies indicate that it plays a significant role in business value. For example, Graham et al. (2022) find that increasing the culture's prevalence can boost the firm's value: firms with stronger culture experience higher stock returns and better earnings, and had greater stability during the financial crisis of 2008-09 (Fang et al., 2023). Furthermore, corporate culture can have a significant effect on operational efficiency; risk-taking; earnings management; and CEO compensation structure (Li et al., 2021), as well as value

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<sup>1</sup> Eisfeldt and Papanikolaou (2013) explore the relationship between organizational capital, an intangible asset, and a cross-section of stock returns and find that firms with higher organizational capital tend to exhibit higher average returns than those with lower organizational capital. Peters and Taylor (2017) examine the effects of increased intangible assets on corporate investment.

creation and deal-making in mergers and acquisitions (Bereskin et al., 2018; Van den Steen, 2010; Yoo, 2020). Li et al. (2021a), in highlighting the importance of corporate culture during and after the COVID-19 pandemic, find that firms with strong corporate culture exhibit performance superior to their counterparts despite the negative effects of COVID-19.

Although ample research recognizes the importance of corporate culture in specific business outcomes (Davidson, Dey, and Smith, 2015; Guiso, Sapienza, and Zingales, 2015, Li et al., 2021, Graham et al., 2022), there are, to the best of our knowledge, no studies that examine the potential impact of corporate culture on product market decisions. We therefore seek to address this gap in the literature by exploring the relationship between corporate culture and firm product market performance. We hypothesize that firms with a strong culture may experience higher sales growth following an increase in product market competition. By examining this relationship, we hope to elucidate how corporate culture helps firms create value in response to unexpected events in the product market.

Corporate culture may play a crucial role in shaping a firm's strategies within its product market and determining its competitive positioning. The culture's influence may be observed through two channels: human capital and technology. On one hand, a strong corporate culture can provide a comparative advantage by means of motivated and productive employees and better customer relationships. Li et al. (2021a) refer to this as the human capital channel for corporate culture, one that can empower employees to make better and more consistent decisions over the long term and lead in turn to increased productivity. Zingales (2000) reinforces this notion, arguing that competition has led to a greater need for "process innovation" and "quality improvement" and makes human capital more important in a corporation.

Another interplay between a strong corporate culture and its product market performance may operate through the technology channel. A technology-focused cultural dimension, one that includes innovation and quality (Li et al., 2021a), can benefit a firm's competitive positioning. Li et al. (2021a) suggested two distinct cultures: human capital channel and technology channel. A human capital channel is characterized by values such as integrity, respect, and teamwork. On the other hand, a technology channel is associated with innovation and quality. Firms that encourage a culture of innovation are more likely to stand out in today's dynamic business environment, given that firms must innovate to survive and grow. High-skilled employees play a crucial role in today's knowledge-based economy; these capable individuals inspire further innovation (Bosetti, Cattaneo, and Verdolini, 2015; Kerr et al., 2016). Additionally, a strong corporate culture can promote integrity; communication; teamwork; and productivity, further enabling growth in market share. Moreover, companies with a strong culture tend to attract talented job seekers and employees who prefer to work in such an environment (Pacelli et al., 2022).

We can observe corporate culture's influence across firms. Graham et al. (2022b) emphasize how varying values and norms differ among industry peers, documenting the contrasting cultural emphasis between industry leaders and followers. This underscores how culture shapes a firm's position within its peer group. Grennan and Li (2022) posit that industry competition can act as a discipline, one that favors firms with a strong culture. However, they also suggest that the pressure of competition may deter firms from investing in long-term intangibles, including culture.

Navigating such intricate relationships demands a deep understanding of the dynamics at play. A firm's decisions affect not only its own product market environment, but the structure of

the overall product market and resulting competition (Fresard and Phillips, 2022). As a result, a firm's corporate culture may be related endogenously to its product market performance – and establishing causality from corporate culture to product market outcomes is challenging. To address this issue, our study exploits exogenous variation in the United States' (US) industry-level import tariffs as a quasi-natural environment. Following an exogenous cash-flow shock to the industry that lowers customer switching costs by increasing competition (Fresard, 2010; Martin and Otto, 2023; Liu, Masulis, and Stanfield (2021), we expect that companies with a strong culture are likely to gain an advantage over their competitors in the product market. As firms use their competitive advantage to respond to industry-level shocks, we aim to investigate how corporate culture affects their ability to navigate increased competition and improve their product market performance.

To test our hypothesis, we conduct a difference-in-difference analysis of tariff cuts in various industries. Following Fresard (2010), we measure an increase in foreign competition by analyzing the reductions in import tariffs for the period 2002-2021. Our findings reveal that a strong corporate culture does not influence market share growth for small reductions in tariffs. However, when the tariff cuts are larger, competition levels increase, potentially leading to lower sales. We find evidence that firms who have a strong culture experience higher market share growth after the import tariff reduction: under these circumstances, a single standard-deviation increase in cultural values results in a 5.70% increase in market sales growth. In addition, when focusing on the largest tariff cuts, we observe a 6.80% increase in market share growth. Overall, the results indicate that a strong corporate culture can have a significant effect on achieving higher market share growth in a highly competitive product market environment, which supports our initial hypothesis. We interpret our findings as consistent with the conclusion drawn by

Graham et al. (2022, 2022b), that corporate culture enhances value and that cultural emphasis and its impact differ between industry leaders and followers. Our results also support the conclusion of Li et al. (2021b) – namely, that corporate culture is an intangible asset that helps companies adapt to unexpected events.

As mentioned earlier, Li et al. (2021a) suggested two distinct cultures: people-focused or human capital channel and technology-focused or technology channel. Using this distinction, we repeat our analysis and find that firms with a people-focused culture tend to experience higher market share growth in response to intensified competition, whereas we observe no significant relation between firms with a technology-focused culture and market share growth following an import tariff reduction.

Next, to address the previously mentioned potential endogeneity concern (and as a quasi-natural experiment), we employ staggered tariff reductions within the industry. Prior studies demonstrated that industry-level tariff reductions are exogenous<sup>2</sup>. To establish the validity of our experiment, we follow Fresard (2010) and Liu, Masulis, and Stanfield (2021) and test whether industry concentration decreases following tariff cuts and whether these tariff reductions are exogenous to our outcome variable by estimating specifications that measure tariff cuts and industry and macro-economic factors. We report the results of this analysis in Appendix tables A.2 and A.3, respectively. The results show the industry concentration has decreased post-tariff cuts (A.2). Further, the results from A.2 indicate that our outcome variable and key explanatory variables do not appear to predict tariff cuts in the industry. To test whether firms expect these

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<sup>2</sup> See Fresard (2010), Fresard and Valta (2016), Dasgupta et al. (2017), Kini, Shenoy, and Subramaniam (2017), Srinivasan (2020), Liu, Masulis and Stanfield (2021).

cuts, we examine pre-treatment trend analysis and show the lack of evidence for an anticipated effect.

In addition, Liu, Masulis, and Stanfield (2021) highlight two concerns specific to industry-level tariff cuts. The first of these is that policy makers look at industries' performance and financial health before removing trade barriers. The second is that they underscore bigger firms' greater ability to influence and lobby politicians for trade protection. To address these issues, we adopt an approach similar to Liu, Masulis, and Stanfield (2021) and include lagged control variables, measured before tariff cuts, to capture firms' past performance, financial strength, and firm size in our regression model.

Furthermore, we create a matched sample, using propensity score matching, to address the potential issue of endogenous selection between companies with strong and weak corporate cultures. We then conduct the same analysis on the matched sample and find that firms with strong corporate culture have higher market share growth when tariffs are reduced. Overall, our results provide evidence that a strong corporate culture has a significant effect on product market outcomes.

After also using alternate measures of corporate culture and sales growth metrics, our results still indicate that product market outcomes are affected by corporate culture. And, since Lie and Yang (2023) suggest that although tariff reductions are linked to higher imports, the explanatory power of the tariff is limited. We therefore measure competition increases using the text-based network industry classification (TNIC) Herfindahl-Hirschman Index (HHI) developed by Hoberg and Philips (2016). Again, we find that firms with strong corporate culture experience higher sales growth in the presence of increased industry competition. Our results are consistent when using different measures of competition.



Our paper makes several contributions to the existing literature. We contribute to the growing literature on corporate culture (Guiso, Sapienza, and Zingales, 2015; Li et al., 2021; Graham et al., 2022; Grennan and Li, 2022) by exploiting an exogenous variation in product market competition to identify the causal effect of corporate culture. Several earlier studies underscored the importance of a strong organizational culture; Kreps (1990), to give one example, highlights how corporate culture helps firms manage unexpected events, while other studies indicate that corporate culture improves business performance significantly (Guiso, Sapienza, and Zingales, 2015; Li et al., 2021; Graham et al., 2022). Moreover, a strong culture can have a considerable effect on value creation and deal-making in mergers and acquisitions (Van den Steen, 2010, Bereskin et al., 2018). Despite this work, no empirical study has yet explored the link between corporate culture and product market performance<sup>3</sup>. Our study bridges this gap. We show that firms with a strong corporate culture experience higher market share growth after the increase in competition in the product market, supporting the prediction of Kreps (1990).

Our study also contributes to the literature on intangible capital and its effect on product market outcomes. We emphasize corporate culture's role as an important intangible asset for influencing firm performance. The existing literature highlights the significance of intangible assets, including intellectual property, brands, and human capital, in shaping firm value and business performance (Edmans, 2011; Eisfeldt and Papanikolaou, 2013; Peters and Taylor, 2017). Our study shows that corporate culture is essential intangible capital, one that can offer firms a competitive advantage over unforeseen market conditions.

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<sup>3</sup> Grennan and Li (2022) emphasize the importance of comprehending the intricate link between competition, culture, and firm performance, suggesting the need for future empirical research to delve deeper into this dynamic relationship.

Finally, we contribute to the large body of literature on product market competition. Earlier studies examine the interactions between firms' financing decisions (Campello, 2003, 2006; Fresard, 2010; Xu, 2012) and real decisions (Jiang et al., 2015; Fresard and Valta, 2016; Hombert and Matray, 2018), as well as their product market strategies and performance. By establishing a link between a strong corporate culture and product market outcomes, our study illuminates an additional channel through which firms' decisions influence product market behavior.

The study is organized as follows. Section 2 discusses the hypothesis development. Section 3 describes the data and empirical methodology. Section 4 presents and discusses the study's main results. And Section 5 reports the conclusions of the study.

## **2. Hypothesis development**

### 2.1 Corporate Culture

Recent research has focused on the potential value of a strong corporate culture. The literature has identified several reasons why corporate culture matters. One reason corporate culture is valuable to a firm is because culture can help companies respond to unexpected events (Kreps, 1990). While corporate culture is an intangible asset, it helps guide employees' behavior and assists them understand what is expected and valued (Graham et al., 2022; Kreps, 1990; O'Reilly and Chatman, 1996). Another reason corporate culture matters is because it plays a critical role in mitigating moral hazard problems within the organization. If employees view their top managers as trustworthy and ethical, performance will increase (Guiso, Sapienza, and Zingales, 2015). Specifically, higher perceived integrity leads to positive outcomes, including increased productivity, profitability, better industrial relations, and appeal to job seekers. Edmans

(2011) finds that companies ranked among the top 100 “best firms to work for” (as measured by the great place to work (GPTW) ranking) typically experience higher future abnormal stock market returns. Integrity and trust are key factors in determining a firm’s inclusion in the top 100, Edmans provides evidence that employee satisfaction lead to strong corporate performance. He further argues that the market initially undervalues the integrity capital, but gradually, as the firms become more profitable, becomes valuable.

Corporate culture is also positively correlated with various business outcomes such as operational efficiency, risk-taking, CEO compensation, firm value, and deal-making (Li et al., 2021). Grennan (2020) demonstrates that a company’s culture is affected by governance practices and plays an important role in determining firm value and that stronger governance leads to changes in culture, such as the increased focus on result-orientation, but a decreased focus on customers, integrity, and collaboration. Grennan further argues that firms with strong governance initially experience benefits in terms of sales, profitability, and payout; however, when the “intangible assets associated with culture deteriorate,” it cancels out the initial benefits. Thakor (2015) suggests that strong culture within a bank act as a hidden asset, promoting prudent risk-taking and maintaining ethical standards, value creation, and stability. Graham et al. (2022) survey how corporate culture impacts different aspects of firms’ decisions and provides executives’ perspectives on corporate culture. They find that more than 90 percent of the 1,348 North American executives believe that increasing firm value can be achieved by improving corporate culture, and these executives consider it “very important” to their firm.

A strong corporate culture has been shown to lead to positive outcomes, even during challenging times like the COVID-19 pandemic (Li et al., 2021). Firms with stronger controlling cultures had better outcomes, including experiencing fewer layoffs, less negative asset growth,

and easier access to credit lines during the 2008/2009 financial crisis (Fang et al., 2023). These studies also show that the benefits of controlling culture are even more pronounced for companies with financial constraints, suggesting that strong culture enhances company stability through improving support from capital sources. Strong corporate culture seems to be crucial to firms' resilience during times of crisis.

Prior literature also documents the role of corporate culture in mergers and acquisitions (M&As) activities. In order to explore the impact of "culture clash" in M&As, Van den Steen (2010) develops an economic theory of the cost and benefits of the corporate culture. He suggests that the cost of a culture clash will immediately impact the operational efficiency of merged firms, while the benefits will take longer to emerge. Bereskin et al. (2018) showed that mergers are more likely to occur between culturally similar firms, and similar cultures facilitated post-deal integration and resulted in greater synergies and improved long-term performance. Yoo (2020) examined CEO letters to shareholders and showed a positive association between merger volume and cultural similarities between target and acquirer companies, indicating that aligned cultures encourage merger attempts. Additionally, Li et al. (2021) documented the significant impact of corporate culture on deal incidence and merger pairings, and the target firms' post-merger and pre-merger cultural values are positively associated with the cultural values of the acquirers. The authors suggested that major corporate events, such as M&As, shape corporate culture. Moreover, cultural heritage also plays a role in the corporate decision. Pan, Siegel, and Wang (2020) investigate how cultural heritage influences US CEOs' attitudes toward uncertainty in their corporate acquisition decisions. They discover that CEOs from uncertainty-avoiding cultural backgrounds tend to avoid acquisitions. These studies highlight the importance of

considering corporate culture in M&A decisions. Similar cultures facilitate integration and better outcomes, while culture clash can result in immediate costs and delayed benefits.

The impact of corporate culture goes beyond M&As. Pacelli, Shi, and Zou (2022) find culture-focused job postings helpful to jobseekers, and companies are more likely to emphasize culture in their job postings in competitive job markets. Furthermore, they explore how firms communicate their culture in job postings and whether it attracts employees. Their findings indicate that providing cultural information in jobs encourages more applicants. Overall, the study suggests that job postings are essential for promoting cultural values and luring top talent into the organization.

All of these studies highlight the importance of corporate culture in driving firm value and business outcomes. Corporate culture is a vital intangible asset that companies should invest in and communicate effectively to attract top talent and improve performance. Further, it can have a significant impact on firm productivity, industrial relations, job seeker appeal, operational efficiency, risk-taking, executive compensation, deal-making, merger success, prudent risk-taking decisions, ethical standards, and value creation. Moreover, strong corporate culture can help companies respond to unexpected events and make them more resistant to external shocks.

While a strong culture can be a valuable intangible asset for a company's success, corporate culture is not immune to destruction. Crouzet et al. (2022) argue that intangible assets require sacrificing current consumption to increase future output and that they rely on strong mediums, such as computers, documents, or people, for innovation to store. They further mention that intangibles are susceptible to destruction from various factors such as corporate scandals, government expropriation, key employee departures, changes in laws, or shifts in consumers tastes. Therefore, a firm must protect its culture to prevent its destruction.

## 2.2 Product market competition

There is a significant body of research that explores the impact of financing and real decisions on a firm's performance in the product market. Campello (2006) investigates the relationship between a firm's financing decisions and its product market performance. He finds moderate levels of debt are linked with increased market share growth, but high levels of debt lead to poor performance in the product market. Similarly, Kini, Shenoy, and Subramaniam (2017) examine how a firm's financial condition impacts its likelihood to recall products and show that poor financial condition of firms have a negative effect on the quality of the products. Additionally, firms are more likely to recall products when faced with greater competition in the market. In contrast, Fresard (2010) examines how cash reserves impact a firm's performance in the product market after facing unexpected competitive shocks. He concludes that having substantial cash reserves results in consistent future market share gains, often at the expense of competitors.

Several studies examine the impact of innovation on product market outcomes. For instance, Hombert and Matray (2018) examine whether firms prioritizing innovation are more resistant to intensifying competition than those that do not. They document that companies that invest more in R&D are less negatively impacted in terms of sales growth and profitability when imports from China increase.

Another area of research focuses on understanding the impact of industry competition on corporate policies. For instance, Jiang et al. (2015) show a positive relationship between product market competition and corporate investment in China. Their findings suggest that firms exposed to high predatory risk and those with a dominant market position in the industry invest more. Similarly, Fresard and Valta (2016) analyze the entry threat and firms' investment behavior

using a reduction in import tariffs in the US. They find that an increase in product market competition led to a significant reduction in firms' capital expenditure. Xu (2012) examines the relationship between import competition and leverage and shows a negative association between increases in import penetration and a firm's leverage, both in book and market leverage. While Hoberg et al. (2014) investigate how a company's payout policy and cash holdings are influenced by product market competition. The study finds that firms that face higher competition tend to pay fewer dividends or may not pay dividends at all. Overall, these studies provide insight into how industry competition impacts corporate financial policies.

Some other studies focus on the relationship between product market and various factors, such as economic growth, productivity, and managerial slack, predation threats, and innovation. Schmidt (1997) suggests that when the competition level increases in the market, the likelihood of a firm being liquidated rises, and at the same time, the profits of the company may decrease. For instance, when the US reduced import tariffs, domestic companies faced stiff competition from low-wage countries like China and India, making it difficult for them to reduce costs and maintain profits. Considering this, Zingales (2000) argues that the demand for process innovation and quality improvement increases with competition, making human capital more critical in a company.

These studies highlight the factors that impact product market competition and emphasize the importance of firms' decisions to withstand and succeed in highly competitive markets. While prior studies in corporate culture have established the relevance of corporate culture to a firm's success, evidence regarding increased competition and the effect of corporate culture remains limited. Specifically, prior research has not explored the potential relationship between a firm's corporate culture and its performance in the product market. A strong corporate culture

can provide a reliable and supportive environment for firms to thrive. Firms with a strong corporate culture can foster trust and cooperation between the firm and its employees, stakeholders, and investors.

Moreover, by investing in human capital and fostering a supportive culture, firms can better position themselves to thrive in a competitive environment. In this regard, domestic companies with a strong corporate culture may be shielded from increased competition. One possible channel through which firms with a strong culture may get a competitive advantage through the human capital channel, in which a firm with a strong corporate culture empowers the employee to make consistent and better decisions based on a long-term perspective, resulting in higher productivity. This advantage may come from motivated and productive employees and better customer relationships, providing an edge over competitors. As firms use their competitive advantage to respond to industry-level shocks, we aim to investigate how corporate culture impacts their ability to navigate increased competition and improve their performance in the product market. We hypothesize that a strong corporate culture has a positive effect on market share growth when faced with increased competition in the industry.

### **3. Data and empirical methodology**

#### **3.1 Data**

We gather annual firm-level financial data from Compustat from 2001-2021<sup>4</sup>. We exclude firms with unavailable sales and total assets, as well as those with negative sales and equity. We also exclude financial and utility firms (Standard industrial classification (SIC) codes 6000-6999 and 4900-4999). Our sample includes US agricultural (sic codes 0100-0999), mining (sic codes

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<sup>4</sup> Since the dependent variable, market share growth, is calculated as the change in sales from the prior year, our final sample for regression analysis starts from 2002.



1000-1499), and manufacturing firms (sic codes 2000-3999) for the period of 2002 to 2021. We select this specific sample period as the corporate culture measures of Li et al. (2021) is available from 2001 to 2021<sup>5</sup>. Li et al. (2021) proposed a method to measure corporate culture using machine learnings technique. They developed a model that can predict a company's five cultural values proposed by Guiso, Sapienza, and Zingales (2015), such as innovation, integrity, quality, respect, and teamwork, by analyzing text data from earnings calls transcripts. The authors calculated five different cultural scores and defined a strong culture as the sum of a firm's cultural values being in the top quartile across all firms in a given year. As we use industry-adjusted data to estimate our results, we restrict the sample in line with Fresard (2010) to those industry-years that have at least ten firms in a given industry with available data on firm-level variables.

### 3.1.1 Import tariff data

To measure increases in foreign competition in a particular industry, we obtain data on import tariffs from the United States International Trade Commission's (USITC) website, using a dataset akin to the one utilized by Kini, Shenoy, and Subramaniam (2017) and Srinivasan (2020). We follow a similar approach to Fresard (2010) to measure the increase in competition in the product market. We first gather annual data for calculated duties and dutiable import values by the four-digit NAICS industry over the period of 2001 to 2021<sup>6</sup>. Then, we calculate the tariff

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<sup>5</sup> The data are gathered from the Kai Li, Feng Mai, Rui Shen, Xinyan Yan, Measuring Corporate Culture Using Machine Learning, *The Review of Financial Studies*, Volume 34, Issue 7, July 2021, Pages 3265–3315, <https://doi.org/10.1093/rfs/hhaa079>.

<sup>6</sup> The calculated duties represent the estimated import duties collected. These duties are based on the applicable rate(s) of duty as shown in the Harmonized Tariff Schedule. The dutiable value refers to the customs value of foreign merchandise imported into the U.S. that is subject to duty. (Source: <https://dataweb.usitc.gov/trade/>.)

rate for each industry-year by dividing the duties collected by U.S. customs by the dutiable import values.

To determine the reduction in import tariffs, we compute the annual change in tariff rates. We identify three instances of tariff cuts for a specific four-digit NAICS industry by defining a negative change in tariff rate that is 2, 2.5, or 3 times larger than the industry's median value. We define three indicator variables for different tariff reduction cutoffs: *TaCut1* takes the value of 1 for tariff cut that is 2 times larger than the industry median, and zero otherwise; *TaCut2* takes the value of 1 for tariff cut that is 2.5 larger than the industry median, and zero otherwise; and *TaCut3* takes the value of 1 for tariff cut that is 3 times larger than the industry median, and zero otherwise.

Moreover, if a tariff cut is succeeded by an equal or greater increase within the next two years, we set the tariff cut indicator variables to zero. This precaution is also in line with Fresard's (2010) method and is intended to ensure that large tariff reductions accurately reflect lasting changes rather than transient changes in the competitive environment. In our sample period, the reduction in import tariffs occurred in a subset of the fifty-seven distinct NAICS codes. Figure 1 displays the number of tariff cuts by year for the period of 2002 to 2021. The figure shows there is no reduction in tariffs from 2016 to 2019, the average change in import tariff, as indicated in figure 2, indicates that the average change is slightly negative in year 2017, but it has increase significantly in both 2018 and 2019.

[Insert Figure 1 and 2 here]

Furthermore, Fresard (2010) highlighted that a valid quasi-natural experiment fulfills three criteria based on the parallel trend assumption. This includes (1) tariff cuts should change

competitive dynamics in the product market, (2) they should be exogenous to the outcome variable, and (3) they should be unexpected by firms. A large body of prior studies documented that industry-level tariff cuts increase competitive environment for the domestic firms (Bertrand et al., 2006 and Fresard, 2010). To test the second criterion that is whether tariff cuts are indeed exogenous shock to the industry, we follow Fresard (2010) and Srinivasan (2020) and estimate various specifications that measure tariff cuts on industry level factors. These factors include industry median sales growth, industry median corporate culture and other financing and performance related as well as macroeconomic factors and present results in Appendix A3.

Columns 1, 2, and 3 Table A3 report logistic regression results, where the dependent variable is the indicator variable for tariff cuts, including *TaCut1*, *TaCut2*, and *TaCut3*, respectively. Column 4 presents the OLS regression estimate, with the dependent variable being the percentage change in import tariffs ( $\Delta Import\ Tariff$ ). The regression estimates indicate that both our outcome variable and main explanatory variable, corporate culture, are statistically insignificant in relation to our tariff cuts dummy variables, as well as the percentage change in import tariffs. The annual change in GDP appears to predict tariff changes in the industry, while our outcome variables, key explanatory variables, and other financing and performance measures do not appear to predict tariff cuts in the industry. These findings help alleviate potential concerns about the endogeneity of tariff reduction with respect to the key variables used in this study, further confirming the findings of Freshard (2010) and Srinivasan (2020).

Finally, to test the third criteria, which involves an element of limited anticipation, we perform pre-treatment trend analysis in the robustness section discussed in Section 4.4.6. Our findings reveal no evidence suggesting that firms are able to predict industry-level tariff cuts.

### 3.2 Sample formation

We merge the corporate culture data with Compustat data and tariffs data resulting in 14,154 firm years. Table 1 shows the summary statistics for key variables with market share growth, corporate culture measure, and firm characteristics. Appendix 1 contains definitions of all variables. Since the majority of variables in our analysis are ratios, which may exhibit extreme values when the denominator is small, we winsorize each variable at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. The average sales growth and market share growth are positive at 0.112 and 0.011, respectively, for the sample period. Despite a negative median market share growth of -0.007, the result indicates that the industries in our sample experienced revenue growth overall. With regards to our primary independent variable, strong culture, the mean and median are 0.202 and 0, respectively.

Consistent with prior studies, we include several control variables in our main regression analysis, including firm size, liquidity position, leverage, market-to-book ratio, change in employee, and one-year lagged market share growth. Previous studies suggest that market share growth may be influenced by factors such as firm size, cash holdings, leverage, market-to-book ratio, and last year's market share growth (Campello, 2003, 2006; Fresard, 2010; and Billett, Garfinkel, and Yu, 2017). Additionally, to account for the possible relationship between change in employee and corporate culture and its impact on market share growth, we also include change in employee as a control variable in our analysis. The control variables in our analysis are closely aligned with those used by Billett, Garfinkel, and Yu (2017). Overall, our final sample appears to be similar to other work in this research area.

[INSERT TABLE 1 HERE]

### 3.3 Propensity score matching

Following Shipman, Swanquist, and Whited (2017), we employ propensity score matching to address potential bias from our non-random methodology for assigning firms into strong and weak corporate cultures. This technique allows us to create a matched sample of comparable groups more likely to have a strong corporate culture. By doing so, we aim to reduce the potential confounding factors, such as differences in observable firm characteristics, which could otherwise undermine the accuracy of our results. This method enables us to provide a more reliable assessment of the link between the strong corporate culture and market share growth.

We use the nearest neighbor matching method without replacement to create matched samples, drawing the matched firm observations from the same year as the strong culture firm-year observations. Subsequently, we run a profit model based on various matching criteria: *Sales*, *Total Assets*, *Sales Growth*, *Cash*, *MB Ratio*, *Leverage*, *ROA*, *Cash Flow*, *CapEx* (capital expenditures), and *R&D intensity*. All variables are defined in Appendix 1. There are 2,927 number of observations in treatment groups and the same number of observations in control groups. Panel B of Table 1 reports the summary statistics for the matched sample. As reported, the variables' mean, median, and standard deviation are comparable between treated and control groups, suggesting that covariates are well-balanced between those groups. Figure 3 displays the kernel density plots of key variables, such as Sales Growth, Sale, Market Share Growth, Leverage, ROA, Cash, Size, and MB Ratio, within the matched sample. The density of these variables appears to be similar for both the treated and control groups. This similarity is crucial for ensuring accurate causal inferences of the impact of a strong corporate culture on product market outcomes.

[Insert Figure 3 here]

### 3.4 Empirical strategy

To understand the product market advantage of having a strong corporate culture, we analyze the relationship between corporate culture and market share growth. Fresard and Phillips (2022) argue that the relationship between a firm and its product market environment is complex and constantly evolving. As a result, the decisions firms make not only affect their product market environment but also impact the structure of the product markets and the resulting competition. This suggests that corporate culture may be endogenously related to its product market performance, and establishing causality going from corporate culture to product market outcomes is challenging. To address this issue, we exploit exogenous variation in industry-level import tariffs as a quasi-natural environment. Since the reduction in tariffs substantially increases the competition from foreign rivals, companies may use corporate culture as a competitive strategy to differentiate themselves from their competitors.

To investigate whether a strong culture provides an advantage in the product market, we utilize the quasi-natural experiment similar to that used in Fresard (2010), using reductions in import tariffs as a source of exogenous variation in the competitive environment across industries<sup>7</sup>. We perform difference-in-differences tests surrounding the tariff cuts in different industries to determine the effect of a strong culture on market share growth. To test our main hypothesis, we estimate the following difference-in-difference regression model.

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<sup>7</sup> Several studies utilize unexpected variation of industry-level import tariffs as an approach to address endogeneity concerns. For instance, Fresard (2010) uses the reduction in import tariffs as an exogenous shock to investigate the competitive advantage of cash in the product market. Similarly, Fresard and Valta (2016) analyze the relationship between product market interaction and corporate investment decisions. Dasgupta et al. (2017) examine the impact of product market competition on CEO turnover, while Srinivasan (2020) utilizes the reduction in tariff cuts in NAICS-industry to analyze the relationship between foreign competition and firms' M&A decisions. Additionally, Liu, Masulis, and Stanfield (2021) also employ the reduction in import tariff as a shock to explore the effect of having a large customer on firm's CEO option compensation choice.

$$Mkt\ share\ growth_{j,i,t} = \alpha + \gamma StCulture_{i,j,t-1} + \phi TaCut_{j,t} + \psi (StCulture_{i,j,t-1}) \times TaCut_{j,t} + \beta X_{i,j,t-1} + Firm_i + Year_t + \epsilon_{i,j,t} \quad (1)$$

where  $i$  indexes firms,  $j$  indexes the industry within which the firm operates, and  $t$  indexes the years. The dependent variable *Mkt share growth* serves as a proxy for the product market outcomes. We follow Campello (2003, 2006) and Fresard (2010) and calculate the *Mkt share growth* as, the percentage change in sales from  $t - 1$  through  $t$   $(Sale_t - Sale_{t-1})/Sale_{t-1}$  minus the industry average of the same. The industry is defined as four-digit SIC codes<sup>8</sup>. Additionally, we construct industry-adjusted firm-level variables in the same manner. *StCulture* is a binary variable that takes the value of 1 if the sum of a firm's five cultural values is in top quartiles across all firms in a particular industry in a year, and zero otherwise. The variable *TaCut* is the reduction in import tariff indicator variable as described previously.  $X_{i,j,t-1}$  is a control variable measured in year  $t-1$ . All control variables are industry adjusted.

Our regression model also includes firm and year fixed effects represented by  $Firm_i$  and  $Year_t$ . We also adjust standard errors clustered at the firm level to control for the within-firm correlations of error terms. The coefficient of interest in the equation (1) is the interaction between the *StCulture* and *TaCut*,  $StCulture \times TaCut$ .

## 4. Empirical Results

### 4.1 Corporate Culture, competition, and market share growth

To evaluate our hypothesis, we conduct difference-in-difference regression analysis surrounding the reduction in import tariffs. This analysis is presented in Table 2, which includes

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<sup>8</sup> We define the industry based on both four-digit SIC codes and four-digit NAICS codes. In untabulated results, using either classification system to construct the industry-adjusted variable yields consistent results, and it does not alter any of our results.

results for the three distinct tariff cut thresholds: *TaCut1*, *TaCut2*, and *TaCut3*, as defined previously. Our primary interest is in examining changes in market share growth for firms with a strong corporate culture following the tariff cuts. As described above, the dependent variable is industry-adjusted market share growth, measured at two time periods ( $t$  and  $t+1$ )<sup>9</sup>. Panel A of Table 2 reports the regression results for the full sample, while panel B reports regression results for results for the matched sample. The results for *TaCut1* are reported in Columns 1 and 2, *TaCut2* in Columns 3 and 4, and *TaCut3* in Columns 5 and 6. Specifically, the dependent variable in Columns 1, 3, and 5 is industry-adjusted market share growth at time  $t$ , whereas in Columns 2, 4, and 6, it is industry-adjusted market share growth at time  $t+1$ . To account for unobserved firm-specific characteristics that may vary over time, our regression models incorporate both firm and year fixed effects. Given that all of our firm-level variables are industry adjusted, we utilize firm fixed effects in our regression estimation model <sup>10</sup>. Additionally, standard errors are clustered at the firm level to control for within-firm correlations of error terms.

[INSERT TABLE 2 HERE]

The regression results in Columns 1, 3 and 5 indicate that the coefficient on strong culture positively impacts market share the following year. However, since the tariff reduction is the same year as the market growth is measured (year  $t$ ), we imagine the competitive change in the market has yet to fully be felt by the firm. Thus, we also examine the sales growth at time  $t+1$ , the year after the tariff cut. We find that strong culture has a negative effect on market share. Yet, when we interact the strong culture measure with the tariff cut dummy, we find that

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<sup>9</sup> In the robustness section, we employ different measures of sales growth and provide qualitatively similar results.



for larger tariff cuts (*TaCut2* or *TaCut3*) a strong corporate culture significantly improves market share at  $t+1$ . Our analysis indicates that following a tariff cut, firms that exhibit a one standard deviation increase in cultural values (strong culture) experience an 8.60% rise in market sales growth. Additionally, we found that firms that experienced the highest level of import cuts observed a 10.90% increase in market share growth.

Table 2, Panel B presents the results of the analysis conducted on the matched sample. Specifically, Columns 2, 4, and 6 show that firms with a strong culture experienced higher market share growth following tariff cuts in the industry, across all three distinct tariff cuts. The coefficients of the interaction term between a strong culture and tariff cuts range from 15.3% to 34.5%. This analysis suggests that firms that foster a strong culture improve market share growth in competitive markets.

The coefficients on the control variables align with those of Fresard (2010) and Billett, Garfinkel and Yu (2021). Specifically, we find that a higher cash balance leads to greater market share growth, while larger firms experience smaller market share growth. Moreover, we observe that when using one year lead of market share growth as the dependent variable, the impact of one-year lagged leverage become weaker and lose the significance level. We also control for changes in the number of employees within firms. The increased competition from the reduction in tariffs may result in employees leaving the firm (e.g., to work for competitors). Our results show a significant negative coefficient for change in employees, indicating that losing employees has an adverse effect on market share growth. Overall, our difference-in-differences approach is consistent with prior research and emphasizes the significance of a strong corporate culture to achieve higher market share growth.

These results provide evidence to support our initial hypothesis that firms with a strong corporate culture are more likely to experience market share growth when faced with increased competition in the market. These results suggest that improving a strong culture within a company can lead to a competitive advantage that help companies to thrive in a challenging environment.

#### 4.2 Human capital vs technology channel culture

Li et al. (2021a) argue that firms that maintain a strong culture tend to invest more in their employees during the stable period, which can lead to improved levels of employee motivation and productivity. As a result, these firms may be better able to cope with negative economic shocks without engaging in aggressive cost cutting. Moreover, they find that firms with a focus on technology (e.g., highly innovative firms) may be better equipped to adapt to a changing environment. They refer to this trend as a technology channel. Overall, their findings suggest that firms that focus on developing both their human capital and technological capabilities are better positioned to succeed in dynamic economic environments.

To gain a deeper understanding of how a strong culture can help firms in competitive product markets, we adopt the similar approach to Li et al. (2021a) and classify two distinct strong cultural values: a strong people-focus culture and a strong technology-focus culture. The former is characterized by values including integrity, respect, and teamwork, while the latter is characterized by innovation and quality. Strong people-focus culture, *SPCulture*, is a binary variable that takes the value of 1 if a firm's sum of three cultural values, including integrity, respect, and teamwork, is in top quartiles across all firms in a particular industry in a year, and zero otherwise. Similarly, strong technology-focus culture, *STechCulture*, is a binary variable that takes the value of 1 if a firm's sum of two cultural values, including innovation and quality,

is in top quartiles across all firms in a particular industry in a year, and zero otherwise. In order to present our results, we follow the regression model outlined in equation (1) and present the results in Table 3. Panel A presents regression estimates for the full sample, while Panel B reports the results for the matched sample. We use the same control variables as in Table 2<sup>11</sup>.

[INSERT TABLE 3 HERE]

The people focus corporate culture results are reported in Columns 1, 2, and 3 and technology focus culture results are reported in Columns, 4, 5, and 6. Columns 1 and 4 present results for *TaCut1*, Columns 3 and 4 present results for *TaCut2*, and Columns 5 and 6 present results for *TaCut3*. Panel A of Table 3 shows that the interaction term between the people focus corporate culture and tariff cuts (*SPCulture\*TaCut1*) is not significant in Column 1. However, when the competition level increases (as shown in Columns 2 and 3), the interaction term becomes positive and highly significant. These results suggest that in highly competitive product markets, firms with a strong people focus culture experience higher market share growth compared to those with a weak culture. Furthermore, when we compare magnitude of the coefficient for the interaction term across different tariff cuts thresholds, we observe a range from 6.85% to 8.88%. However, technology focus corporate culture does not have a significant impact on market share growth when faced with increased competition (Columns 4, 5, and 6)

Similar results are reported in Table 2, Panel B for the matched sample. Columns 1, 2, and 3 indicate that firms with a strong people focus are more likely to achieve higher market share growth following tariff cuts, across all three distinct tariff cuts measure. Conversely,

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<sup>11</sup> We do not present the coefficient estimates for the control variables in Table 2 to ensure brevity, but results are available upon request.

technology focus corporate culture has no significant impact on market share growth. Taken together, our results highlight the significance of the human capital channel in achieving higher market share growth in a competitive environment. While technology focus culture can bring benefits to a company, it does not appear to impact growth in market share when the foreign competition increases in the product market.

#### 4.3 Corporate Culture, decrease in foreign competition, and market share growth

In this section, we investigate how a strong corporate culture can affect market share growth when competition level decreases. To measure decreases in competition, we identify tariff increases. We create dummy variables, *TaInc1*, *TaInc2*, and *TaInc3*, similar to our tariff reduction dummy variables used previously. We also use the level of increase in import tariffs from 2018 through 2019. As shown in Figure 2, there was a significant increase in import tariff in 2018 and 2019 in the US. Table 4 presents the regression analysis for the impact of corporate culture on market share growth following decreases in market competition. Panel A of Table 4 reports results for the dummy variables, while Panel B presents results for increase in import tariffs in 2018-2019.

[INSERT TABLE 4 HERE]

The results from Table 4 indicate that the interaction term between the strong culture and tariff increases (*StCulture \* TaInc*) is not significant across three tariff increases thresholds. Further, Panel B of Table 4 shows that the interaction term between the strong culture and post dummy (*StCulture \* Post*) is positive but not significant. These results suggest that there is no significant impact of a strong culture on market share growth when faced with a decrease in market competition. It is important to note that these findings are similar using both measures of

decreases in competition<sup>12</sup>. Overall, the findings demonstrate that a strong corporate culture may not be as effective in driving market share growth when the competition level decreases in the market. The findings align with Li et al. (2021a) and Li et al. (2021), who have shown that corporate culture is more pronounced during tough economic conditions.

#### 4.4 Robustness tests

##### 4.4.1 Continuous measure of culture and market share growth

Given that we use a binary measure of corporate culture, this measure may lack precision or be arbitrary in capturing the nuances of corporate culture. Therefore, in this section, we employ a continuous measure of corporate culture. We utilize a sum of five cultural values, including innovation, integrity, quality, respect, and teamwork, as our measure of culture, rather than the indicator variable, and then estimate the equation (1) and present the results in Table 5.

[INSERT TABLE 5 HERE]

Table 5 shows the results for continuous measures of corporate culture, *CorCulture*. The interaction terms involving *CorCulture* and TaCuts (TaCut2 or TaCut3) demonstrate a positive and significant relationship at the 5 percent significance level. This is consistent with our primary findings that increasing corporate culture may lead to increased market share growth when the competition has increased in the product market. Thus, this result implies that our primary corporate culture measure is not arbitrary, rather, it effectively captures the intricate nuances of corporate culture.

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<sup>12</sup> In an unreported test, we conducted a difference-in-differences analysis two-year period before and after the increases in tariffs in 2018-19 in the US. However, we find that the results are quantitatively similar to reported findings with full sample period.

#### 4.4.2 Current year culture and market share growth

Given that our primary analysis is based on a one-year lag in corporate culture to examine its impact on market share growth in the subsequent year ( $t+1$ ), in this section, we aim to investigate whether a more immediate impact can be observed by using the current year's corporate culture to explore its impact on market share growth. Table 6 displays the results for this analysis, which uses the same specification as equation (1) but with current year culture. The dependent variable is *Mkt Share Growth* measured at time  $t$  in columns 1, 3, and 5 and measured at  $t+1$  in columns 2, 4, and 6. The regression estimates for each tariff cuts indicator, such as *TaCut1*, *TaCut2*, and *TaCut3* are reported columns 1 and 2, 3 and 4, and 5 and 6, respectively.

[INSERT TABLE 6 HERE]

The coefficients of *StCulture \* TaCut* are positive and statistically significant at 5 percent level. These results suggest that firms having a strong culture this year are more likely to have higher market share growth in subsequent years. Taken together, these findings provide support to the notion that a strong corporate culture has a significant impact on market share growth, and that our primary analysis using a one-year lag was indeed capturing this effect.

#### 4.4.3 Alternative measure of sales growth

This section uses alternative measure of growth: Sales Growth, calculated as  $(Sales_t - Sales_{(t-1)})/Sales_{(t-1)}$ , logarithm of sales (*Log Sale*), and sales-to- total assets (*Sale/TA*) to test whether different measure of sales growth provide consistent results and validate the robustness of our primary findings. Again, we estimate equation (1) using the alternative measures of sales growth and report results in Table 7.

[INSERT TABLE 7 HERE]

The dependent variable is Sales Growth (measured at time  $(t+1)$ ) in Columns 1, 2, and 3, Log Sale in Columns 4, 5, and 6, and Sale/TA in Columns 7, 8, and 9 Sale/TA. The coefficient of the variable of interest, the interaction between strong culture and tariff reduction indicators, is positive and significant at the 1 percent level when the dependent variable is Sales Growth for larger tariff cuts (TaCut2 and TaCut3). The results are similar to our initial findings that firms with a strong culture may experience higher sales growth when competition intensifies in the product market at the expense of their rivals. Moreover, results remain consistent when we choose dependent variables such as *Log Sale* and Sale/TA. Since Log Sale and Sale/TA do not measure sales growth, we do not expect them to have the same significant level as the other measure of sales growth. In sum, this analysis of employing different growth measures further highlights the role of corporate culture in influencing sales growth under different competitive conditions.

#### 4.4.4 Positive vs negative market share growth

To gain a better understanding of how corporate culture affects market share growth, we categorize market share into positive growth and negative growth. By doing so, we can explore whether the impact of corporate culture on market share growth differs depending on the direction of the growth. Table 8 presents the findings of this analysis. The model specification used in this analysis is similar to equation (1).

[INSERT TABLE 8 HERE]

Columns 1 and 2 report the results for negative market share growth, measured at times  $t$  and  $t+1$ , while Columns 3 and 4 report the results for positive market share growth, measured at times  $t$  and  $t+1$ . When using the market share growth measured at time  $t$ , the results are

quantitatively similar to the results presented above. However, when the dependent variable is *Mkt Share Growth* at time  $t+1$ , the estimated coefficient for the interaction of strong culture with a tariff reduction positive and significant at the 5 percent level for negative market share growth. This suggests that a strong corporate culture helps firms experience lower levels of negative share growth. Moreover, the results from column 4 indicate that firms having a strong corporate culture experience significantly higher market share growth when the market share growth is positive. The findings suggest that a strong corporate culture may help firms avoid losing market share during downturns and experience higher growth when the market share growth is positive.

#### 4.4.5 Alternative measure of competition

In this section, we examine whether alternative, somewhat endogenous, measures of product market competition provide a comparable impact on the relationship between a strong corporate culture and product market performance. Specifically, we utilize the text-based network industry classification (TNIC) measure developed by Hoberg and Phillips (2016)<sup>13</sup>. This new and dynamic classification is based on product descriptions from web crawling and text parsing from annual firm 10-K filings with the Securities and Exchange Commission (SEC) and offers an alternative to more traditional fixed industry classification such as SIC codes and the NAICS. We then create a proxy for the intensity of product market competition following a similar approach as Valta (2012). We define the indicator variable *Competition*, which equals one if firm's TNIC Herfindahl-Hirschman Index (HHI) score is in the lowest quartile across all firms in a given industry during a specific year. We then run the following regression equation.

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<sup>13</sup> The data are gathered from the Gerard Hoberg and Gordon Phillips, Text-Based Network Industries and Endogenous Product Differentiation. *Journal of Political Economy* (October 2016), 124 (5) 1423-1465. <https://hobergphillips.tuck.dartmouth.edu>.



$$\begin{aligned}
Mkt\ share\ growth_{j,i,t} &= \alpha + \beta_1 StCulture_{i,j,t-1} + \beta_2 Competition_{j,t} + \\
&\beta_3 (StCulture_{i,j,t-1}) \times Competition_{j,t} + \beta_4 X_{i,j,t-1} + Firm_i + Year_t + \epsilon_{i,j,t}
\end{aligned} \tag{2}$$

where  $i$  indexes firms,  $j$  indexes the industry within which the firm operates, and  $t$  indexes the years. We use *Mkt share growth* and *Sales Growth* as our dependent variables. *Competition* is a binary variable that takes the value of 1 if firms TNIC HHI score is in the lowest quartile across all firms in a given industry for a given year. The variable interest is the interaction term between strong culture and competition proxy (*StCulture*  $\times$  *Competition*). A positive and significant coefficient indicates that a strong culture may help to experience better product market performance when there is a higher level of competition within each industry. The results of the regression in equation (2) are presented in Table 9.

[INSERT TABLE 9 HERE]

The dependent variable is *Mkt Share Growth* in columns 1 and 2, measured at time  $t$  and  $t+1$ , respectively, and *Sales Growth* in columns 3 and 4, measured at time  $t$  and  $t+1$ , respectively. The coefficient of the interaction term is positive and statistically significant when the dependent variable is measured at time  $t+1$ , suggesting that firms with a strong culture experience a higher level of sales growth when there is greater competition within the industry. These results further support the main findings of this study.

#### 4.4.6 Falsification test

To investigate the relationship between a strong corporate culture and product market outcomes, we employ tariff cuts as an exogenous shock, assuming that tariff cuts are exogenous to firms with a strong corporate culture. In order to assess whether firms can anticipate tariff cuts and adjust their culture in response to changes in market conditions, we conduct a falsification

test using a pre-treatment trend approach similar to that employed by Fresard (2010) and Liu, Masulis, and Stanfield (2021). Fresard (2010) pointed out that if firms accurately predict tariff cuts, we would see a noticeable impact prior to the industry tariff cuts. We create a pre-treatment trend indicator variable, including *PreTaCut1*, *PreTaCut2*, and *PreTaCut3*, which takes the value of 1 if each firm is one or two years before an industry-level tariff cut. For example, if each firm takes the value of 1 in *TaCut2* in year *t*, *PreTaCut2* will take value of 1 one or two years before that, and zero otherwise. We then conduct a regression that interacts the pre-treatment trend with a strong corporate culture and present the results in Table 10.

The interaction term does not show statistical significance across all measurements of pre-treatment trend variable, suggesting a lack of evidence for an anticipated effect. In general, this quasi-natural experiment reduces concerns about reverse causality and confirms the importance of strong corporate culture for a product market advantage.

[INSERT TABLE 10 HERE]

## **5. Conclusions**

This paper investigates how a strong corporate culture impacts product market outcomes, specifically in terms of market share growth following an increase in competition in the market. By utilizing exogenous variation in the industry-level tariff cuts in the US as a quasi-natural experiment, we provide evidence that a strong corporate culture significantly influences product market performance. Specifically, we find that firms with a strong corporate culture experience higher market share growth post tariff cuts compared with their counterparts. The results show that a one-standard deviation increase in cultural values leads to a 10.9 percent increase in market share growth.

Furthermore, we identify two distinct cultural dimensions –the human capital channel and the technology channel- and document that culture focusing on human capital is associated with higher market share growth in response to intensified competition. Overall, these results suggest the importance of intangible assets in shaping business outcomes. However, the results also indicate that complexity of the relationship between corporate culture and product market outcomes, as the impact of corporate culture on market share growth depends on the level of competition in the product market.

Overall, we believe our study highlights the importance role of corporate culture in shaping business outcomes. By exploiting exogenous variation in industry-level import tariffs in the US as a quasi-natural environment, we provide evidence of the impact of corporate culture on product market outcomes. Our findings have practical implications for firms as investing in and improving corporate culture may lead to higher market share growth, particularly in highly competitive product market environments. This underscores the potential of corporate culture to drive long-term success in competitive business environments.

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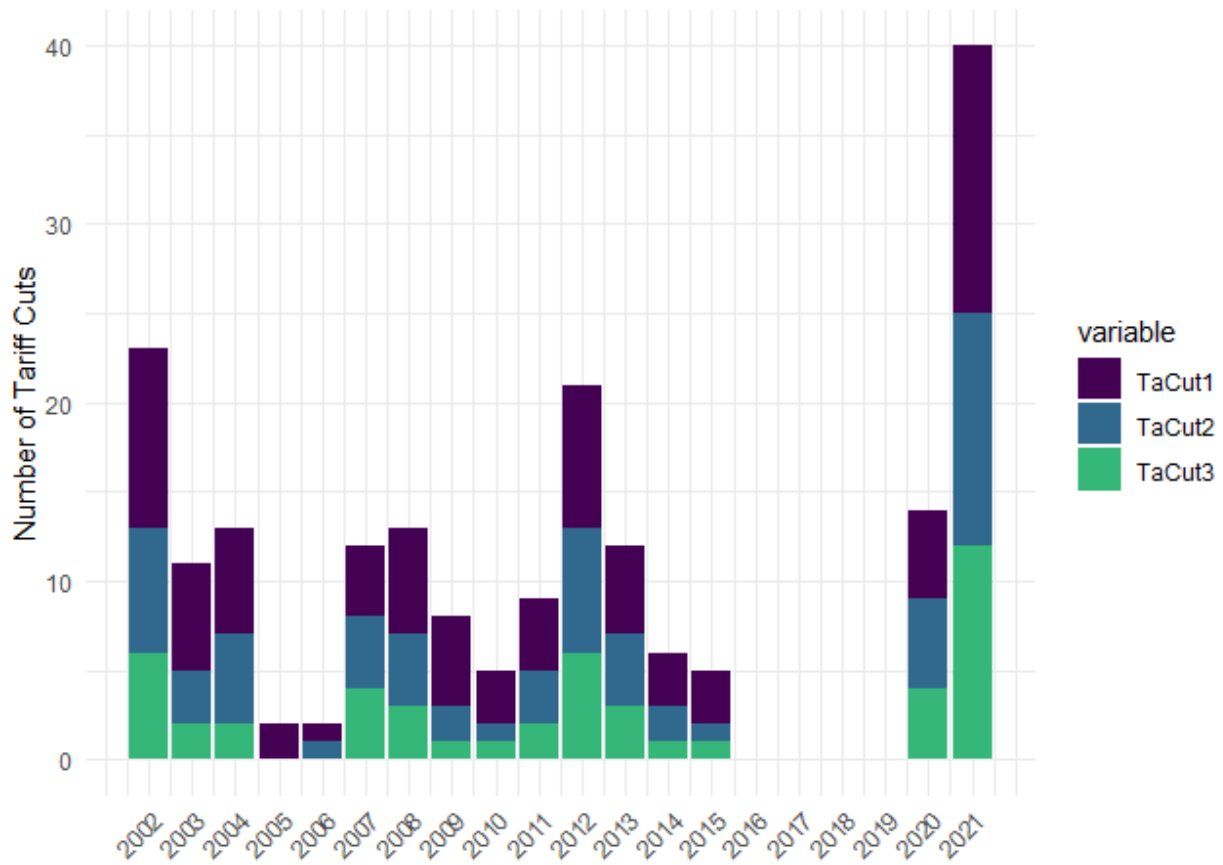


Fig. 1: Import tariff cuts by year, 2002-2021. This figure displays industry-level tariff cuts for 57 distinct 4-digit NAICS codes. TaCut1, TaCut2, and TaCut3 are defined as industry-level tariff rates that are 2, 2.5, and 3 times larger than the industry’s median tariff change over the sample period, respectively, following the methodology used by Fresard (2010).

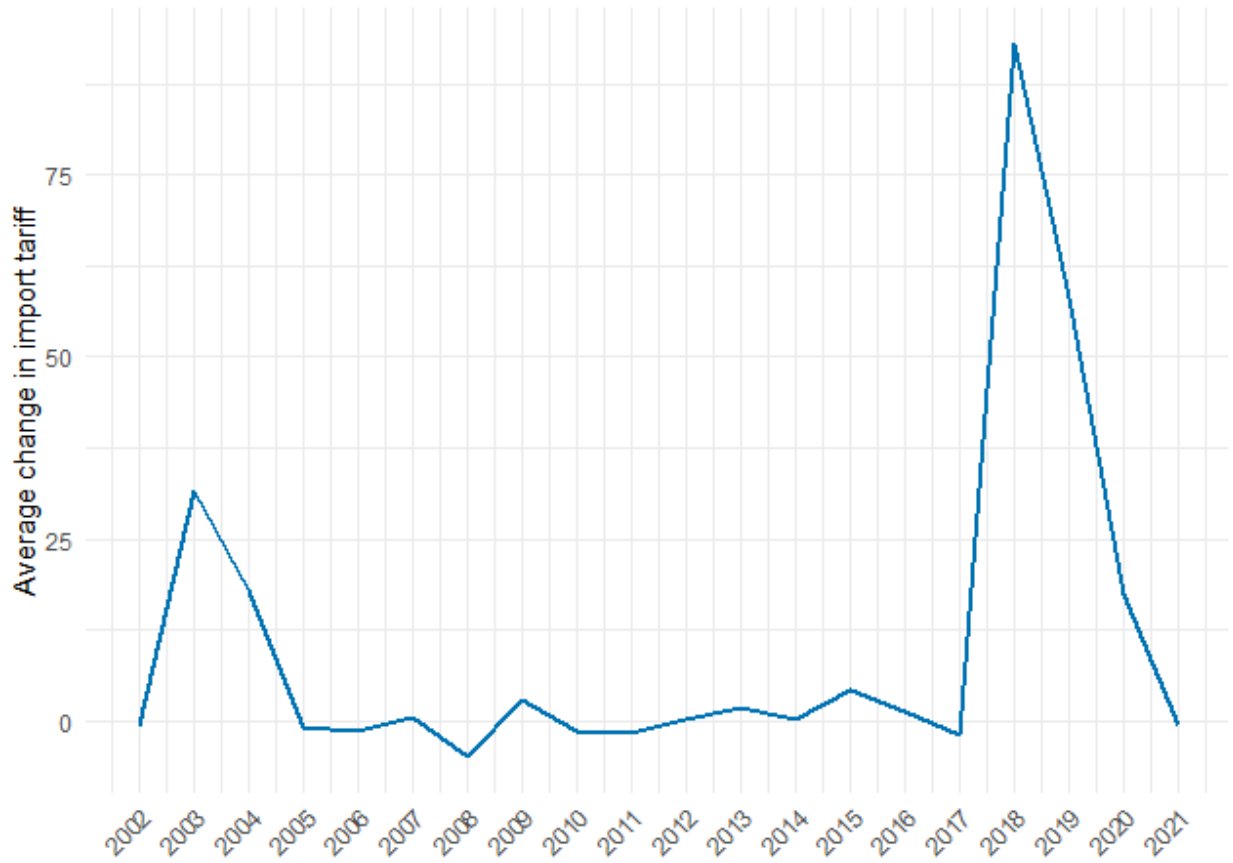


Fig. 2: Average change in import tariffs rate by year, 2002-2021: This figure displays the average change in tariff rate for seventy distinct 4-digit NAICS codes. Tariff rate for each industry-year is calculated as duties collected by U.S. customs divided by the dutiable import values.

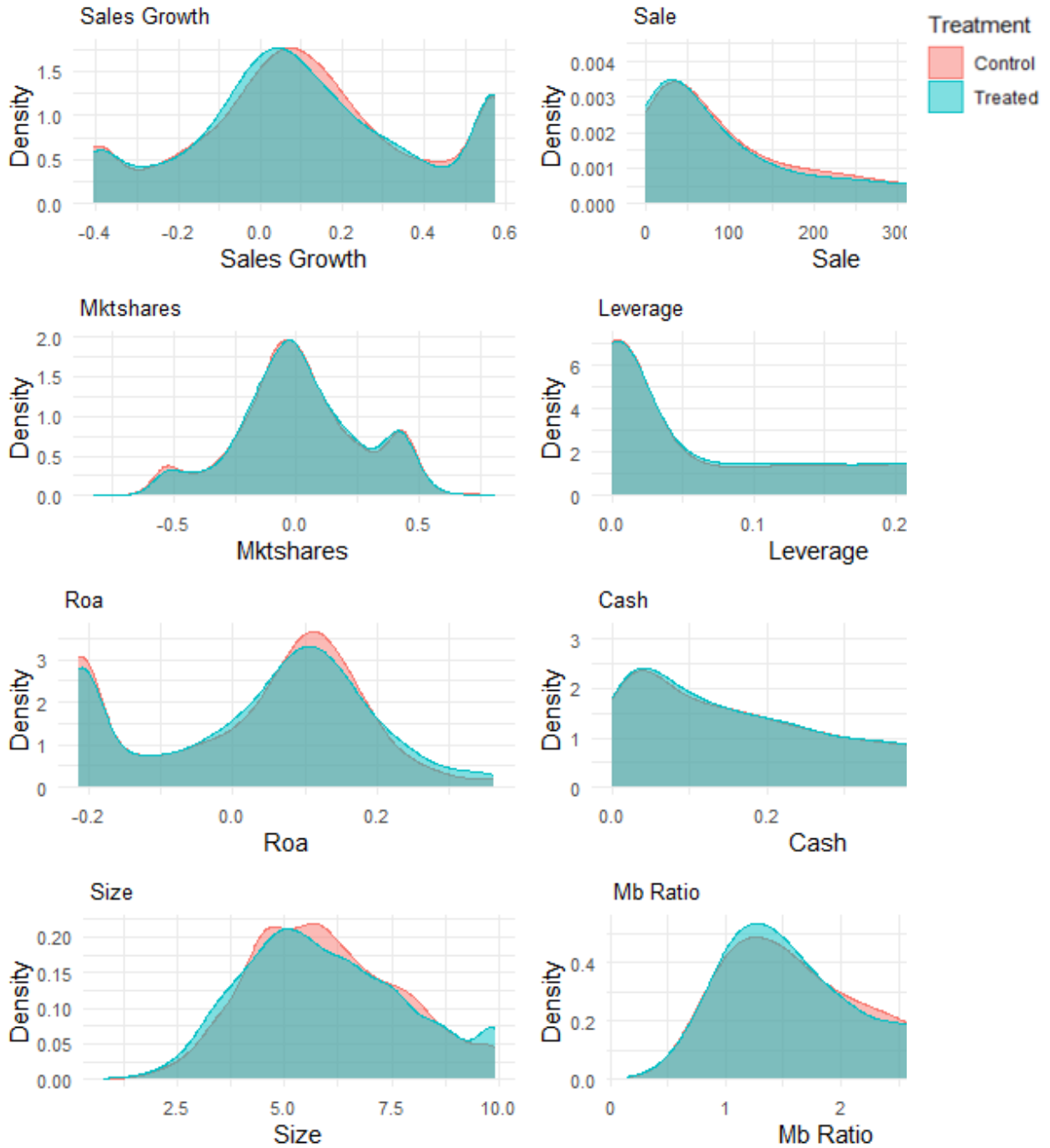


Fig. 3: Kernel density plots of matched sample. This figure depicts kernel density plots of several firm-level variables, including Sales Growth, industry-adjusted sales growth (MktShares), Leverage, ROA, and Cash, within in the matched sample. Definitions of all variables can be found in Appendix A1.

**Table 1: Summary statistics**

The table represents descriptive statistics for the key variables used in this paper. The sample consists of all non-financial and non-utility U.S. companies with available data from fiscal years 2002 through 2021 in COMPUSTAT database. For variable definitions and details of their construction are detailed in Appendix 1. All firm-level variables are winsorized at the 1 and 99 percentile values.

| Panel A: Summary statistics of the full sample |       |       |           |                  |        |                  |         |        |
|--|-------|-------|-----------|------------------|--------|------------------|---------|--------|
| Variable                                       | N     | Mean  | Std. Dev. | 25th Percentiles | Median | 75th Percentiles | Min     | Max    |
| <i>Sales Growth</i>                            | 14154 | 0.112 | 0.273     | -0.052           | 0.088  | 0.281            | -0.405  | 0.574  |
| <i>Mkt Share Growth</i>                        | 14154 | 0.011 | 0.247     | -0.131           | -0.007 | 0.152            | -0.827  | 0.821  |
| <i>StCulture</i>                               | 14154 | 0.202 | 0.401     | 0                | 0      | 0                | 0       | 1      |
| <i>CorCulture</i>                              | 14154 | 0.011 | 4.508     | -2.885           | -0.480 | 2.347            | -15.810 | 37.984 |
| <i>Cash</i>                                    | 14154 | 0.262 | 0.197     | 0.074            | 0.222  | 0.485            | 0.000   | 0.537  |
| <i>Size</i>                                    | 14154 | 6.207 | 1.972     | 4.775            | 6.116  | 7.623            | 0.071   | 9.937  |
| <i>Leverage</i>                                | 14154 | 0.133 | 0.122     | 0                | 0.115  | 0.280            | 0       | 0.293  |
| <i>ROA</i>                                     | 14154 | 0.039 | 0.155     | -0.084           | 0.083  | 0.146            | -0.212  | 0.362  |
| <i>MB Ratio</i>                                | 14154 | 2.049 | 0.965     | 1.248            | 1.787  | 2.856            | 0.145   | 3.621  |
| <i>TaCut1</i>                                  | 14154 | 0.071 | 0.257     | 0                | 0      | 0                | 0       | 1      |
| <i>TaCut2</i>                                  | 14154 | 0.051 | 0.220     | 0                | 0      | 0                | 0       | 1      |
| <i>TaCut3</i>                                  | 14154 | 0.034 | 0.181     | 0                | 0      | 0                | 0       | 1      |

| Panel B: Summary statistics of matched sample |      |                           |           |         |      |                           |           |         |
|---|------|---------------------------|-----------|---------|------|---------------------------|-----------|---------|
| Variable                                      | N    | <u>Strong Culture = 1</u> |           |         | N    | <u>Strong Culture = 0</u> |           |         |
|   |      | Mean                      | Std. Dev. | Median  |      | Mean                      | Std. Dev. | Median  |
| <i>Sales</i>                                  | 2927 | 237.342                   | 190.006   | 202.316 | 2927 | 236.630                   | 186.149   | 199.012 |
| <i>Total Assets</i>                           | 2927 | 327.914                   | 225.364   | 307.311 | 2927 | 333.237                   | 219.877   | 335.767 |
| <i>Sales Growth</i>                           | 2927 | 0.116                     | 0.278     | 0.085   | 2927 | 0.117                     | 0.278     | 0.096   |
| <i>Mkt Share Growth</i>                       | 2927 | 0.017                     | 0.252     | -0.003  | 2927 | 0.012                     | 0.258     | -0.004  |
| <i>CorCulture</i>                             | 2927 | 4.994                     | 3.444     | 4.180   | 2927 | -1.940                    | 2.801     | -1.663  |
| <i>Cash</i>                                   | 2927 | 0.274                     | 0.200     | 0.241   | 2927 | 0.280                     | 0.201     | 0.250   |
| <i>Size</i>                                   | 2927 | 5.978                     | 1.917     | 5.728   | 2927 | 5.976                     | 1.769     | 5.816   |
| <i>Leverage</i>                               | 2927 | 0.125                     | 0.121     | 0.093   | 2927 | 0.126                     | 0.122     | 0.095   |
| <i>ROA</i>                                    | 2927 | 0.031                     | 0.156     | 0.067   | 2927 | 0.023                     | 0.154     | 0.069   |
| <i>MB Ratio</i>                               | 2927 | 2.020                     | 0.970     | 1.730   | 2927 | 2.060                     | 0.975     | 1.816   |
| <i>Cash Flow</i>                              | 2927 | -0.065                    | 0.340     | 0.042   | 2927 | -0.075                    | 0.351     | 0.042   |
| <i>CapEX</i>                                  | 2927 | 0.050                     | 0.071     | 0.026   | 2927 | 0.048                     | 0.074     | 0.025   |
| <i>TaCut1</i>                                 | 2927 | 0.073                     | 0.260     | 0       | 2927 | 0.071                     | 0.256     | 0       |
| <i>TaCut2</i>                                 | 2927 | 0.052                     | 0.221     | 0       | 2927 | 0.050                     | 0.217     | 0       |
| <i>TaCut3</i>                                 | 2927 | 0.035                     | 0.183     | 0       | 2927 | 0.036                     | 0.186     | 0       |

**Table 2: Corporate culture, competition, and market share growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the market share growth of firms, measured at time  $t$  and  $t+1$ , over a sample period from 2002 to 2021. The dependent variable used is industry-adjusted market share growth. Lagged independent variables are used in the analysis. Tariff reductions ( $TaCut$ ) are categorized into three different cut thresholds. All variables are defined in Appendix A1. The results for  $TaCut1$  are presented in Columns (1) and (2),  $TaCut2$  in Columns (3) and (4), and  $TaCut3$  in Columns (5) and (6). The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

Panel A: Regression estimates for full sample

| VARIABLES   | <i>Mkt Share Growth</i><br>(1) | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(2) | <i>Mkt Share Growth</i><br>(3) | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(4) | <i>Mkt Share Growth</i><br>(5) | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(6) |
|---|--------------------------------|--|--------------------------------|--|--------------------------------|--|
| <i>StCulture<sub>(t-1)</sub></i>                      | 0.004<br>(0.007)               | -0.015**<br>(0.008)                            | 0.003<br>(0.007)               | -0.016**<br>(0.007)                            | 0.004<br>(0.007)               | -0.015**<br>(0.007)                            |
| <i>StCulture<sub>(t-1)</sub> * TaCut1<sub>t</sub></i> | -0.030<br>(0.023)              | 0.040<br>(0.025)                               |                                |  |                                |  |
| <i>TaCut1<sub>t</sub></i>                             | 0.008<br>(0.010)               | -0.017<br>(0.011)                              |                                |  |                                |  |
| <i>StCulture<sub>(t-1)</sub> * TaCut2<sub>t</sub></i> |                                |  | -0.023<br>(0.027)              | 0.086***<br>(0.028)                            |                                |  |
| <i>TaCut2<sub>t</sub></i>                             |                                |  | -0.001<br>(0.012)              | -0.026**<br>(0.013)                            |                                |  |
| <i>StCulture<sub>(t-1)</sub> * TaCut3<sub>t</sub></i> |                                |  |                                |  | -0.074**<br>(0.035)            | 0.109***<br>(0.039)                            |
| <i>TaCut3<sub>t</sub></i>                             |                                |  |                                |  | 0.008<br>(0.016)               | -0.047**<br>(0.020)                            |
| <i>MB Ratio<sub>(t-1)</sub></i>                       | 0.060***<br>(0.005)            | 0.009<br>(0.006)                               | 0.060***<br>(0.005)            | 0.009<br>(0.006)                               | 0.060***<br>(0.005)            | 0.009<br>(0.006)                               |
| <i>Cash<sub>(t-1)</sub></i>                           | -0.022<br>(0.028)              | 0.181***<br>(0.032)                            | -0.021<br>(0.028)              | 0.182***<br>(0.032)                            | -0.021<br>(0.028)              | 0.180***<br>(0.032)                            |
| <i>Size<sub>(t-1)</sub></i>                           | -0.030***<br>(0.005)           | -0.062***<br>(0.005)                           | -0.030***<br>(0.005)           | -0.062***<br>(0.005)                           | -0.030***<br>(0.005)           | -0.062***<br>(0.005)                           |
| <i>Leverage<sub>(t-1)</sub></i>                       | 0.147***<br>(0.035)            | -0.006<br>(0.038)                              | 0.148***<br>(0.035)            | -0.006<br>(0.038)                              | 0.148***<br>(0.035)            | -0.006<br>(0.038)                              |
| <i>Mkt Share Growth<sub>(t-1)</sub></i>               | -0.082***<br>(0.015)           | -0.077***<br>(0.017)                           | -0.082***<br>(0.015)           | -0.077***<br>(0.017)                           | -0.082***<br>(0.015)           | -0.077***<br>(0.017)                           |
| <i>Change in Emp<sub>t</sub></i>                      | -0.108***<br>(0.005)           | -0.040***<br>(0.005)                           | -0.108***<br>(0.005)           | -0.040***<br>(0.005)                           | -0.108***<br>(0.005)           | -0.040***<br>(0.005)                           |
| Constant  | 0.132***<br>(0.013)            | 0.161***<br>(0.013)                            | 0.133***<br>(0.013)            | 0.159***<br>(0.013)                            | 0.132***<br>(0.013)            | 0.159***<br>(0.013)                            |
| Observations  | 11,447                         | 9,367  | 11,447                         | 9,367  | 11,447                         | 9,367  |
| R-squared   | 0.096                          | 0.057  | 0.096                          | 0.057  | 0.096                          | 0.057  |
| Firm FE   | Yes                            | Yes  | Yes                            | Yes  | Yes                            | Yes  |
| Year FE   | Yes                            | Yes  | Yes                            | Yes  | Yes                            | Yes  |
| Cluster by firms                                      | Yes                            | Yes  | Yes                            | Yes  | Yes                            | Yes  |

Table 2(continue)

Panel B: Regression estimates for matched sample

|   | <i>Mkt Share<br/>Growth</i> | <i>Mkt Share<br/>Growth<sub>(t+1)</sub></i> | <i>Mkt Share<br/>Growth</i> | <i>Mkt Share<br/>Growth<sub>(t+1)</sub></i> | <i>Mkt Share<br/>Growth</i> | <i>Mkt Share<br/>Growth<sub>(t+1)</sub></i> |
|---|-----------------------------|---|-----------------------------|---|-----------------------------|---|
| VARIABLES                                       | (1)                         | (2)   | (4)                         | (5)   | (7)                         | (8)   |
| <i>StCulture<sub>t</sub></i>                    | -0.009<br>(0.016)           | 0.009<br>(0.025)                            | -0.010<br>(0.015)           | 0.011<br>(0.025)                            | -0.010<br>(0.015)           | 0.011<br>(0.025)                            |
| <i>StCulture<sub>t</sub>*TaCut1<sub>t</sub></i> | -0.028<br>(0.047)           | 0.153*<br>(0.086)                           |                             |   |                             |   |
| <i>TaCut1<sub>t</sub></i>                       | 0.017<br>(0.037)            | -0.076<br>(0.074)                           |                             |   |                             |   |
| <i>StCulture<sub>t</sub>*TaCut2<sub>t</sub></i> |                             |   | -0.028<br>(0.052)           | 0.189**<br>(0.096)                          |                             |   |
| <i>TaCut2<sub>t</sub></i>                       |                             |   | 0.024<br>(0.040)            | -0.066<br>(0.086)                           |                             |   |
| <i>StCulture<sub>t</sub>*TaCut3<sub>t</sub></i> |                             |   |                             |   | -0.018<br>(0.071)           | 0.345***<br>(0.127)                         |
| <i>TaCut3<sub>t</sub></i>                       |                             |   |                             |   | 0.036<br>(0.049)            | -0.160<br>(0.105)                           |
| Panel A Control variables                       | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |
| Observations                                    | 2,326                       | 1,078                                       | 2,326                       | 1,078                                       | 2,326                       | 1,078                                       |
| R-squared                                       | 0.120                       | 0.071                                       | 0.120                       | 0.074                                       | 0.120                       | 0.078                                       |
| Firm FE   | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |
| Year FE   | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |
| Cluster by firms                                | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |

**Table 3: People vs Technology focus culture, competition, and market share growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the market share growth of firms, measured at time  $t+1$ , over a sample period from 2002 to 2021. The dependent variable used is industry-adjusted market share growth. Lagged independent variables are used in the analysis. Tariff reductions ( $TaCut$ ) are categorized into three different cut thresholds. All firm-level variables are winsorized at the 1st and 99th percentile values, and all variables are defined in Appendix A1. The results for people focus corporate culture are presented in Column (1) and technology focus corporate culture in Column (2). The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| Panel A: Regression estimates for full sample |                              |                      |                       |                                 |                     |                     |
|---|------------------------------|----------------------|-----------------------|---------------------------------|---------------------|---------------------|
| VARIABLES                                     | <u>People Focus Culture</u>  |                      |                       | <u>Technology Focus Culture</u> |                     |                     |
|   | (1)                          | (2)                  | (3)                   | (4)                             | (5)                 | (6)                 |
|   | <i>Mkt Share Growth(t+1)</i> |                      |                       |                                 |                     |                     |
| $StCulture_{(t-1)}$                           | -0.0122<br>(0.0086)          | -0.0136<br>(0.0085)  | -0.0127<br>(0.0084)   |                                 |                     |                     |
| $SPCulture_{(t-1)} * TaCut1_t$                | 0.0243<br>(0.0251)           |                      |                       |                                 |                     |                     |
| $TaCut1_t$                                    | -0.0136<br>(0.0109)          |                      |                       | -0.0016<br>(0.0111)             |                     |                     |
| $SPCulture_{(t-1)} * TaCut2_t$                |                              | 0.0685**<br>(0.0277) |                       |                                 |                     |                     |
| $TaCut2_t$                                    |                              | -0.0214<br>(0.0131)  |                       |                                 | -0.0093<br>(0.0132) |                     |
| $SPCulture_{(t-1)} * TaCut3_t$                |                              |                      | 0.0888**<br>(0.0409)  |                                 |                     |                     |
| $TaCut3_t$                                    |                              |                      | -0.0401**<br>(0.0199) |                                 |                     | -0.0238<br>(0.0206) |
| $STechCulture_{(t-1)}$                        |                              |                      |                       | -0.0078<br>(0.0068)             | -0.0102<br>(0.0068) | -0.0100<br>(0.0067) |
| $STechCulture_{(t-1)} * TaCut1_t$             |                              |                      |                       | -0.0253<br>(0.0215)             |                     |                     |
| $STechCulture_{(t-1)} * TaCut2_t$             |                              |                      |                       |                                 | 0.0135<br>(0.0250)  |                     |
| $STechCulture_{(t-1)} * TaCut3_t$             |                              |                      |                       |                                 |                     | 0.0199<br>(0.0386)  |
| Table 2 Controls                              | Yes                          | Yes                  | Yes                   | Yes                             | Yes                 | Yes                 |
| Observations                                  | 9,367                        | 9,367                | 9,367                 | 9,367                           | 9,367               | 9,367               |
| R-squared                                     | 0.0561                       | 0.0567               | 0.0568                | 0.0562                          | 0.0560              | 0.0561              |
| Firm FE                                       | Yes                          | Yes                  | Yes                   | Yes                             | Yes                 | Yes                 |
| Year FE                                       | Yes                          | Yes                  | Yes                   | Yes                             | Yes                 | Yes                 |
| Cluster by firms                              | Yes                          | Yes                  | Yes                   | Yes                             | Yes                 | Yes                 |

**Table 3** (continued)  
**Panel B: Regression estimates for matched sample**

| VARIABLES  | <u>People Focus Culture</u> |                       |                              | <u>Technology Focus Culture</u> |                     |                     |
|--|-----------------------------|-----------------------|------------------------------|---------------------------------|---------------------|---------------------|
|  | (1)                         | (2)                   | (3)                          | (4)                             | (5)                 | (6)                 |
|  |                             |                       | <i>Mkt Share Growth(t+1)</i> |                                 |                     |                     |
| <i>SPCulture<sub>t-1</sub></i>                         | 0.0008<br>(0.0247)          | -0.0038<br>(0.0248)   | -0.0045<br>(0.0247)          |                                 |                     |                     |
| <i>SPCulture<sub>t-1</sub> * TaCut1<sub>t</sub></i>    | 0.0521<br>(0.0950)          |                       |                              |                                 |                     |                     |
| <i>TaCut1<sub>t</sub></i>                              | 0.0117<br>(0.0377)          |                       |                              | 0.0569<br>(0.0475)              |                     |                     |
| <i>SPCulture<sub>t-1</sub> * TaCut2<sub>t</sub></i>    |                             | 0.3022***<br>(0.1002) |                              |                                 |                     |                     |
| <i>TaCut2<sub>t</sub></i>                              |                             | -0.0043<br>(0.0438)   |                              |                                 | 0.0980*<br>(0.0587) |                     |
| <i>SPCulture<sub>t-1</sub> * TaCut3<sub>t</sub></i>    |                             |                       | 0.4980***<br>(0.1309)        |                                 |                     |                     |
| <i>TaCut3<sub>t</sub></i>                              |                             |                       | -0.0511<br>(0.0601)          |                                 |                     | 0.1012<br>(0.0770)  |
| <i>STechCulture<sub>t-1</sub></i>                      |                             |                       |                              | -0.0127<br>(0.0217)             | -0.0155<br>(0.0223) | -0.0156<br>(0.0219) |
| <i>STechCulture<sub>t-1</sub> * TaCut1<sub>t</sub></i> |                             |                       |                              | -0.1017<br>(0.0730)             |                     |                     |
| <i>STechCulture<sub>t-1</sub> * TaCut2<sub>t</sub></i> |                             |                       |                              |                                 | -0.0904<br>(0.0855) |                     |
| <i>STechCulture<sub>t-1</sub> * TaCut3<sub>t</sub></i> |                             |                       |                              |                                 |                     | -0.1943<br>(0.1448) |
| Table 2 Controls                                       | Yes                         | Yes                   | Yes                          | Yes                             | Yes                 | Yes                 |
| Observations   | 1,078                       | 1,078                 | 1,078                        | 1,078                           | 1,078               | 1,078               |
| R-squared  | 0.0646                      | 0.0813                | 0.0868                       | 0.0677                          | 0.0691              | 0.0688              |
| Firm FE  | Yes                         | Yes                   | Yes                          | Yes                             | Yes                 | Yes                 |
| Year FE  | Yes                         | Yes                   | Yes                          | Yes                             | Yes                 | Yes                 |
| Cluster by firms                                       | Yes                         | Yes                   | Yes                          | Yes                             | Yes                 | Yes                 |



**Table 4: Corporate culture, decrease in competition, and market share growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the market share growth of firms, measured at time  $t+1$ , over a sample period from 2002 to 2021. The dependent variable used is industry-adjusted market share growth. Lagged independent variables are used in the analysis. Tariff increases (*TaInc*) are categorized into three different cut thresholds. All are defined in Appendix A1. The results for people focus corporate culture are presented in Column (1) and technology focus corporate culture in Column (2). The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

Panel A: Regression estimates for increases in tariff rates measured similar to tariff cuts

| VARIABLES   | <i>Mkt Share Growth</i> | <i>Mkt Share Growth<sub>(t+1)</sub></i> | <i>Mkt Share Growth</i> | <i>Mkt Share Growth<sub>(t+1)</sub></i> | <i>Mkt Share Growth</i> | <i>Mkt Share Growth<sub>(t+1)</sub></i> |
|---|-------------------------|---|-------------------------|---|-------------------------|---|
|   | (1)                     | (2)                                     | (3)                     | (4)                                     | (5)                     | (6)                                     |
| <i>StCulture<sub>(t-1)</sub></i>                      | -0.002<br>(0.007)       | -0.009<br>(0.008)                       | -0.001<br>(0.007)       | -0.010<br>(0.008)                       | -0.000<br>(0.007)       | -0.012<br>(0.007)                       |
| <i>StCulture<sub>(t-1)</sub> * TaInc1<sub>t</sub></i> | 0.025<br>(0.016)        | -0.018<br>(0.019)                       |                         |   |                         |   |
| <i>TaInc1<sub>t</sub></i>                             | -0.002<br>(0.008)       | 0.009<br>(0.009)                        |                         |   |                         |   |
| <i>StCulture<sub>(t-1)</sub> * TaInc2<sub>t</sub></i> |                         |   | 0.023<br>(0.017)        | -0.015<br>(0.020)                       |                         |   |
| <i>TaInc2<sub>t</sub></i>                             |                         |   | 0.003<br>(0.009)        | 0.009<br>(0.010)                        |                         |   |
| <i>StCulture<sub>(t-1)</sub> * TaInc3<sub>t</sub></i> |                         |   |                         |   | 0.017<br>(0.017)        | -0.004<br>(0.020)                       |
| <i>TaInc3<sub>t</sub></i>                             |                         |   |                         |   | -0.000<br>(0.009)       | 0.003<br>(0.010)                        |
| Table 2 Control variables                             | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |
| Observations  | 11,447                  | 9,367                                   | 11,447                  | 9,367                                   | 11,447                  | 9,367                                   |
| R-squared   | 0.096                   | 0.056                                   | 0.096                   | 0.056                                   | 0.096                   | 0.056                                   |
| Firm FE   | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |
| Year FE   | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |
| Cluster by firms                                      | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |

**Table 4** (continued)

Panel B: Regression estimates for tariff increase (2018-19 tariff increase in the US)

| VARIABLES                               | <i>Mkt Share<br/>Growth</i><br>(1) | <i>Mkt Share<br/>Growth<sub>(t+1)</sub></i><br>(2) |
|---|------------------------------------|--|
| <i>StCulture<sub>(t-1)</sub></i>        | 0.006<br>(0.005)                   | -0.016***<br>(0.006)                               |
| <i>StCulture<sub>(t-1)</sub> * Post</i> | 0.007<br>(0.014)                   | 0.010<br>(0.015)                                   |
| <i>Post</i>                             | -0.006<br>(0.006)                  | -0.002<br>(0.006)                                  |
| Table 2 controls                        | Yes                                | Yes  |
| Observations                            | 11,447                             | 9,367  |
| R-squared                               | 0.086                              | 0.046  |
| Firm FE                                 | Yes                                | Yes  |
| Year FE                                 | No                                 | No   |
| Cluster by firms                        | Yes                                | Yes  |

**Table 5: Continuous measure of culture, competition, and market share growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the market share growth of firms over a sample period from 2002 to 2021. The table uses the continuous measure of corporate culture instead of binary variable of corporate culture. The dependent variable used is industry-adjusted market share growth, measured at time  $t$  and  $t+1$ . Lagged independent variables are used in the analysis. Tariff reductions ( $TaCut$ ) are categorized into three different cut thresholds. All firm-level variables are winsorized at the 1st and 99th percentile values, and all variables are defined in Appendix A1. The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| VARIABLES  | <i>Mkt Share Growth</i><br>(1) | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(2) | <i>Mkt Share Growth</i><br>(3) | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(4) | <i>Mkt Share Growth</i><br>(5) | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(6) |
|--|--------------------------------|--|--------------------------------|--|--------------------------------|--|
| <i>CorCulture<sub>(t-1)</sub></i>                      | -0.0003<br>(0.0009)            | -0.0016*<br>(0.0009)                           | -0.0004<br>(0.0009)            | -0.0017*<br>(0.0009)                           | -0.0002<br>(0.0009)            | -0.0016*<br>(0.0009)                           |
| <i>CorCulture<sub>(t-1)</sub> * TaCut1<sub>t</sub></i> | -0.0003<br>(0.0023)            | 0.0030<br>(0.0026)                             |                                |  |                                |  |
| <i>TaCut1<sub>t</sub></i>                              | -0.0011<br>(0.0091)            | -0.0080<br>(0.0104)                            |                                |  |                                |  |
| <i>CorCulture<sub>(t-1)</sub> * TaCut2<sub>t</sub></i> |                                |  | 0.0021<br>(0.0028)             | 0.0058**<br>(0.0029)                           |                                |  |
| <i>TaCut2<sub>t</sub></i>                              |                                |  | -0.0063<br>(0.0112)            | -0.0038<br>(0.0118)                            |                                |  |
| <i>CorCulture<sub>(t-1)</sub> * TaCut3<sub>t</sub></i> |                                |  |                                |  | -0.0014<br>(0.0038)            | 0.0101**<br>(0.0044)                           |
| <i>TaCut3<sub>t</sub></i>                              |                                |  |                                |  | -0.0096<br>(0.0151)            | -0.0130<br>(0.0175)                            |
| <i>MB Ratio<sub>(t-1)</sub></i>                        | 0.0678***<br>(0.0051)          | 0.0122**<br>(0.0056)                           | 0.0677***<br>(0.0051)          | 0.0121**<br>(0.0056)                           | 0.0678***<br>(0.0051)          | 0.0121**<br>(0.0056)                           |
| <i>Cash<sub>(t-1)</sub></i>                            | 0.0330<br>(0.0291)             | 0.1993***<br>(0.0319)                          | 0.0336<br>(0.0291)             | 0.2000***<br>(0.0319)                          | 0.0330<br>(0.0291)             | 0.1989***<br>(0.0319)                          |
| <i>Size<sub>(t-1)</sub></i>                            | -0.0330***<br>(0.0051)         | -0.0614***<br>(0.0055)                         | -0.0331***<br>(0.0051)         | -0.0613***<br>(0.0055)                         | -0.0331***<br>(0.0051)         | -0.0613***<br>(0.0055)                         |
| <i>Leverage<sub>(t-1)</sub></i>                        | 0.1363***<br>(0.0359)          | -0.0142<br>(0.0381)                            | 0.1367***<br>(0.0359)          | -0.0145<br>(0.0381)                            | 0.1366***<br>(0.0359)          | -0.0152<br>(0.0381)                            |
| <i>Mkt Share Growth<sub>(t-1)</sub></i>                | -0.0987***<br>(0.0158)         | -0.0771***<br>(0.0171)                         | -0.0989***<br>(0.0158)         | -0.0772***<br>(0.0171)                         | -0.0988***<br>(0.0158)         | -0.0772***<br>(0.0171)                         |
| <i>Change in Emp<sub>t</sub></i>                       | -0.0602***<br>(0.0053)         | -0.0071<br>(0.0055)                            | -0.0602***<br>(0.0053)         | -0.0073<br>(0.0055)                            | -0.0602***<br>(0.0053)         | -0.0075<br>(0.0055)                            |
| Constant   | 0.1075***<br>(0.0142)          | 0.1380***<br>(0.0133)                          | 0.1075***<br>(0.0139)          | 0.1359***<br>(0.0130)                          | 0.1075***<br>(0.0139)          | 0.1361***<br>(0.0130)                          |
| Observations   | 11,447                         | 9,367  | 11,447                         | 9,367  | 11,447                         | 9,367  |
| R-squared  | 0.0636                         | 0.0493   | 0.0637                         | 0.0496   | 0.0636                         | 0.0501   |
| Firm FE  | Yes                            | Yes  | Yes                            | Yes  | Yes                            | Yes  |
| Year FE  | Yes                            | Yes  | Yes                            | Yes  | Yes                            | Yes  |
| Cluster by firms                                       | Yes                            | Yes  | Yes                            | Yes  | Yes                            | Yes  |

**Table 6: Current year culture, competition, and market share growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the market share growth of firms, measured at time  $t+1$ , over a sample period from 2002 to 2021. The dependent variable used is industry-adjusted market share growth. The strong corporate culture is measured at time  $t$ . Lagged independent variables are used in the analysis. Tariff reductions ( $TaCut$ ) are categorized into three different cut thresholds. All firm-level variables are winsorized at the 1st and 99th percentile values, and all variables are defined in Appendix A1. The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| VARIABLES                                       | <i>Mkt Share Growth</i> | <i>Mkt Share Growth<sub>(t+1)</sub></i> | <i>Mkt Share Growth</i> | <i>Mkt Share Growth<sub>(t+1)</sub></i> | <i>Mkt Share Growth</i> | <i>Mkt Share Growth<sub>(t+1)</sub></i> |
|---|-------------------------|---|-------------------------|---|-------------------------|---|
|   | (1)                     | (2)                                     | (3)                     | (4)                                     | (5)                     | (6)                                     |
| <i>StCulture<sub>t</sub></i>                    | -0.008<br>(0.007)       | -0.008<br>(0.008)                       | -0.009<br>(0.007)       | -0.007<br>(0.008)                       | -0.008<br>(0.007)       | -0.008<br>(0.008)                       |
| <i>StCulture<sub>t</sub>*TaCut1<sub>t</sub></i> | -0.002<br>(0.022)       | 0.044*<br>(0.025)                       |                         |   |                         |   |
| <i>TaCut1<sub>t</sub></i>                       | 0.002<br>(0.010)        | -0.018<br>(0.011)                       |                         |   |                         |   |
| <i>StCulture<sub>t</sub>*TaCut2<sub>t</sub></i> |                         |   | 0.005<br>(0.027)        | 0.045<br>(0.030)                        |                         |   |
| <i>TaCut2<sub>t</sub></i>                       |                         |   | -0.008<br>(0.012)       | -0.016<br>(0.013)                       |                         |   |
| <i>StCulture<sub>t</sub>*TaCut3<sub>t</sub></i> |                         |   |                         |   | -0.014<br>(0.039)       | 0.100**<br>(0.044)                      |
| <i>TaCut3<sub>t</sub></i>                       |                         |   |                         |   | -0.008<br>(0.016)       | -0.042**<br>(0.019)                     |
| Table 2 controls                                | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |
| Observations                                    | 11,447                  | 9,367                                   | 11,447                  | 9,367                                   | 11,447                  | 9,367                                   |
| R-squared                                       | 0.096                   | 0.056                                   | 0.096                   | 0.056                                   | 0.096                   | 0.057                                   |
| Firm FE   | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |
| Year FE   | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |
| Cluster by firms                                | Yes                     | Yes                                     | Yes                     | Yes                                     | Yes                     | Yes                                     |

**Table 7: Alternative measure of sales growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the various measures of sales growth of firms, measured at time  $t+1$ , over a sample period from 2002 to 2021. The dependent variable used is *Sales Growth*, calculated as  $Sales_t - Sales_{t-1}/Sales_{t-1}$  in Columns 1, 2, and 3, *Log Sale*, calculated as logarithmic of sale, in Columns 4, 5, and 6, and *Sale/TA*, calculated as sales over total assets in Columns 7, 8, and 9. Lagged independent variables are used in the analysis. Tariff reductions (*TaCut*) are categorized into three different cut thresholds. All firm-level variables are winsorized at the 1st and 99th percentile values, and all variables are defined in Appendix A1. The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| VARIABLES  | <i>Sales Growth</i> <sub>(t+1)</sub> | <i>Sales Growth</i> <sub>(t+1)</sub> | <i>Sales Growth</i> <sub>(t+1)</sub> | <i>Log Sale</i> <sub>(t+1)</sub> | <i>Log Sale</i> <sub>(t+1)</sub> | <i>Log Sale</i> <sub>(t+1)</sub> | <i>Sale/TA</i> <sub>(t+1)</sub> | <i>Sale/TA</i> <sub>(t+1)</sub> | <i>Sale/TA</i> <sub>(t+1)</sub> |
|--|--------------------------------------|--------------------------------------|--------------------------------------|----------------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|
|  | (1)                                  | (2)                                  | (3)                                  | (4)                              | (5)                              | (6)                              | (7)                             | (8)                             | (9)                             |
| <i>StCulture</i> <sub>(t-1)</sub>                              | -0.016*                              | -0.017**                             | -0.017**                             | -0.055**                         | -0.057**                         | -0.054**                         | -0.008                          | -0.008                          | -0.009                          |
|  | (0.008)                              | (0.008)                              | (0.008)                              | (0.025)                          | (0.024)                          | (0.024)                          | (0.009)                         | (0.009)                         | (0.009)                         |
| <i>StCulture</i> <sub>(t-1)</sub> * <i>TaCut1</i> <sub>t</sub> | 0.033                                |                                      |                                      | 0.080                            |                                  |                                  | 0.023                           |                                 |                                 |
|  | (0.025)                              |                                      |                                      | (0.056)                          |                                  |                                  | (0.026)                         |                                 |                                 |
| <i>TaCut1</i> <sub>t</sub>                                     | 0.002                                |                                      |                                      | 0.009                            |                                  |                                  | -0.007                          |                                 |                                 |
|  | (0.012)                              |                                      |                                      | (0.030)                          |                                  |                                  | (0.013)                         |                                 |                                 |
| <i>StCulture</i> <sub>(t-1)</sub> * <i>TaCut2</i> <sub>t</sub> |                                      | 0.081***                             |                                      |                                  | 0.142**                          |                                  |                                 | 0.035                           |                                 |
|  |                                      | (0.029)                              |                                      |                                  | (0.071)                          |                                  |                                 | (0.032)                         |                                 |
| <i>TaCut2</i> <sub>t</sub>                                     |                                      | -0.011                               |                                      |                                  | -0.031                           |                                  |                                 | 0.004                           |                                 |
|  |                                      | (0.014)                              |                                      |                                  | (0.039)                          |                                  |                                 | (0.016)                         |                                 |
| <i>StCulture</i> <sub>(t-1)</sub> * <i>TaCut3</i> <sub>t</sub> |                                      |                                      | 0.122***                             |                                  |                                  | 0.140                            |                                 |                                 | 0.088*                          |
|  |                                      |                                      | (0.041)                              |                                  |                                  | (0.110)                          |                                 |                                 | (0.046)                         |
| <i>TaCut3</i> <sub>t</sub>                                     |                                      |                                      | -0.013                               |                                  |                                  | 0.052                            |                                 |                                 | 0.010                           |
|  |                                      |                                      | (0.021)                              |                                  |                                  | (0.062)                          |                                 |                                 | (0.021)                         |
| Table 2 Control variables                                      | Yes                                  | Yes                                  | Yes                                  | Yes                              | Yes                              | Yes                              | Yes                             | Yes                             | Yes                             |
| Observations   | 9,367                                | 9,367                                | 9,367                                | 9,367                            | 9,367                            | 9,367                            | 9,367                           | 9,367                           | 9,367                           |
| R-squared  | 0.146                                | 0.147                                | 0.147                                | 0.315                            | 0.315                            | 0.315                            | 0.088                           | 0.088                           | 0.089                           |
| Firm FE  | Yes                                  | Yes                                  | Yes                                  | Yes                              | Yes                              | Yes                              | Yes                             | Yes                             | Yes                             |
| Year FE  | Yes                                  | Yes                                  | Yes                                  | Yes                              | Yes                              | Yes                              | Yes                             | Yes                             | Yes                             |
| Cluster by firms   | Yes                                  | Yes                                  | Yes                                  | Yes                              | Yes                              | Yes                              | Yes                             | Yes                             | Yes                             |

**Table 8: Corporate culture, competition, and positive vs negative market share growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the market share growth of firms, measured at time  $t$  and  $t+1$ , over a sample period from 2002 to 2021. The dependent variable used is positive vs negative change in industry-adjusted market share growth. Lagged independent variables are used in the analysis. Tariff reductions ( $TaCut2$ ) are categorized by 2.5 times the industry median. All variables are defined in Appendix A1. The results for negative change in market share growth are presented in Columns (1) and (2) and positive change in market share growth in Columns (3) and (4). The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| VARIABLES                      | <u>Negative Mkt Share Growth</u> |  | <u>Positive Mkt Share Growth</u> |  |
|--------------------------------|----------------------------------|--|----------------------------------|--|
|                                | <i>Mkt Share Growth</i><br>(1)   | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(2) | <i>Mkt Share Growth</i><br>(3)   | <i>Mkt Share Growth<sub>(t+1)</sub></i><br>(4) |
| $StCulture_{(t-1)}$            | -0.008<br>(0.005)                | -0.011<br>(0.010)                              | -0.007<br>(0.006)                | -0.011<br>(0.012)                              |
| $StCulture_{(t-1)} * TaCut2_t$ | -0.026<br>(0.019)                | 0.079**<br>(0.039)                             | 0.025<br>(0.025)                 | 0.104**<br>(0.042)                             |
| $TaCut2_t$                     | -0.014<br>(0.009)                | -0.012<br>(0.015)                              | -0.016<br>(0.011)                | -0.020<br>(0.021)                              |
| $MB Ratio_{(t-1)}$             | 0.017***<br>(0.004)              | 0.015*<br>(0.008)                              | 0.010**<br>(0.004)               | 0.006<br>(0.009)                               |
| $Cash_{(t-1)}$                 | -0.065***<br>(0.023)             | 0.191***<br>(0.044)                            | 0.070***<br>(0.027)              | 0.168***<br>(0.047)                            |
| $Size_{(t-1)}$                 | -0.007*<br>(0.004)               | -0.053***<br>(0.010)                           | -0.023***<br>(0.005)             | -0.069***<br>(0.009)                           |
| $Leverage_{(t-1)}$             | 0.017<br>(0.027)                 | -0.017<br>(0.054)                              | 0.072**<br>(0.029)               | 0.051<br>(0.061)                               |
| $Mkt Share Growth_{(t-1)}$     | -0.007<br>(0.011)                | -0.220***<br>(0.023)                           | 0.007<br>(0.010)                 | -0.166***<br>(0.021)                           |
| $Change in Emp_t$              | -0.041***<br>(0.003)             | -0.037***<br>(0.007)                           | -0.027***<br>(0.005)             | -0.049***<br>(0.009)                           |
| Constant                       | -0.130***<br>(0.013)             | 0.084***<br>(0.024)                            | 0.256***<br>(0.011)              | 0.220***<br>(0.018)                            |
| Observations                   | 6,075                            | 4,919  | 5,372                            | 4,448  |
| R-squared                      | 0.048                            | 0.099  | 0.046                            | 0.100  |
| Firm FE                        | Yes                              | Yes  | Yes                              | Yes  |
| Year FE                        | Yes                              | Yes  | Yes                              | Yes  |
| Cluster by firms               | Yes                              | Yes  | Yes                              | Yes  |

**Table 9: Alternative measure of competition, corporate culture, and market share growth**

The table presents the results of a difference-in-differences test that examines the impact of corporate culture on the market share growth using alternative measures of market competition of firms over a sample period from 2002 to 2021. The dependent variable used is industry-adjusted market share growth measured at time  $t$  and  $t+1$  in columns 1 and 2, respectively and sales growth measured at time  $t$  and  $t+1$  in columns 3 and 4, respectively. Lagged independent variables are used in the analysis. All firm-level variables are winsorized at the 1st and 99th percentile values, and all variables are defined in Appendix A1. The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| VARIABLES  | <i>Mkt Share Growth</i> | <i>Mkt Share Growth<sub>(t+1)</sub></i> | <i>Sales Growth</i>  | <i>Sales Growth<sub>(t+1)</sub></i> |
|--|-------------------------|---|----------------------|-------------------------------------|
|  | (1)                     | (2)                                     | (3)                  | (4)                                 |
| <i>StCulture<sub>(t-1)</sub></i>                           | 0.001<br>(0.005)        | -0.017***<br>(0.005)                    | 0.002<br>(0.005)     | -0.017***<br>(0.005)                |
| <i>StCulture<sub>(t-1)</sub> * Competition<sub>t</sub></i> | 0.008<br>(0.008)        | 0.027***<br>(0.009)                     | 0.004<br>(0.009)     | 0.022**<br>(0.010)                  |
| <i>Competition<sub>t</sub></i>                             | 0.009**<br>(0.004)      | 0.003<br>(0.005)                        | 0.012**<br>(0.005)   | 0.007<br>(0.005)                    |
| <i>MB Ratio<sub>(t-1)</sub></i>                            | 0.051***<br>(0.003)     | 0.012***<br>(0.004)                     | 0.048***<br>(0.003)  | 0.011***<br>(0.004)                 |
| <i>Cash<sub>(t-1)</sub></i>                                | 0.019<br>(0.020)        | 0.170***<br>(0.023)                     | 0.002<br>(0.021)     | 0.146***<br>(0.024)                 |
| <i>Size<sub>(t-1)</sub></i>                                | -0.026***<br>(0.004)    | -0.057***<br>(0.004)                    | -0.029***<br>(0.004) | -0.063***<br>(0.004)                |
| <i>Leverage<sub>(t-1)</sub></i>                            | 0.102***<br>(0.024)     | -0.003<br>(0.027)                       | 0.113***<br>(0.025)  | 0.022<br>(0.029)                    |
| <i>Mkt Share Growth<sub>(t-1)</sub></i>                    | -0.027**<br>(0.012)     | -0.069***<br>(0.012)                    | -0.024**<br>(0.012)  | -0.074***<br>(0.013)                |
| <i>Change in Emp<sub>t</sub></i>                           | -0.101***<br>(0.003)    | -0.045***<br>(0.004)                    | -0.114***<br>(0.004) | -0.052***<br>(0.004)                |
| Constant   | 0.205***<br>(0.008)     | 0.133***<br>(0.009)                     | 0.291***<br>(0.009)  | 0.252***<br>(0.010)                 |
| Observations   | 21,268                  | 17,463                                  | 21,268               | 17,463                              |
| R-squared  | 0.101                   | 0.065                                   | 0.173                | 0.149                               |
| Firm FE  | Yes                     | Yes                                     | Yes                  | Yes                                 |
| Year FE  | Yes                     | Yes                                     | Yes                  | Yes                                 |
| Cluster by firms   | Yes                     | Yes                                     | Yes                  | Yes                                 |

**Table 10: Falsification test of pre-treatment trends for firms**

This table presents the falsification test of pre-treatment trends for firms over a sample period spanning from 2002 to 2021. The dependent variable is industry-adjusted market share growth, measured at both time points,  $t$  and  $t+1$ . The variables  $PreTaCut1$ ,  $PreTaCut2$ , and  $PreTaCut3$  are indicators for pre-treatment trends. Each variable takes the value of 1 if a firm is one or two years prior to industry-level tariff cuts. All control variables from Table 2 are included in the regression but are not reported here for brevity. Lagged variables are also incorporated, and the data is winsorized at the 1st and 99th percentiles. The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

|  | <i>Mkt Share<br/>Growth</i> | <i>Mkt Share<br/>Growth<sub>(t+1)</sub></i> | <i>Mkt Share<br/>Growth</i> | <i>Mkt Share<br/>Growth<sub>(t+1)</sub></i> | <i>Mkt Share<br/>Growth</i> | <i>Mkt Share<br/>Growth<sub>(t+1)</sub></i> |
|--|-----------------------------|---|-----------------------------|---|-----------------------------|---|
| VARIABLES  | (1)                         | (2)   | (3)                         | (4)   | (5)                         | (6)   |
| <i>StCulture<sub>t-1</sub></i>                         | 0.003<br>(0.007)            | -0.012<br>(0.007)                           | 0.002<br>(0.007)            | -0.012<br>(0.007)                           | 0.003<br>(0.007)            | -0.011<br>(0.007)                           |
| <i>StCulture<sub>t-1</sub> * PreTaCut1<sub>t</sub></i> | -0.017<br>(0.023)           | -0.008<br>(0.025)                           |                             |   |                             |   |
| <i>PreTaCut1<sub>t</sub></i>                           | -0.001<br>(0.011)           | -0.008<br>(0.012)                           |                             |   |                             |   |
| <i>StCulture<sub>t-1</sub> * PreTaCut2<sub>t</sub></i> |                             |   | -0.009<br>(0.026)           | -0.012<br>(0.030)                           |                             |   |
| <i>PreTaCut2<sub>t</sub></i>                           |                             |   | -0.007<br>(0.012)           | -0.009<br>(0.014)                           |                             |   |
| <i>StCulture<sub>t-1</sub> * PreTaCut3<sub>t</sub></i> |                             |   |                             |   | -0.024<br>(0.037)           | -0.047<br>(0.044)                           |
| <i>PreTaCut3<sub>t</sub></i>                           |                             |   |                             |   | 0.001<br>(0.017)            | -0.005<br>(0.019)                           |
| Table 2 control variables                              | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |
| Observations   | 11,447                      | 9,367                                       | 11,447                      | 9,367                                       | 11,447                      | 9,367                                       |
| R-squared  | 0.096                       | 0.056                                       | 0.096                       | 0.056                                       | 0.096                       | 0.056                                       |
| Number of gvkey  | 1,740                       | 1,456                                       | 1,740                       | 1,456                                       | 1,740                       | 1,456                                       |
| Firm FE  | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |
| Year FE  | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |
| Cluster by firms                                       | Yes                         | Yes   | Yes                         | Yes   | Yes                         | Yes   |



## Appendix

**Table A.1**

Variable definitions

| Variables                | Description  | Data Source      |
|--------------------------|--|------------------|
| <i>Mkt Share Growth</i>  | Mkt Share Growth is calculated as $Sales_t$ minus $Sales_{t-1}$ divided by $Sales_{t-1}$ minus industry-year average   | Compustat        |
| <i>Size</i>              | Size is the natural logarithms of total book value of assets (AT)  | Compustat        |
| <i>StCulture</i>         | <i>StCulture</i> is a binary variable that takes the value of 1 if the sum of firm's five cultural values is in the top quartile across all firms in a particular industry in a given year, and zero otherwise | Li et al. (2021) |
| <i>Cash</i>              | Cash is cash and short-term investment (CHE) scaled by total assets (AT)   | Compustat        |
| <i>Leverage</i>          | Long-term debt (DLTT) scaled by total assets (AT)  | Compustat        |
| <i>ROA</i>               | Ratio of operating income before depreciation and amortization expenses (OIBDP) to total assets (AT)   | Compustat        |
| <i>MB Ratio</i>          | MB Ratio equals market value of equity (PRCC_C*CSHO) plus book value of assets (AT) minus book value of equity (CEQ) minus deferred taxes (TXDB) divided by total assets (AT)                                  | Compustat        |
| <i>TaCut1</i>            | <i>TaCut1</i> is a binary variable that takes the value of 1 if the reduction in import tariff is 2 times larger than the industry median, and zero otherwise  | USITC website    |
| <i>TaCut2</i>            | <i>TaCut2</i> is a binary variable that takes the value of 1 if the reduction in import tariff is 2.5 times larger than the industry median, and zero otherwise  | USITC website    |
| <i>TaCut3</i>            | <i>TaCut3</i> is a binary variable that takes the value of 1 if the reduction in import tariff is 3 times larger than the industry median, and zero otherwise  | USITC website    |
| <i>Change in Emp.</i>    | <i>Change in Emp</i> is a binary variable take takes the value of 1 if firm's number of employees (EMP) has decreased from prior year to this year, and zero otherwise   | Compustat        |
| <i>Sales Growth</i>      | Sales Growth is calculated as $Sales_t$ minus $Sales_{t-1}$ divided by $Sales_{t-1}$   | Compustat        |
| <i>CapEX</i>             | CapEx is calculated as capital expenditure (CAPX) divided by total assets (AT)   | Compustat        |
| <i>Cash Flow</i>         | Cash Flow is calculated as sum of net income before extraordinary items (IB) and depreciation and amortization (DP) divided by total assets (AT)   | Compustat        |
| <i>R&amp;D Intensity</i> | R&D intensity is calculated as R&D expenses (XRD) divided by total assets (AT). Missing values are set to zero.  | Compustat        |

**Table A.2 Does industry concentration decrease following tariff cuts?**

This table reports results from regressions examining the effect of tariff cuts on industry concentration over the period of 2002 to 2021. Tariff cuts are defined using three different cutoffs, TaCut1, TaCut2, and TaCut3. The results report OLS regression estimates, in which the dependent variable is TNIC HHI measured at time (t+1). The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| VARIABLES                        | Dependent variable: TNIC HHI <sub>(t+1)</sub> |                      |                      |                      |
|----------------------------------|---|----------------------|----------------------|----------------------|
|                                  | (1)   | (2)                  | (3)                  | (4)                  |
| TaCut1 <sub>t</sub>              | 0.001<br>(0.009)                              |                      |                      |                      |
| TaCut2 <sub>t</sub>              |   | -0.002<br>(0.011)    |                      |                      |
| TaCut3 <sub>t</sub>              |   |                      | -0.026**<br>(0.013)  |                      |
| Tariff Rate <sub>t</sub>         |   |                      |                      | 0.493**<br>(0.242)   |
| <i>MB Ratio</i> <sub>(t-1)</sub> | -0.004<br>(0.005)                             | -0.004<br>(0.005)    | -0.004<br>(0.005)    | -0.004<br>(0.005)    |
| <i>Cash</i> <sub>(t-1)</sub>     | -0.243***<br>(0.036)                          | -0.243***<br>(0.036) | -0.243***<br>(0.036) | -0.241***<br>(0.036) |
| <i>Size</i> <sub>(t-1)</sub>     | -0.022***<br>(0.005)                          | -0.022***<br>(0.005) | -0.022***<br>(0.005) | -0.022***<br>(0.005) |
| ROA <sub>(t-1)</sub>             | 0.103***<br>(0.036)                           | 0.103***<br>(0.036)  | 0.103***<br>(0.036)  | 0.103***<br>(0.036)  |
| Leverage <sub>(t-1)</sub>        | -0.072<br>(0.045)                             | -0.072<br>(0.045)    | -0.072<br>(0.045)    | -0.070<br>(0.045)    |
| Log Sale <sub>(t-1)</sub>        | 0.003<br>(0.004)                              | 0.003<br>(0.004)     | 0.003<br>(0.004)     | 0.003<br>(0.004)     |
| Constant                         | 0.236***<br>(0.022)                           | 0.237***<br>(0.022)  | 0.237***<br>(0.022)  | 0.218***<br>(0.023)  |
| Observations                     | 9241  | 9241                 | 9241                 | 9241                 |
| R-squared                        | 0.326   | 0.326                | 0.326                | 0.326                |
| Industry FE                      | Yes   | Yes                  | Yes                  | Yes                  |
| Year FE                          | Yes   | Yes                  | Yes                  | Yes                  |
| Cluster by firms                 | Yes   | Yes                  | Yes                  | Yes                  |

**Table A.3 Tariff Cuts as an exogenous shock**

This table reports results from regressions of tariff cuts on industry level variables as well as macroeconomic factor over the period of 2002 to 2021. Tariff cuts are defined using three different cutoffs, TaCut1, TaCut2, and TaCut3. Columns 1, 2, and 3 report estimates for logistic regression, which is the dependent variable is indicator variable for three different tariff cut thresholds, TaCut1, TaCut2, and TaCut3, respectively. Column 4 reports OLS regression estimates, in which the dependent variable is change in Import Tariff. Lagged industry-level and macroeconomic variable are used in this analysis. The coefficients are presented with robust standard errors in parentheses, and standard errors are calculated allowing for clustering at the firm level. \*\*\* represents 1% significance level, \*\* represents 5% significance level, and \* represents 10% significance level, respectively.

| VARIABLES                              | TaCut1<br>(1)         | TaCut2<br>(2)         | TaCut3<br>(3)         | $\Delta$ Import Tariff<br>(4) |
|--|-----------------------|-----------------------|-----------------------|-------------------------------|
| Industry Sales Growth <sub>(t-1)</sub> | -0.198<br>(1.187)     | 0.451<br>(1.067)      | 0.553<br>(1.114)      | -12.28<br>(14.75)             |
| Industry Culture <sub>(t-1)</sub>      | 0.0417<br>(0.0662)    | 0.0678<br>(0.0827)    | 0.0997<br>(0.0963)    | 0.227<br>(0.820)              |
| Industry Cash <sub>(t-1)</sub>         | -0.300<br>(2.477)     | -0.150<br>(2.553)     | -0.404<br>(3.059)     | -32.72<br>(23.57)             |
| Industry Size <sub>(t-1)</sub>         | -0.108<br>(0.191)     | -0.375**<br>(0.172)   | -0.208<br>(0.204)     | 1.528<br>(2.677)              |
| Industry Leverage <sub>(t-1)</sub>     | -1.695<br>(2.336)     | 0.00174<br>(2.382)    | -0.954<br>(2.661)     | -32.76<br>(23.66)             |
| Industry ROA <sub>(t-1)</sub>          | -2.313<br>(1.932)     | -2.261<br>(1.910)     | -4.656**<br>(2.308)   | -42.82<br>(33.88)             |
| Industry MB Ratio <sub>(t-1)</sub>     | 0.420<br>(0.314)      | 0.0504<br>(0.328)     | 0.189<br>(0.411)      | -4.258<br>(2.800)             |
| Industry # Firms <sub>(t-1)</sub>      | -0.00912<br>(0.00712) | -0.00936<br>(0.00696) | -0.0155*<br>(0.00829) | -0.0115<br>(0.0633)           |
| $\Delta$ GDP <sub>(t-1)</sub>          | 0.110**<br>(0.0552)   | 0.0989<br>(0.0621)    | 0.151***<br>(0.0534)  | 0.0846<br>(0.962)             |
| Constant                               | -2.463<br>(1.546)     | -1.105<br>(1.657)     | -2.774<br>(1.765)     | 5.229<br>(18.38)              |
| Observations                           | 609                   | 609                   | 609                   | 609                           |
| Pseudo R-squared (R-squared)           | 0.051                 | 0.072                 | 0.113                 | (0.255)                       |