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JEL Codes: D22, F14, G32, J21, L23, L25

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1 Introduction

Rising trade tensions between the United States and China, and the United Kingdom's referendum to leave the European Union show that unobstructed international trade can no longer be taken for granted. How do firms which sell internationally adapt to new trade barriers, and to a decrease in demand for their products in general? Firms' reaction necessarily involves making quick and inherently risky decisions which take into account all constraints they are facing. For example, a firm hit by an unexpected decrease in demand can fire some workers and limit investment, or try to innovate and enter new markets. A firm's financial position may substantially constrain its ability to respond: if the firm has large upcoming debt payments, it may lack resources to retain workers and to make costly investments, or may consider the risk of investment too high. To understand how firms respond to changing economic circumstances, therefore, one must understand how capital structure constrains those responses.

In this paper, we analyze how financial leverage influences firms' adaptation decisions. We take advantage of a natural experiment in Denmark that led to a sudden and unexpected reduction of foreign demand for a small set of firms in an otherwise growing economy. In September 2005, a Danish newspaper published caricatures of the prophet Muhammad, which subsequently led to widespread boycott of Danish products in Muslim countries. We combine firms' financial statements and personnel records with administrative data on export flows at exporter-product-destination level. The combined data allow us to measure firms' exposure to Muslim countries before the boycott and distinguish capital structure across firms at the time of the shock. As a result, we can use a triple-difference design to analyze the differential effects of the boycott for low- and high leverage firms, addressing the traditional challenge of distinguishing financial and economic distress.

Our main findings show that only low leverage firms were able to withstand the shock by introducing new products and entering new export markets. These firms did not reduce employment and increased investment, while taking advantage of supply chain relationships to receive trade credit. In contrast, high leverage firms did not innovate or redirect their products to new markets. Instead, they reduced their sales, employment, and investment, and partially substituted employment with outsourcing and owning assets with leasing. These results are consistent with a short-term focus of high leverage firms. Their strategies may be optimal in the short run and allow them to honor upcoming debt payments. However, the same strategies may also imply a long-term loss of talent, technology, and ability to innovate, suggesting that hidden costs of debt may put firms at a competitive disadvantage in the long run.

We start by establishing basic facts about the response to the crisis. Low and high leverage firms have similar exposure to the boycott and they both significantly decrease their exports. But the magnitude of the decrease is significantly larger for highly leveraged firms and the difference is driven by non-Muslim destinations. This suggests that low leverage firms redirect their exports to other markets but firms with high leverage do not do so. Consistent with the heterogeneity in export response, high leverage firms experience a significantly larger decrease in total sales. In fact, firms with low leverage do not significantly reduce sales, which suggests that domestic sales increased

enough to cover their losses caused by the boycott. While high leverage firms would certainly like to increase their domestic sales and redirect exports, it is likely that financial constraints do not allow them to make costly investments in developing new markets and attracting new clients. This interpretation is consistent with our results on debt holdings: while low leverage firms weakly increase their debt holdings, high leverage firms do not and even slightly reduce it.

We then proceed to analyze the employment and investment response. High leverage firms exposed to the boycott significantly reduce employment while low leverage firms do not. At the same time, low leverage firms increase investment in response to the crisis (presumably to be able to accommodate new products or markets), but high leverage firms do not – in fact they even seem to sell more assets. Importantly, we find that high leverage firms engage in new leasing contracts and their layoffs are accompanied by an increased probability of outsourcing after the boycott. Using a subsample of firms for which we have more detailed data on outsourcing activities, we show that firms start outsourcing high-skill tasks unrelated to their core activity, e.g. IT or marketing. Combined with the decreasing share of skilled workers, which we also document, this suggests that firms substitute employment of expensive workers performing tasks unrelated to the core activities with more flexible outsourcing arrangements. This "flight-to-flexibility" strategy towards outsourcing and leasing may provide cost savings in the short run but it implies a loss of talent and firm-specific human capital, higher future recruiting and training costs, and lower long-term investment.

To further analyze how financial obligations may limit firms' ability to compete, we employ more detailed product-level data on exports and - for a subset of firms - domestic sales. Doing so reveals that low- and high leverage firms stop exporting to roughly the same number of countries (as they are boycotted by the same set of Muslim countries) but low leverage firms are able to partially compensate for these losses by introducing new products into non-Muslim destination markets. Moreover, these products are not only slight modification of the existing product portfolio: we analyze the response using detailed product-destination data on export flows and show that low leverage firms increase the number of 6-, 4- and even 2-digit product categories in their exports. We then use domestic sales data by product code for a sample of manufacturing firms to show that these newly exported products constitute product innovation and are not just products that were already sold domestically before. This finding suggests that financial obligations may limit firms' ability to innovate and invest in development of new products and export markets or, more generally, to adapt its product offerings to new market conditions.

Finally, we analyze how firms' relationships with other members of the supply chain contribute to their ability to respond to a negative shock. Changes in accounts payable reveal that low leverage firms receive an increase in trade credit, but the same is not true for high leverage firms. This finding suggests that after an exogenous demand shock suppliers are willing to provide additional liquidity to firms which are less indebted, but are not willing to do the same for high leverage firms. Instead, to increase their liquidity, high leverage firms significantly reduce holdings of inventory, presumably trading off lower costs against the ability to account for upstream or downstream variability. On

the other side of the supply chain, accounts receivable increase for low leverage firms but not for high leverage firms. While this is partially explained by differential changes in sales, the magnitude of coefficients suggests that it may also reflect better financing conditions which low leverage firms give to their customers to increase demand and boost sales.

In order to shed more light on the underlying mechanism of liquidity constraints due to higher ex ante leverage, we discuss alternative explanations for the results. We first show that leverage is not simply a proxy for firm size, product variety, or differences across industries. Explicitly controlling for these differences across firms interacted with year dummies to allow for flexible time trends yields quantitatively very similar results across high and low leverage firms. Next, we analyze the role of an alternative channel related to liquidity - cash holdings. We show that cash works as a buffer for the flight-to-flexibility adjustments, but its effect is too small to compensate the role of leverage. Instead, leverage seems to be the main driver of the results. Moreover, we analyze the effects of having a large stock of long-term debt acquired more than 1 year ago, indicating more debt maturing soon after the boycott starts, and show that it supports our main conclusion. We also present a series of robustness checks using different assumptions and definitions of our key variables.

Our findings paint a comprehensive and complex picture of the relationship between firm's capital structure and adaptation to shocks. The results clearly demonstrate that firms with high leverage adjust to the negative demand shock differently than those with low leverage. We do not find a significant increase in bankruptcy among high leverage firms immediately after the boycott, but we interpret our results as suggestive evidence that high financial leverage is costly, even away from bankruptcy, since it forces firms to take suboptimal adaptation decisions. While we cannot explicitly rule out that some of the differences in adaptation are actually favorable to high leverage firms (consistent with a disciplining role of the debt as argued by Jensen, 1986), we find it unlikely that e.g. lack of product innovation is beneficial in the long term. Overall, we think that reduced operational flexibility stemming from upcoming debt payments may be an important downside of high leverage, which can help explain why levels of debt are lower than what traditional capital structure theories would predict (Strebulaev and Yang, 2013).

Our setting has three main advantages. First, we can combine detailed data about firms' financial statements with administrative data on export flows at the product-destination level for each firm. The combined data allow us to measure firms' exposure to Muslim countries before the boycott and distinguish capital structure across firms at the time of the shock. We then use a triple-difference design to analyze the differential effects of the boycott for low- and high leverage firms, partialling out the time-varying effect of high leverage alone and the effect of exposure to Muslim countries alone. In other words, we precisely measure the size of the economic shock in order to isolate the role of financial distress. This estimation strategy addresses a traditional challenge of the literature on financial distress, that is, distinguishing financial and economic distress[1]. A

[1]See e.g. Asquith, Gertner, and Scharfstein (1994); Opler and Titman (1994); Andrade and Kaplan (1998); Zingales (1998)

second advantage of our setting is that our demand shock was unexpected and affected firms in a heterogeneous way that was unrelated to local economic conditions.[2] Because the shock was unexpected, firms were unlikely to adjust their leverage in anticipation of it. Because it was highly targeted, we can use a partial equilibrium analysis without concerns that general equilibrium effects will confound our estimates. Finally, the third advantage of our setting is a unique combination of detailed data on product innovation, export destinations, outsourcing activities and firms' financials and personnel structure, which allows us to provide a comprehensive perspective on the role of financial constraints for firms' responses in both input and output markets.

While leverage is known to affect many aspects of the firm, including wages (Graham et al., 2016), employment Giroud and Mueller (2016), pool of available employees (Brown and Matsa, 2016), firing decisions (Caggese, Cuñat, and Metzger, 2016), capital vintage (Eisfeldt and Rampini, 2007) or pricing (Chevalier, 1995; Busse, 2002), we show that it also directly affects the end goal of all these intermediate factors - firms' ability to generate business. More leveraged firms in our analysis see a higher reduction of sales because they are unable to boost domestic sales, export new products and enter new markets.[3] In addition, our results provide new evidence that financial constraints substantially influence firms' decisions in both input and output markets. While some recent papers have documented that flexibility of employment affects the capital structure (Kuzmina 2013; Simintzi, Vig, and Volpin 2014; Baghai et al. 2016; Serfling 2016 and a review article by Matsa, 2017), we show that this relationship also works in the other direction: capital structure affects labor flexibility through outsourcing.[4] Our further contribution is demonstrating that the flexibility trade-off also applies to physical capital: leverage affects the propensity to use leasing instead of investment (recent papers analyzing determinants of leasing decisions include Baker and Hubbard, 2003; Eisfeldt and Rampini, 2009). The richness of our data allows us to investigate the role of financial constraints on adjustments in inventory holdings, and on supplier and customer relationships. Our shock is not large enough to drive firms into bankruptcy but we still observe that high financial leverage impedes an efficient response to the crisis. Because bankruptcy is rare in general, analyzing the adverse effect of debt even if a firm is far from bankruptcy is important for understanding the determinants of corporate leverage choices.

On a broader level, we show that the combination of financial constraints and adverse economic shocks can be a significant driver of differences in performance across firms. In our setting financial constraints coupled with a demand shock generate significant dispersion in sales and product innovation, which can translate into differences in measured productivity (Syverson, 2011). The trade-based character of our demand shock also connects our analysis to other papers that have

[2]This is in contrast to a related paper by Giroud and Mueller (2016) who analyze the effect of leverage on firms' employment reduction following local demand shocks in the aftermath of the financial crisis to quantify the role of leverage for overall employment losses.

[3]While Hortaçsu et al. (2013) show customer-driven adverse effects of leverage on sales, our results highlight that sales can suffer because of the effect of leverage on the firm itself.

[4]We also contribute to the literature on the determinants of outsourcing (Grossman and Helpman, 2002; Lafontaine and Slade, 2007), providing empirical evidence that the decision whether to outsource or produce in-house may be driven by financial constraints faced by the firm.

recently explored the link between trade and firm dynamics and organization (Antràs and Rossi-Hansberg, 2009), in particular focusing on the effect of competition and trade shocks on product mix (Mayer, Melitz, and Ottaviano 2014, 2016) and innovation (Bloom, Draca, and Van Reenen 2016, Autor et al. 2016, Aghion et al. 2017). We add to this literature by emphasizing that financial constraints may influence firm innovations and product offerings. We also document that economic shocks coupled with financial constraints influence relationships in the supply chain, contributing to understanding of the role of finance not only for decisions made inside the firm but also for shaping the relationships between firms (Burkart and Ellingsen, 2004; Cunat, 2006; Nocke and Thanassoulis, 2014). More generally, our paper also relates to the new and growing literature on the relationship between international trade and corporate finance, see Desai, Foley, and Forbes (2008); Amiti and Weinstein (2011); Manova (2013); Chaney (2016) Paravisini et al. (2015) and Foley and Manova (2015) for a review. Our analysis highlights the importance of trade credit compared to other sources of capital, including bank loans, and shows that financial structure affects not only the intensive margin of trade but also the decision to enter new markets with new products.

The remainder of this paper is organized as follows. Section 2 provides details about the Cartoon Crisis and exposed firms. In Section 3 we describe our econometric approach and describe the data. We present our empirical findings in Section 4. Section 5 provides robustness analysis and Section 6 discusses alternative mechanisms underlying the main results. We conclude in Section 7.

2 The Cartoon Crisis

This section first describes the timeline of events that led to the Cartoon Crisis and then discusses the consequences for Danish exporters across different industries. In particular, we analyze the duration of the boycott, extent of export reduction, and persistence of adverse effects after the end of the official boycott.

2.1 Timeline of Events

Denmark's largest newspaper, *Jyllands-Posten,* published 12 cartoons of the Prophet Muhammad on September 30, 2005. According to the article in the newspaper, the cartoons were a statement in favor of freedom of expression, in response to the self-censorship of Danish artists regarding illustrations in a recently published book about the life of Muhammad.

The cartoons first led to public protests among Danish Muslims that received no formal response from *Jyllands-Posten* or the Danish government. As a consequence, the group of Danish Muslims contacted ambassadors of several Muslim countries to Denmark to get help in disseminating information about the cartoons in the Muslim world. The group was successful in placing the cartoons on the agenda of the conference of the Organization of Islamic Countries (OIC) in Mecca in December 2005. This event set in motion widespread media coverage and political debate in Muslim countries. By the end of January 2006, Saudi Arabia and Kuwait were the first countries to

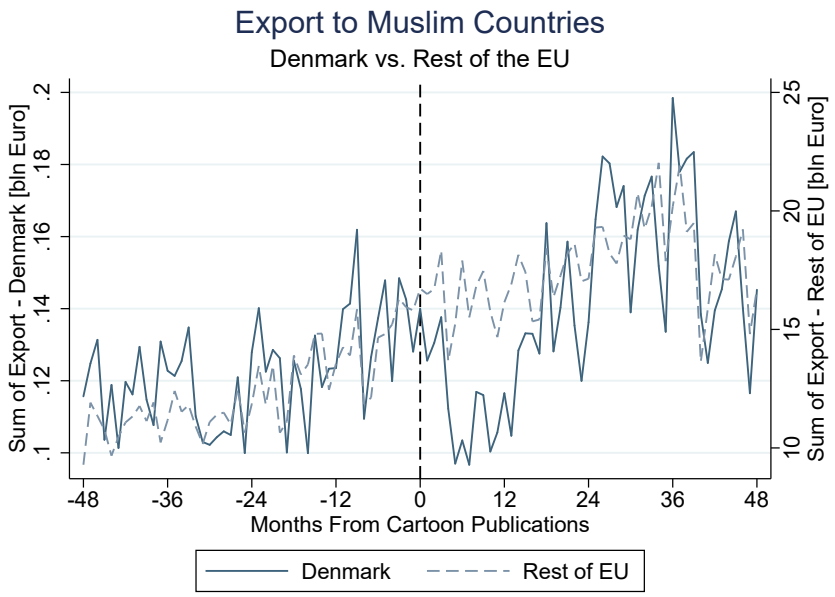

Figure 1: Exports to Muslim Countries for Denmark vs the Rest of the EU

declare an official boycott of Danish products. These announcements were followed by more violent protests at Danish embassies in Syria, Iran, Pakistan, and other countries. At the same time, the boycott quickly spread to many other Muslim countries around the world.[5]

2.2 Danish Exporters

2.2.1 Duration of the Boycott and Persistence of the Shock

Ex ante, firms had to build expectations about the duration of the shock to make the necessary adjustments. To illustrate the actual timing and duration of the boycott, Figure 1 compares total monthly exports from Denmark and from the rest of the EU to countries with at least 50% Muslim population.[6] The horizontal axis defines time (in months) relative to September 2005 when the cartoons were first published. As the time line illustrates, the boycott started with a delay of several months because the dissemination in the Muslim world took a considerable amount of time. The figure shows that while exports from other European countries continued to grow over this

[5]For a detailed time line of events, see for example Jensen (2008).

[6]Consistent with the findings by Michaels and Zhi (2010), a deterioration in attitudes towards Danish products led to a substantial reduction in Danish exports even to Muslim countries that did not declare an official boycott. Muslim population shares follow a report by the Pew Research Center (2009) based on national Census data from the years 2000-2006 and the World Religion Database using Muslim population estimates for the year 2005. The countries are United Arab Emirates, Afghanistan, Albania, Algeria, Azerbaijan, Bangladesh, Burkina Faso, Bahrain, Brunei, Djibouti, Egypt, Western Sahara, Gambia, Guinea, Indonesia, Iraq, Iran, Jordan, Kyrgyzstan, Comoros, Kuwait, Kazakhstan, Lebanon, Libya, Morocco, Mali, Mauritania, Maldives, Malaysia, Niger, Nigeria, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Sudan, Sierra Leone, Senegal, Somalia, Syria, Chad, Tajikistan, Tunisia, Turkey, Uzbekistan, Yemen, and Mayotte. In Table 9 we employ alternative definition of treatment group which only includes Arab countries.

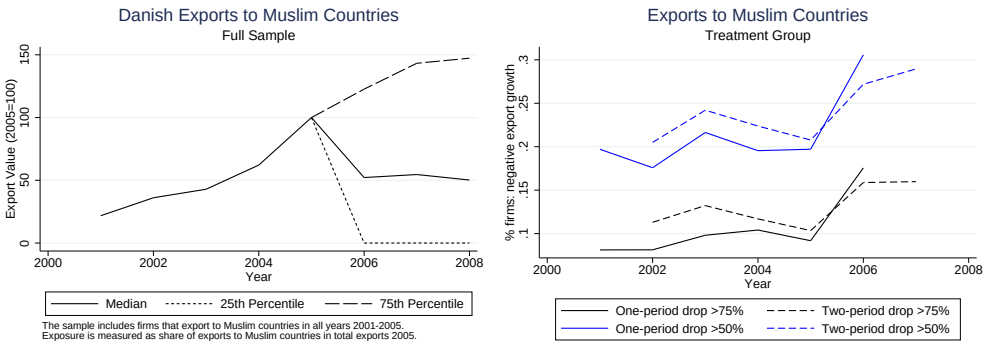

Figure 2: Exports to Muslim Countries for Danish Firms

period, Danish exports experienced a sudden drop and remained at 25% below their previous level for more than one year. Danish exports largely recovered over 2007 at the aggregate level.

The aggregate time series suggests a temporary shock with a full recovery by mid-2007 compared to the export volume from other EU countries. But this aggregate time series hides important heterogeneity in the persistence of the shock across Danish exporters. Figure 2 illustrates the time series of export volume to Muslim destinations among firms that exported to these markets before the boycott. We normalize their export value to Muslim countries in 2005 to 100 to illustrate the average drop in 2006 and the dispersion in outcomes over the post-boycott period. Specifically, the left panel of the Figure shows the interquartile range of export values across exposed firms after 2005. The median firm was unable to reach their 2005 export volume to Muslim countries again in 2007 and the bottom quartile of exposed firms remained at zero export volume to Muslim countries in 2007. The persistent drop is observable even if we restrict attention to firms who had very stable and successful business activities in Muslim countries over 2001-2005 (see Figure A.4 in the Appendix). The right panel of Figure 2 shows that 30% of previous exporters to Muslim countries experienced a drop by more than half to these destinations in 2006. The graph shows that this share is 50% (10 percentage points) larger than in a typical year before. More importantly, the share of firms experiencing a persistent drop in exports over a two-year period increases by a similar margin in 2007. These results emphasize that firms experienced a large reduction in exports to Muslim countries on average, the recovery is very heterogeneous across firms, and the shock is persistent for a substantial share of exporters.[7] In other words, the aggregate recovery in Figure 1 is driven by a small share of high-growth firms and by new entrants into these markets.

2.2.2 Exposure: Danish Exports to Muslim Countries

This section sheds more light on the exposure to the boycott across industries and on the importance of particular destination markets. The left panel of Figure 3 illustrates the share of firms by industry that exported to Muslim countries before the boycott. Exposed firms constitute a substantial fraction of exporters in a large set of different industries, ranging from consumer products such

[7] Appendix Figure A.4 provides additional details on firm export responses.

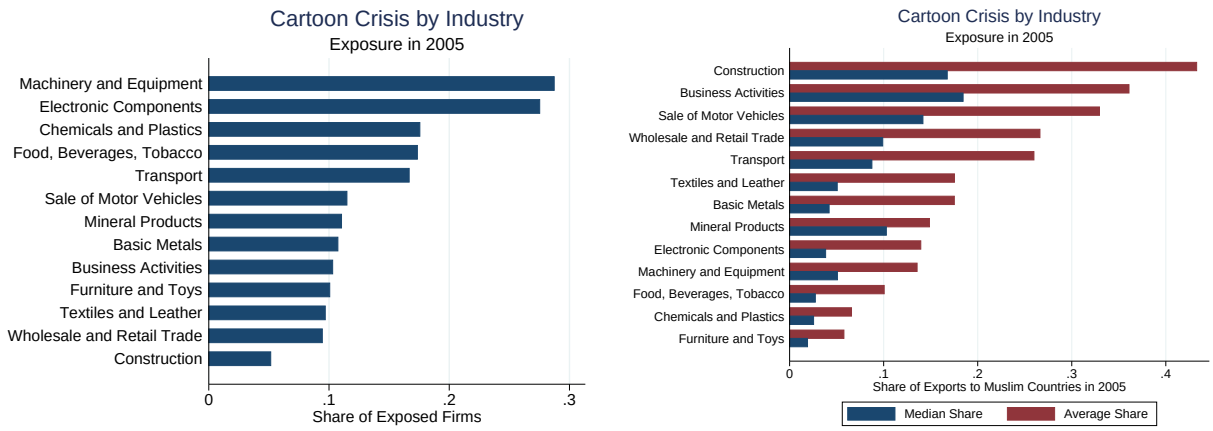

Figure 3: Boycott across Industries

The median and average share of exports to Muslim countries in the right panel is calculated within the group of exposed firms.

as textiles, food, and furniture, to heavy machinery and equipment. Moreover, the right panel of Figure 3 reports the average and median share of exports in these destination markets among exposed firms. There is considerable variation in the importance of Muslim destinations both across sectors but also across firms within industries. The difference between average and median shares by industry indicate a small share of firms with high exposure in each industry, which we will characterize further below.[8]

3 Data and Empirical Strategy

In this section, we discuss our empirical strategy and introduce the data and main definitions.

3.1 Data

An important advantage of our empirical context is that we can combine a variety of administrative data sources for the universe of firms and workers in Denmark, including firm-level trade data, financial statements of firms, and employer–employee matched data over the period 2001–2006. In addition, we are able to add detailed information on outsourcing and input expenditure, as well as product-level sales. We discuss these data sources in more details below.

The first data source is the Danish Foreign Trade Statistics Register (UHDI), which provides annual firm-level trade value by product-destination pairs at the CN-8-digit product level. Importantly, any trade flows with countries outside the EU are precisely measured by the customs authority (Extrastat). In contrast, Danish firms only have to declare exports to EU member states

[8] We provide additional details on the change in log exports to Muslim countries for 2005-2006 by industry in Appendix Figure A.1. Consumer products experienced the largest drop in exports but there is a substantial reduction in exports of capital goods and intermediates across different industries as well.

above a threshold of approximately $250,000 per year (Intrastat). Thus, firms selling small quantities only to destinations within the EU will not be included in the sample of exporters.

Second, we add financial statements of firms from the Accounting Register (FIRE) and additional information on founding date, sales, employment, industry, and firm exit from the Danish Business Register (FIRM). The accounting data provides balance sheet and profit and loss statements with detailed information about short-term and long-term liabilities, assets, investment and leasing activities, and input costs, in particular for labor services. A smaller subset of manufacturing firms also provides more detailed responses on purchases of goods and services, with a specific section of the survey listing expenditures on outsourcing across different tasks, such as transportation, accounting, consulting, catering, IT, and marketing. Moreover, a similar dataset collects information on domestic sales by product code (8-digit CN) for all manufacturing firms with at least 10 employees. These data will be valuable to identify product innovation among these firms.

Finally, we use firm identifiers from the Firm-Integrated Database for Labor Market Research (FIDA) to match the firm-level data with worker-level information from the Danish integrated database for labor market research (IDA). IDA covers the universe of firms and workers in Denmark over 1980–2011. The data contain information about primary employment in November each year, including plant and firm identifiers, location and industry of the establishment, and detailed worker characteristics such as gender, age, education, experience, tenure, hourly wages, and annual earnings.

3.2 Definitions and Sample Descriptives

The main sample uses data on all private Danish exporters during 2003-2005. This yields a panel of about 15,000 firms. We measure exposure to the Cartoon Crisis based on exports to Muslim countries in 2005 before the boycott. The control group consists of all firms in the sample without any exports to Muslim countries in 2005. Given the widespread rejection of Danish products even without formal declaration of a boycott in many countries, we choose a broad definition of Muslim countries, including all countries with at least 50% Muslim population in 2005. Any firm with at least 0.5% of their exports in these markets will be considered exposed to the shock.[9] The treatment group includes firms with heterogeneous degrees of exposure in terms of export shares and export volumes; this will lead to stronger implications if we find effects of the boycott even for this heterogeneous group of firms. In addition, we will use the total share of previous exports in Muslim destination markets as a direct measure of the size of the shock at the firm level.

Figure 4 shows the distribution of exposure to the boycott, defined as share of exports to Muslim countries before the start of the boycott, for low- and high leverage firms. A large group of firms have low exposure which does not exceed 10% of exports but among both low- and high leverage firms there is a sizable group almost exclusively focused on Muslim markets. Low- and

[9] This restriction aims to reduce false categorization of treated firms and to focus on firms with a relevant share of business in Muslim countries. We provide additional robustness checks for the definitions of treatment and exposure in Section 5.

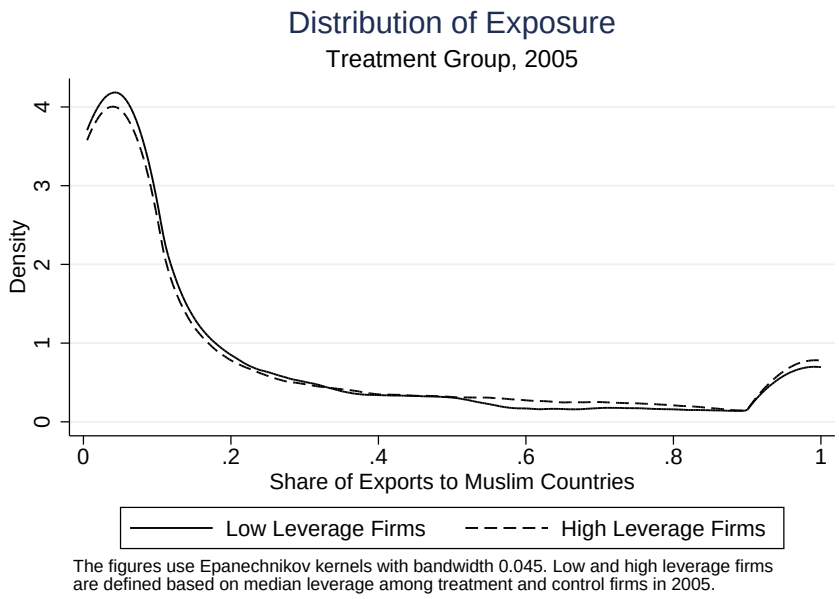

Figure 4: Distribution of Exposure (Share of Exports to Muslim Countries) for High- and Low Leverage Firms

high leverage firms have very similar exposure and indeed there is no statistical difference in the degree of exposure between the two groups.[10] Therefore in our main specification we directly compare the reaction of all firms using a simple indicator of exposure. In Section 5, however, we present results for alternative specifications which explicitly take into account the cross-sectional differences in exposure. In Appendix Figure A.2 we present the distribution of an alternative measure of exposure, which is defined as share of exports to Muslim countries in total sales.

We capture the differences in firms' capital structure by calculating the book leverage, defined as the ratio of total liabilities to total assets. Its distribution in treatment and control groups is presented in Figure 5. The two groups have similar distribution of leverage and if anything, leverage is slightly higher for the control group. Figure A.1 in the Appendix presents the distributions for firms within the treatment group with low and high exposure to the boycott and they track each other very closely. Our main measure of leverage will be an indicator variable for high leverage firms, which is defined to be 1 if a firm's leverage is above the median. While in the basic specification we use the country-wide median, Section 5 demonstrates that the results are robust to defining the median by industry. In another robustness check, we show that our results still hold if total leverage is substituted with financial leverage which excludes debt to suppliers.

As documented in Figure 5, the typical level of book leverage in our sample is relatively high and there are several factors which can explain this. First, firms in Denmark - similarly to other countries in continental Europe - are more bank-dependent than U.S. firms and hence their leverage ratios are higher. Second, we use only firms involved in international trade, whose levels of debt

[10]The Kolmogorov-Smirnov test cannot reject the null of equal distributions with p=0.27.

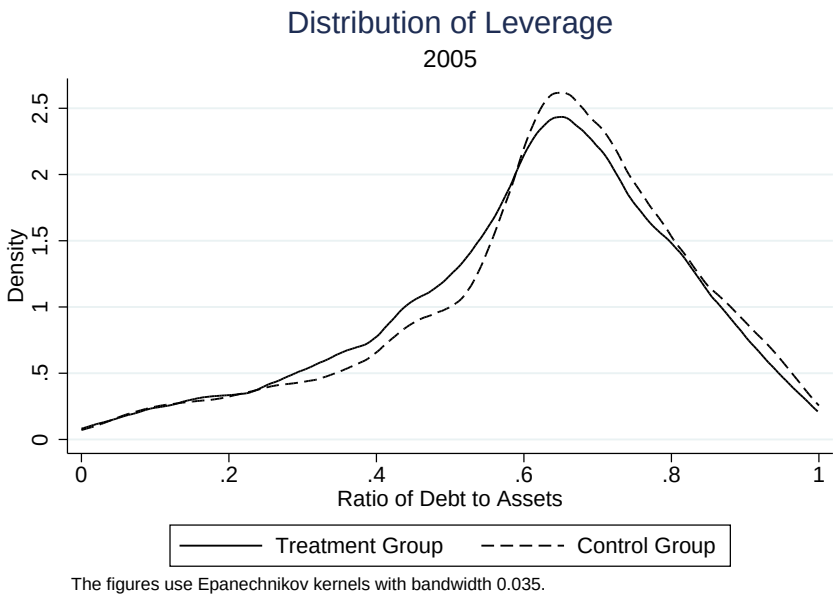

Figure 5: Distribution of Leverage for Firms Exposed and Not Exposed to the Boycott

are higher. And third, our debt measure includes all liabilities and hence is significantly higher than the ratio excluding debt to suppliers. We provide alternative results, which are consistent with the results from our main specification, using measures of financial leverage that exclude debt to suppliers in Section 5.

Table 1 provides descriptive statistics for low and high leverage firms in control and treatment groups separately. We report all results for the pre-boycott period 2001-2005. One important difference between control and treatment groups is size. Not surprisingly, firms exporting to Muslim countries (which are relatively distant and exotic markets) are larger on average. There is also a difference between size of low- and high leverage firms within the treatment group, as evidenced by sales, exports and employment. While firm-fixed effects will absorb any effect of size which is time-invariant, it is possible that size also influences the response to the boycott. We explicitly consider this possibility in Section 6, which shows that the effect of leverage is not capturing the differential size of firms. Further rows of Table 1 show indicator variables for usage of outsourcing and leasing, and shares of leasing expenses in investment and sales. We define these variables based on costs from the profit and loss statement (outside labor, separated into temporary agency workers and subcontractors; and operating leasing costs) and additional information about new financial leases, attached to the financial statement. In general, firms are similar across their outsourcing and leasing practices. Treated firms are a bit less likely to outsource and use leasing but there are no significant differences within the treatment group (if anything, high leverage firms appear to use leasing slightly more often).

Table 1: Summary Statistics

For sales, employment, exports and leverage, we report the sample median. Other variables are binary indicators (except for ratios of financial leasing to investment and operating leasing to sales) and sample means are reported for them.

	(1)	(2)	(3)	(4)
	Control Group		Treatment Group	
	Low Lev	High Lev	Low Lev	High Lev
Firms	6,548	6,816	1,000	844
Observations	33,278	33,828	5,407	4,313
Sales	1.7m	1.7m	5.6m	3.6m
Employment	8.5	8.4	27.8	17.6
Exports	0.05m	0.04m	1.42m	0.68m
Leverage	0.586	0.782	0.558	0.766
External Labor	0.761	0.751	0.674	0.689
Temp Workers	0.532	0.523	0.493	0.491
Subcontracting	0.627	0.621	0.504	0.530
Financial Leasing	0.134	0.132	0.099	0.130
Operational Leasing	0.749	0.756	0.635	0.687
Fin Leasing / Investment	0.019	0.021	0.017	0.026
Op Leasing / Sales	0.031	0.038	0.031	0.035

Note: Sales, employment, exports, and leverage report the sample median.

3.3 Empirical Strategy

Our main specification to estimate the role of leverage for adaptation to a negative economic shock is:

$$Y_{it} = a_1 HighLev_i \cdot Exposed_i \cdot Post_t + a_2 Exposed_i \cdot Post_t + \sum_{t=2001}^{2006} (\beta_{1t} \cdot Yr_t \cdot HighLev_i + \beta_{2t} \cdot Yr_t \cdot Exposed_i + \beta_{3t} \cdot Yr_t + \gamma_{j,t} \cdot Yr_t \cdot Ind_j) + \mu_i + \epsilon_{i,t}. \quad (1)$$

The dependent variable Y_{it} measures firm outcomes such as sales, employment, workforce composition, outsourcing, investment, leasing activity, inventory changes, and changes in debt. Because of concerns about serial correlation in many of these outcomes, we use growth rates for most of the analysis. The main coefficient of interest is a_1, the differential response of high leverage firms exposed to the boycott in the period during and after the crisis. As we show in Figure 4, exposure to the shock is very similar for high and low leverage firms in the treatment group, which means the interaction with high leverage isolates the role of financial distress conditional on economic distress. This is a key advantage of our research design. Throughout all regressions, we control for differences in outcomes between firms in the control and treatment group by year, and we also control for annual differences between high and low leverage firms. The identifying assumption of the interaction effect is that absent the shock, and conditional on other controls, the difference between high and low leverage firms in the treatment group would have followed the same path as difference between high and low leverage firms in the control group. Importantly, we include industry-year fixed

effects as well as firm-fixed effects in all specifications to account for idiosyncratic time-invariant determinants of firm outcomes. These characteristics may for example include location, industry, management practices, and firm size. In additional robustness checks, we provide further results including time-varying controls for firm size. Another robustness analysis provides detailed results controlling for continuous firm-level exposure to the boycott, and interacting leverage and exposure. All results cluster standard errors at the industry-year level because firms' adjustment may interact with other firms in their industry and we want to allow for arbitrary correlation of these responses.

3.4 Identifying Variation

The boycott of Danish products during the Cartoon Crisis is a particularly attractive setting to study the response of highly leveraged firms to financial distress. In this section, we argue to what extent our research design addresses the two main empirical challenges common to the literature on consequences of financial leverage: distinguishing financial distress from economic distress and endogeneity of capital structure choice. We address the first concern by precisely measuring the size of the economic shock and controlling for its direct consequences using the response of firms who were similarly affected but have less debt on their balance sheet. We further benefit from the small aggregate size of the shock that implies no effects on firms through global demand effects or the banking sector. The second concern of endogeneity is harder to address because we do not have exogenous variation in the capital structure. Nonetheless, the unexpected nature of our shock allows us to convincingly argue that firms did not adjust their capital structure in anticipation of this particular event and hence the effects we observe can be interpreted as ex-post consequences of high leverage for firms who chose to have a lot of debt. We discuss this interpretation in more details below.

Financial distress is usually accompanied or triggered by economic distress. Firms with high leverage have trouble meeting their debt obligations when their economic situation deteriorates. Oftentimes this is related to important developments inside a firm: losing key employees or important customers, facing a new aggressive competitor or lagging behind in technological innovation. It is very challenging to distinguish the consequences of these economic factors from consequences of financial distress. For example, if we observe that a financially distressed firms decreases investment, is it because of its capital structure or simply because the demand for its product decreased and this caused both financial distress and reduction of investment? This problem is widespread in the corporate finance literature and few papers are able to convincingly distinguish these mechanisms. To tackle this problem we use a difference-in-difference strategy and explicitly control for the consequences of economic distress. The firm-level trade data before the crisis allows us to measure the size of the economic shock precisely for each firm. This means we can compare the differential response of firms with similar exposure to the boycott, but with different leverage before the crisis. As a result, we attribute any differences between high and low leverage firms to the impact of differences in financial distress. The assumption behind this procedure is that high leverage firms would exhibit similar reaction to low leverage firms if their leverage ratio was lower. Given that

their exposure to the shock is the same (see Table 4), this is a reasonable assumption. However, to explicitly account for potential differences in exposure and in firm size (since high leverage firms are on average smaller than low leverage firms, see Table 1), Sections 5 and 6 present additional evidence supporting our main results.

Endogeneity of leverage choice is another issue plaguing the empirical corporate finance literature. Because firms choose their leverage having expectations about the future, it is hard to rule out reverse causality and the influence of omitted variables. For example,when we observe that a firm has more flexible labor contracts after increasing leverage, is this the causal effect of leverage or did the anticipation of more flexible contracts make this firm choose higher leverage? Or perhaps something else happened at the firm, e.g. new management was introduced, which led both to the increase in leverage and to a change in contract flexibility? One contribution of our paper is the setting which greatly alleviates concerns about reverse causality. The shock which we analyze was entirely unexpected and hence firms were unable to adjust their leverage before the boycott anticipating the occurrence of the shock. Concerns about omitted variables are more plausible in our scenario: firms that choose to have high leverage may also differ in other dimensions and these differences may influence firms' reactions. This raises two potential questions: external validity and attribution of causal influence. We do not claim that the effects we find can be generalized to the entire population of firms. It is true that some firms pre-select into having large debt and we document ex-post consequences of debt for these firms. Whether or not these consequences would be the same if we randomly allocated more debt to other firms is a question which we do not address in this analysis. Arguably it is important to make predictions about differential responses to negative shocks for those firms that in fact choose high leverage to begin with. Another question is whether we can attribute the observed reaction to the effect of leverage or whether leverage is only a proxy for some other factor which we are not capturing. To address this possibility we explicitly discuss alternative explanations in section 6.

4 Results

In this section, we provide graphical and regression-based evidence on the differential response of Danish exporters with high or low leverage. We subsequently analyze responses of exports and sales, employment and outsourcing, investment and leasing, , exported products and product innovation as well as adjustments in the supply chain. .

4.1 Exports and Sales

The boycott significantly reduces affected firms' exports to Muslim countries and hence has a direct negative impact on their sales. However, production capacity freed by lower demand from Muslim countries could be used for producing goods sold in other markets. To boost sales elsewhere, firms may need to create new products, increase marketing expenses or offer more attractive prices to their customers. High leverage firms may be unable to afford these actions and as a result the net

effect on their sales could be larger, even though the initial exposure to the boycott is the same.

The effects of the boycott on exports, sales, value added, bankruptcy, and debt are presented in Table 2. Both low leverage and high leverage firms reduce exports as a consequence of the boycott (column 1). While the difference between the two groups is not significant, the point estimate for high leverage firms is negative, suggesting that they might experience a larger export drop. To shed more light on this result, we restrict the sample to firms exposed to Muslim countries in columns 2 and 3 and separate their changes in exports to Muslim countries and other destinations. As expected, the decline is driven by Muslim countries (column 2). However, for low leverage firms this decline is accompanied by an increase in exports to other countries (column 3) and increase in domestic sales. As a result, their total sales do not decrease and even slightly increase (column 4). High leverage firms, however, do not significantly increase their exports elsewhere (sum of the coefficients in column 3 is not significantly different from zero) and as a result their total exports drop more and total sales decrease.[11] These results suggest that low leverage firms redirect their sales to other markets but high leverage firms are unable to do so. Notice, however, that redirecting the sales does not increase value added (column 5) and hence it suggests that after the boycott low leverage firms sold slightly more, but at a lower margin. We analyze the drivers of the increase in domestic sales and exports to other countries more closely in Section 4.4.

The shock caused by the boycott is not large enough to drive affected firms out of business. Column 6 presents the results of a cross-sectional regression for all exporters in the sample in 2005 with the dependent variable being an indicator for firm exit in 2006. The effect of the boycott is close to zero and there is no significant difference between low- and high leverage firms. Firm survival is therefore unlikely to be an important element of the analysis. This is an interesting feature of our setting which allows us to study potential effects of leverage on firms' operations far away from bankruptcy threats.

While the shock is not large enough to cause bankruptcy, it may definitely threaten firms' liquidity and require additional funds to accommodate its consequences. Consistent with this, column 7 shows that after the boycott low leverage firms borrow more, insignificantly increasing their debt. However, firms with high leverage may be unable to increase borrowing because lenders consider them too risky given their already high debt. Indeed, the effect for high leverage firm is significantly smaller, and their net change of debt is negative. Notice that the need for additional funds is probably larger for high leverage firms: not only do they need to fund actions taken to adjust to the boycott, but they also need to cover their upcoming debt payments.

4.2 Employment and Outsourcing

Adjusting employment is a natural margin of response to an adverse economic shock. If their demand decreases, firms may no longer need as much labor as before and hence may reduce em-

[11] This result emphasizes the importance of distinguishing high and low leverage firms. In a case study of dairy producers, Hiller, Schröder, and Sørensen (2014) do not find reallocation of products across markets after the boycott on average for exposed dairy producers.

Table 2: Response of the Amount of Business

All regressions, except column 6, include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. Columns 2 and 3 contain only firms exposed to the boycott (because only for them it is meaningful to analyze exports to Muslim countries). The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006) but in columns 2 and 3 all firms are exposed. Dependent variables in columns 1-5 are log-differences in total exports, total exports to Muslim countries, total exports to non-Muslim countries, total sales and value added. Column 6 is a cross-sectional regression of an indicator for firm death in 2006, while in column 7, the dependent variable is the log-change of total debt. The bottom row presents the mean of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level (except column 6 where clustering is at industry level since only one year is included)

	(1) Δln(Export)	(2) Δln(Exp Muslim)	(3) Δln(Exp Other)	(4) Δln(Sales)	(5) Δln(Value Added)	(6) Firm Exit 2006	(7) Δln(Debt)
Treatment	-0.210***			0.0332*	0.0032	-0.0021	0.0228
X 2006	(0.068)			(0.022)	(0.025)	(0.001)	(0.024)
Treatment	-0.066			-0.0510*	-0.0113	0.0037	-0.0540
X High	(0.076)			(0.026)	(0.030)	(0.003)	(0.029)
X 2006							
Year		-0.646***	0.375***				
2006		(0.081)	(0.143)				
High		0.135	-0.249				
X 2006		(0.107)	(0.181)				
Obs	53,910	5,947	8,920	76,826	75,133	12,626	76,790
R-squared	0.231	0.207	0.210	0.189	0.194	0.006	0.160
Firms	13,307	1,563	1,785	15,208	15,056	12,626	15,207
Sample Avg 01-05	0.0298	0.166	0.0200	0.0576	0.0338	0.00396	0.0422

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

ployment. However, in the presence of numerous frictions, it is unlikely that firms simply adjust their employment proportionally to the lost demand. Hiring and firing is costly and employees build firm-specific human capital which contributes to the stickiness of employment after temporary negative shocks. This stickiness, known as labor hoarding (Okun, 1963), is especially likely in our setting as firms face significant uncertainty on how long the boycott will last. Hoarding labor, however, is costly. It requires paying workers' salaries today, even though they are not productive, and the benefits can only be recouped in the future in the form of reduced hiring and training costs. If a firm is financially constrained, it may be unable to engage in labor hoarding. Instead, they may choose to reduce employment more than firms with a lot of financial slack, even though it may be sub-optimal in the long run.[12] In addition, firms with higher leverage can credibly take a tougher stance when negotiating with their workforce and after a negative demand shock may be more successful in convincing unions that reducing the size of the workforce is necessary, see Matsa (2010). In this case the reduction could benefit the firm and hence such a mechanism is related to the famous free cash flow problem described by Jensen (1986).

In this subsection we analyze the differential employment and outsourcing response of high- and low leverage firms. We show that high leverage firms indeed reduce employment, compared to the low leverage group. This reduction, however, is accompanied by an increased propensity to use outsourcing, which suggests that some tasks of dismissed workers are now being performed using more flexible outsourcing arrangements.

Table 3 presents the results: while firms with low leverage do not decrease employment (they even slightly increase it which indicates both labor hoarding and the expansion into other markets, see Subsection 4.4), highly-leveraged firms reduce the size of their workforce (column 1-2). They decrease the total number of workers by 3.5% compared to low leverage firms and hence the combined effect of the boycott for these firms is a 2% reduction in employment. Column 2 shows that, compared to low leverage firms, the number of hours goes down by 6%, significantly more than number of workers. Therefore the reduction in employment comes both from firing some workers and from reducing hours for those who remain employed. Column 3 indicates the effect on the total wage bill. It is similar but slightly smaller than the employment effect, which may indicate both changes in workforce composition and limited ability to adjust personnel costs (e.g. because of contract rigidities or severance payments). The left panel of Figure 6 illustrates the evolution of employment. Employment patterns before the boycott were roughly similar for low- and high leverage firms. Since 2003 there was a slightly positive differential trend for high leverage firms but it was abruptly reversed by the boycott. Additional results on the employment response are presented in Appendix Table A.1, which analyzes the changes in firms' skill structure and demonstrates that the share of high-skill workers decreases at high leverage firms.

Our results confirm that financially constrained firms reduce employment to a larger extent when faced with a negative economic shock. This is consistent with the findings of Sharpe (1994)

[12] This is related to the inability of high leverage firms to credibly enter relational employment contracts, see e.g. Fahn, Merlo, and Wamser (2017).

who shows that employment in high leverage firms is more cyclical in general, as well as with recent results of Giroud and Mueller (2016) who show that leveraged firms were more likely to reduce employment in the last recession. A distinct feature of our setting is captured by the positive coefficient for low leverage firms: while all exposed firms face a negative economic shock, they have possibilities to expand into other markets. Therefore the negative effect of high leverage not only captures the reduced extent of labor hoarding but also limited expansionary response to the boycott. Firms in our sample are not dealing with a widespread recession, and hence we add to previous research by showing that the negative effect of leverage also applies when firms operate in an otherwise growing economy.

Notice that the observed decline in employment for high leverage firms is larger than the decrease in total sales (although, admittedly, the magnitude of the difference is small compared to the standard errors of our estimates). This is particularly surprising because we would expect that labor hoarding does happen to some extent and some workers are kept in the firm and become less productive (as there is no demand to be satisfied by their work). While one possible explanation may involve increased overall productivity (a recent paper by Lazear, Shaw, and Stanton, 2016, demonstrates that worker productivity may rise in recessions), another possibility is that some employees were substituted with other inputs. The use of outsourcing is particularly attractive if firms want to fire some workers with rigid full-time contracts but still be able to perform these workers' tasks on more flexible terms. For example, a firm employing an in-house IT specialist may realize that after the boycott there is not enough work to be done by this person. Since it may be impossible to reduce the specialist's working hours, the firm may decide to fire them and outsource necessary IT services. Not only does this response allow to adjust to the lower demand today, but it also helps to flexibly react to changes in the future (since the firm faces uncertainty about the duration and future severity of the boycott). We may therefore expect that firms use outsourcing to partially substitute laid-off workers.

On the other hand, the main reason why firms reduce in-house employment is lower demand and hence lower production. The same channel may lead to reduced demand for services which are already outsourced. For example, if a firm uses translation services to perform its sales activities in the Middle East, the boycott may make these services rather useless. It is therefore unclear what direction of adjustment we should expect at the intensive margin. Nonetheless, the substitution mechanism unambiguously suggests that we should see some firms starting to outsource activities they have not outsourced before. We therefore focus on the extensive margin response: our main dependent variable is an indicator whether a firm has any outsourcing, overall or in particular categories. We also hypothesize that total outsourcing expenses, while perhaps decreasing in general due to reduced firm operations, should increase compared to total sales.

The outsourcing response is shown in columns 4-5 of Table 3. High leverage firms are over 5 pp. more likely to report any outsourcing. This is a large effect given the fact that 75% of firms before the boycott already declared using some outsourcing and hence 5 pp. corresponds to 20% of the firms who have not used any outsourcing before. Column 5 shows that the share of total

Table 3: Employment and Outsourcing Response

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are log-differences in count of workers employed, full-time equivalence employment (measure of total hours worked), total wage bill, indicator for any outsourcing and amount of outsourcing expenses as the share of total sales. The bottom row presents mean of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1) Δln(Workers) (Headcount)	(2) Δln(Workers) (FTE)	(3) Δln(Wages) (Total)	(4) Any Outsourcing	(5) Outsourcing (% of Sales)
Treatment X 2006	0.0168	0.0295**	0.0095	-0.0246	-0.0033*
	(0.014)	(0.013)	(0.015)	(0.015)	(0.002)
Treatment X High X 2006	-0.0347*	-0.0586***	-0.0426**	0.0507**	0.0048*
	(0.018)	(0.020)	(0.018)	(0.020)	(0.003)
Observations	76,826	76,826	74,826	76,826	76,815
R-squared	0.240	0.330	0.257	0.371	0.571
Firms	15,208	15,208	14,963	15,208	15,208
Sample Avg 01-05	0.00121	0.0358	0.0503	0.747	0.0144

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

spending on outsourcing in sales significantly increases for high leverage firms. Graphical evidence for outsourcing adjustment is also presented in the right panel of Figure 6. While the difference between low- and high leverage firms was never significant before the boycott, after the boycott high leverage firms are significantly more likely to use outsourcing.[13]

The data we use in Table 3 come directly from the profit and loss statement and hence the results are based only on total level of costs associated with outsourcing. To provide more details on what services exactly are being outsourced, we use supplementary data on outsourcing activities from a firm survey on purchased intermediate goods and services collected by Statistics Denmark.[14] The data cover 1,221 manufacturing firms from our main sample and we conduct the subsequent analysis for this subsample. We construct several variables indicating non-zero spending on outsourcing of tasks in a given category. We then use our main specification (1) to see which categories are responsible for the increase observed in the overall profit and loss statement. The results are presented in Table 4. Because of much smaller sample size the results are less precise, but we do see significantly different responses of high leverage firms for a variety of labor services. In particular, high leverage firms respond by outsourcing transportation, legal services, marketing, and ICT

[13]The accounting information allows us also to disentangle outsourcing into hiring of agency workers and other freelancers. The analysis conducted for the indicators of these two separate types of outsourcing yields results with magnitudes similar in both, but the statistical significance of both of them is lower when analyzed separately.

[14]For another recent application using this outsourcing survey to analyze firms' choices between intermediate inputs and in-house production, see Chan (2017).

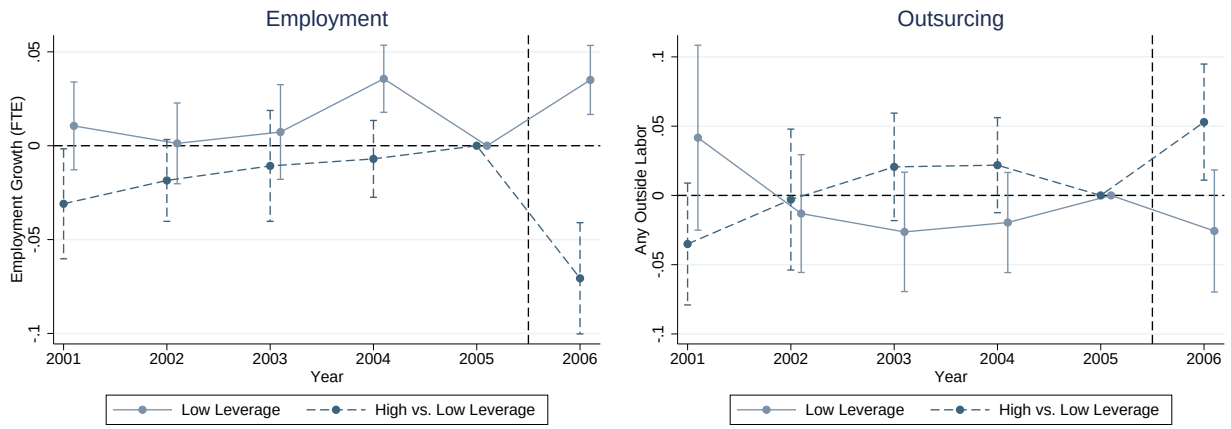

Figure 6: Employment and Outsourcing for High- and Low Leverage Firms

The dependent variables are full-time equivalent employment level and indicator for any outsourcing . The markers in the figures show coefficients from regression analogous to the main specification in which high leverage X treatment X pre-boycott term was split into several terms for each year separately. Coefficients for low leverage firms are for firms exposed to the boycott (treated) with leverage below median. Coefficients for high vs low leverage are differential effects for high leverage firms within treated firms. The brackets denote 90-percent confidence intervals.

services after the boycott. We also find sizable increases in outsourcing of training and consulting, but these results are not precisely estimated. In general, these newly outsourced activities are more likely to correspond to tasks performed by high-skill workers, e.g. lawyers, accountants, or IT specialists. In Table A.1 in the Appendix we analyze how the skill structure of workers employed in the firm changes after the boycott. We observe a decrease in high-skilled workers' share in total employment which is consistent with our hypothesis of substitution for non-core activities: instead of employing in-house high-skilled workers, firms decide to outsource these activities. In contrast, the results do not show any significant response in engineering services, suggesting that manufacturing firms remain focused on their core competencies.

Our results contribute to a small literature on capital structure and outsourcing decisions. In empirical work of Moon and Phillips (2014) and the theoretical model of Kanatas and Qi (2016), firms which outsource have lower financial leverage. Firms may choose lower leverage because this strategy decreases expected costs of financial distress for their contracting parties. In our paper, however, firms with high leverage choose to outsource because they want to increase operational flexibility to decrease the risk of financial distress. One can interpret this adjustment exactly along the lines of the previous literature because the use of outsourcing leads to lower operating leverage and hence lower risk.

4.3 Investment and Leasing

Another input to the production function, capital, can also be adjusted when a firm faces a negative demand shock. Yet, it is hard to quickly adjust the capital stock and hence it is more appropriate to analyze its changes: investment and divestment flows. Given that high leverage firms are finan-

Table 4: Outsourcing Response - Detailed Analysis

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). The data sample limited to 1221 firms for which the results of outsourcing survey are available. We define 12 categories of services being outsourced by grouping several related activity codes. The bottom row presents averages of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1) Transport	(2) ICT	(3) Accounting & Legal	(4) Engineering	(5) Marketing	(6) HR & Training
Treated X	0.0068*	-0.0192**	-0.0013	-0.0191	-0.0269	-0.0195**
2006	(0.003)	(0.009)	(0.009)	(0.018)	(0.017)	(0.009)
Treated X	0.0256	0.0393*	0.0523**	0.0143	0.0553**	0.0529
High X 2006	(0.015)	(0.020)	(0.021)	(0.046)	(0.018)	(0.035)
R-squared	0.565	0.726	0.667	0.851	0.747	0.781
Sample Avg 01-05	0.985	0.965	0.965	0.614	0.932	0.870

	(7) Security	(8) Cleaning	(9) Food	(10) Consulting	(11) Construction & Repairs	(12) Sales Commission
Treated X	0.0433***	0.0059	0.0201	-0.0018	-0.0088	-0.0121
2006	(0.014)	(0.018)	(0.015)	(0.035)	(0.010)	(0.021)
Treated X	-0.0042	-0.0009	-0.0357	0.0721	0.0397	0.0233
High X 2006	(0.036)	(0.025)	(0.039)	(0.044)	(0.024)	(0.040)
R-squared	0.824	0.715	0.851	0.744	0.692	0.854
Sample Avg 01-05	0.671	0.901	0.614	0.658	0.972	0.383
Firms	1,221	1,221	1,221	1,221	1,221	1,221
Observations	5,249	5,249	5,249	5,249	5,249	5,249

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Investment and Leasing Response

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are logs of investment/divestment in production equipment, indicator for any leasing, amount of financial leasing as the share of total investment and measure of own investment. The flows in columns 1 are based on financial statement data and therefore they include new financial leases; column 5 uses synthetic measure of investment in production equipment net of financial leasing. The bottom row presents mean of levels of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1) ln(Investment)	(2) ln(Divestment)	(3) Any Lease	(4) Fin Lease (% of Invst)	(5) ln(Own Investment)
Treated X 2006	0.3046***	-0.1794	-0.0367*	-0.0011	0.3035***
	(0.073)	(0.161)	(0.019)	(0.009)	(0.073)
Treated X High X 2006	-0.1965**	0.2961	0.0589**	0.0169***	-0.2661***
	(0.087)	(0.216)	(0.023)	(0.005)	(0.084)
Observations	45,821	26,913	76,826	69,321	45,414
R-squared	0.792	0.742	0.397	0.319	0.793
Firms	13,437	11,136	15,208	14,992	13,411
Sample Avg 01-05	2,448	1,512	0.762	0.0178	2,415

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

cially constrained, we would expect that they reduce investment compared to their low leverage counterparts. In this section we document that highly-leveraged firms who are exposed to the boycott indeed decrease their investment and increase divestment, compared to low leverage firms. We also show that this shrinkage of capital is to some extent counteracted with leasing, a more flexible way of providing capital input.

Table 5 shows the response of investment, divestment and leasing flows. Low leverage firms exposed to the boycott increase investment but high leverage firms do not (column 1). Instead, they sell their existing equipment (column 2), although the decrease, while economically large, is not statistically significant. Notice that the sample size varies across columns and in general is lower than the size of the full sample used in the employment analysis. This is because of the lumpy character of investment and divestment and our log-based specification which drops observations with zero flows. Moreover, as a consequence of common accounting practice, our measure of investment flows includes new financial leases (column 5 presents results for a synthetic measure of own investment).

Similarly to the response of employment and outsourcing, the drop in investment and increase in divestment of high leverage firms may be to some extent substituted with leasing. A firm may decide not to buy a new asset or to sell an existing one and use leasing to provide the capital input

instead. This requires less access to capital and hence may be particularly attractive for financially constrained firms. Moreover, it also allows for more flexible adjustment to changes in future economic conditions, a feature similar to the characteristics of outsourcing vis-a-vis employment.

The response of leasing at the intensive margin combines both the substitution of own assets with leasing and general downsizing of the firm which may include terminating some existing leasing contracts. As a result, our main focus is on indicators for any leasing to capture the extensive margin response. We also look at the relative measure of leasing expenses. Financial leasing information comes from additional declarations about new leases supplementing the financial statement. Firms report the value of new equipment leased in a given year (as opposed to payments made this year) and hence we compare it to total investment. Because our measure of operating leases comes from the profit and loss statement, we do not observe the value of leased equipment but instead we see only the size of payments. While these values cannot be directly compared to investment flows, we analyze them in Table A.2 in the Appendix, where we compare them to total costs.

As illustrated in column 3 of Table 5, highly leveraged firms are significantly more likely to use either financial or operating leasing after the boycott. Figure 7 shows the graphical evidence for the leasing response. Compared to low leverage firms, high leverage firms do not seem to be significantly different in their use of leasing before the boycott but they are more likely to rely on it after the boycott hits. The intensive-margin measure of financial leasing in column 4 also increases for high leverage firms. After financial leases are subtracted from total investment, we find a more precise and significantly negative response of own investment: contrary to low leverage firms, high leverage firms do not increase their own investment (column 5). Moreover, as evidenced in column 2, they insignificantly increase divestment. Fixed assets they sell are presumably substituted with both operating and financial leasing. The magnitude of the own investment increase for low leverage firms is large and close to 30%. While we cannot directly compute the equivalent number for the leasing response (because we only know operating leasing payments, not the value of the assets which would be comparable to investment), back of the envelope calculations (assuming that payments constitute around 15% of leased asset value) suggest that the leasing response of high leverage firms can be sizable when compared both to low leverage firms' investment and high leverage firms' divestment reaction.

4.4 Redirecting Sales and Product Innovation

In Section 3.2 we have shown that the pre-boycott export exposure to Muslim countries was similar for low- and high leverage firms. When the boycott hits, however, some firms may be able to accommodate it better than others. In particular, some firms may be able to find new markets or sell different products to their existing markets to mitigate the adverse effects of the shock. All these activities, however, are costly and risky, and hence financially constrained firms may be unable or unwilling to perform them. They may lack capital necessary to invest in the development of new markets or the risk of entering new markets may be simply too high given their need to honor financial obligations. Table 2 in Section 4.1 confirms that low leverage firms significantly increase

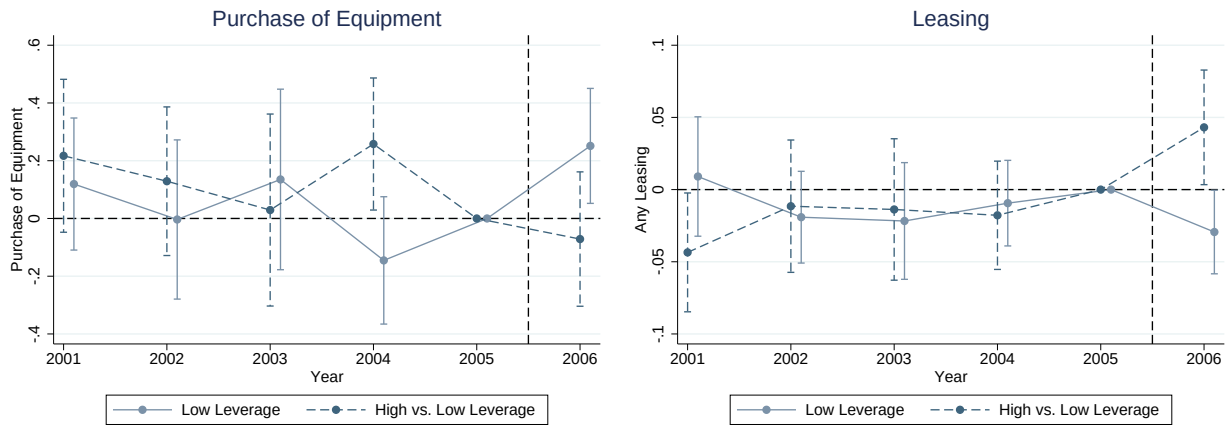

Figure 7: Investment and Leasing Response

The dependent variables are log change in equipment investment and an indicator for any leasing costs. The bars in the figure show coefficients from regression analogous to the main specification in which high leverage X treatment X pre-boycott term was split into several terms for each year separately. Coefficients for low leverage firms are for firms exposed to the boycott (treated) with leverage below median. Coefficients for high vs low leverage are differential effects for high leverage firms within treated firms.

exports to non-Muslim countries but high leverage firms do not. In this subsection we investigate the product market response in more detail. We take advantage of the detailed product-destination level data on export flows and domestic sales, and analyze product innovation and entry into new export markets by low- and high leverage firms.

Table 6 shows that as the result of the boycott, both low leverage and high leverage firms stopped exporting to slightly more than 1 country on average, which constitutes around 20% of their export destinations.Note that this estimate may understate exit from Muslim markets because of trade diversion. One could imagine that in the face of the boycott some Danish producers may decide to use nearby non-Muslim countries as a gateway to reach Muslim markets. Yet, the results show that there is no differential response for high and low leverage firms on this margin.[15]

In contrast, we find substantial differences in adjustment of the exported product mix, which cannot be explained by trade diversion. In particular, columns 2-4 analyze product-level export flows and introduction of new products. The dependent variable is the number of product categories for which we observe non-zero export flows for a given firm. Column 2 defines product category based on the 6-digit classification from the harmonized system (HS), while columns 3 and 4 use the 4- and 2-digit classification, respectively. An example of 2-digit category is "Coffee, Tee, Mate and Spices". Within this group, 4-digit categories include "Coffee" and "Tea", while "Black Tea" or "Green Tea" are examples of 6-digit products. While introducing new 6-digit products, evidenced by column 2, may be viewed as slightly modifying a firm's range of export products, introducing a new 2-digit category (column 4) is an important innovation which presumably required additional

[15]We believe that trade diversion is unlikely to explain a significant portion of our results. The boycott targets all products associated with Denmark, not only those produced in Denmark. Therefore a Danish brand will be boycotted even if the product is sold by a foreign firm or even is produced in a different country.

Table 6: Redirecting Sales: New Export Markets and Products

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are changes of number of export destinations and number of exported products defined as non-zero flows in 6-, 4- and 2-digits product category in HS system. The bottom row presents mean of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1) ΔExport Destinations	(2) ΔNum Exp Products (6-digit)	(3) ΔNum Exp Products (4-digit)	(4) ΔNum Exp Products (2-digit)
Treated X 2006	-1.2405***	1.53561**	1.4372***	0.4901***
	(0.312)	(0.627)	(0.356)	(0.101)
Treated X High X 2006	0.1398	-0.7218	-0.8196*	-0.2540*
	(0.358)	(0.767)	(0.482)	(0.133)
Observations	53,910	53,910	53,910	53,910
R-squared	0.197	0.200	0.188	0.166
Firms	13,307	13,307	13,307	13,307
Sample Avg 01-05	7.810	11	7.878	4.149

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

investment. Our results therefore confirm that low leverage firms actively innovate and look for new ways to use their existing capacity. This response is muted for high leverage firms: while overall effects for high leverage firms are positive, they are not significantly different from zero. Moreover, Table A.4 in the Appendix presents a log-based specification in which the overall effect for high leverage firms is negative. Since the log-based specification puts more weight on firms with lower number of export destinations, we interpret this difference as evidence that high leverage impedes the ability to introduce new export products for small firms in particular.

By looking only at exports we are unable to tell if new products are indeed product innovations or existing products which were sold domestically before and now are also exported. To answer this question, we use domestic sales data at the product level for all manufacturing firms with at least 10 employees to define new products for each firm over time.[16]

We report the results in Table 7. As suggested by the product dynamics in the export markets, we find evidence that firms exposed to the boycott introduce differentially more new products in 2006 compared to other firms and compared to their previous innovative behavior. Product innovation is less pronounced among exposed firms with high leverage; in fact, we cannot reject that the overall treatment effect for this group is zero. The magnitude of changes is considerable, with low leverage exposed firms adding on average 0.3 new products in a 4-digit category. This

[16] Smeets and Warzynski (2013) provide more details about this dataset and use it to measure productivity of multi-product firms.

Table 7: Product Innovation

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are the number and indicators for any new products sold domestically (columns 1-4) or exported (columns 5-6), defined as first-time non-zero revenue in a 6- or 4-digits product category in the HS system. The bottom row presents mean of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1) ΔNumber New Prod (4 digit)	(2) ΔNumber New Prod (6 digit)	(3) Any New Products (4 digit)	(4) Any New Products (6 digit)	(5) ΔNum New Exp Prod (4 digit)	(6) ΔNum New Exp Prod (6 digit)
Treated X 2006	0.2676*	0.4408**	0.0293*	0.0209	0.3136**	0.4396**
	(0.156)	(0.224)	(0.016)	(0.018)	(0.128)	(0.192)
Treated X High X 2006	-0.2491*	-0.3776*	0.0101	0.0059	-0.2141	-0.3153*
	(0.150)	(0.198)	(0.023)	(0.022)	(0.128)	(0.162)
Observations	15,863	15,863	16,479	16,479	12,311	12,311
R-squared	0.230	0.230	0.421	0.438	0.360	0.422
Firms	3,298	3,298	3,416	3,416	2,695	2,695
Sample Avg 01-05	0.113	0.200	0.0863	0.106	0.103	0.186

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

corresponds to a 200% increase relative to the annual average rate of innovation across firms over the period 2001-2005. Interestingly, this increase in innovative activity is driven by a change in the number of new products, rather than a change in any product innovation. Highly leveraged firms continue to innovate, but they introduce much fewer new products after the boycott than less leveraged competitors.

Finally, we use the data on domestic sales to refine the analysis on product mix in export markets. Specifically, we identify product innovation in export markets as new products sold abroad that had not been sold domestically before. Columns (5) and (6) of Table 7 show that for the sample of manufacturing firms with information on domestic sales, product innovation drives a large increase in newly exported products.

4.5 Relationships along the Supply Chain

An unforeseen demand drop can influence not only the firm subject to the shock but also their relationships with business partners along the production chain. When some of the expected cash flows are not materialized, a firm would like to pay its suppliers later and receive money from customers faster. Whether or not these partners are willing to grant such concessions will depend on the nature of the relationship: if the relationship is long-standing and there is a large amount

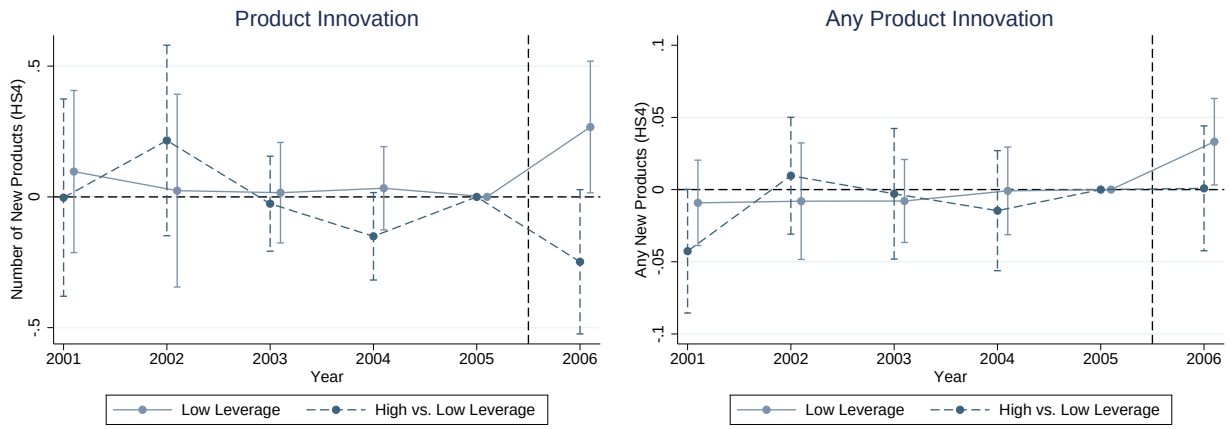

Figure 8: Product Innovation Response

The dependent variables are change in number of new products and an indicator for any product innovation at the 4-digit HS level. The bars in the figure show coefficients from regression analogous to the main specification in which high leverage X treatment X pre-boycott term was split into several terms for each year separately. Coefficients for low leverage firms are for firms exposed to the boycott (treated) with leverage below median. Coefficients for high vs low leverage are differential effects for high leverage firms within treated firms.

of trust, all parties may be interested in preserving long-term cooperation and hence may be more accommodating to the partner in trouble. Otherwise, suppliers may be unwilling to grant any payment extensions, especially if the firm is highly leveraged and may have trouble paying back its debt. On the other side of the chain, customers may actually request better trade credit conditions since their bargaining position is better when the firm just lost part of its demand. In this section, we analyze the outcomes of transactions with suppliers and customers and document differential changes in accounts payable and receivable of firms with high and low leverage.

Short-term debt to suppliers increases for low leverage firms hit by the boycott, as evidenced by column 1 in Table 8. The stock of accounts payable goes up by 10% which is much more than the change in sales. This change suggests that low leverage firms were able to receive better payment conditions from their suppliers after the boycott. The total effect for high leverage firms, however, is insignificant, which suggests that they were not able to receive such concessions. Suppliers are therefore accommodating boycotted firms but only when they perceive it safe to do so.[17] Interestingly, the coefficient for other types of short-term debt (presumably mostly bank loans) is insignificant, which suggests that suppliers are more cooperative than financial institutions. This may be either because they have more interest in helping the troubled firm or because the information asymmetry and ability to divert loans is lower (Burkart and Ellingsen, 2004; Cunat, 2006).

Column 3 of Table 8 presents results for accounts receivable. Low leverage firms insignificantly increase current receivables and the increase is larger than the change in their sales. In Appendix

[17] Another interpretation is that less leveraged firms may rely more on relational contracts with their business partners to begin with. This argument is analogous to the commitment role of equity financing for employment relationships as in Fahn, Merlo, and Wamser (2018).

Table 8: Relationships in the Supply Chain

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are log-changes of short term debt (to suppliers and other creditors), receivables and level of inventories. The bottom row presents mean of levels of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1)	(2)	(3)	(4)
	Δln(Short-Term Debt)		Δln(Receivables)	Δln(Inventory)
	To Suppliers	To Other	Current	
Treatment X	0.0954*	-0.0306	0.0554	0.0473
2006	(0.049)	(0.042)	(0.047)	(0.052)
Treatment X	-0.0930***	-0.0662	-0.0894**	-0.1058
High X 2006	(0.033)	(0.041)	(0.035)	(0.064)
Observations	76,110	76,263	76,711	43,480
R-squared	0.122	0.139	0.127	0.256
Firms	15,189	15,201	15,203	13,601
Sample Avg 01-05	0.0188	20,318	20,121	7,451

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

Table A.3, we decompose the changes in different types of accounts receivable and find a significant increase in receivables for finished products and ongoing work among low leverage firms. This increase is consistent with granting better payment conditions to their customers as a way to secure additional demand and sell products which could not be sold to Muslim countries. The increase in receivables is significantly smaller for high leverage firms. This suggests that such firms, even though they would clearly prefer to secure additional demand, may be unable to grant better payment conditions because they have their own financial obligations to meet.

In order to generate liquidity, high leverage firms also reduce their inventory. In general, choosing the optimal level of inventory is a trade-off between costs and potential threats to smooth operations. Holding too much inventory is unnecessarily costly and diverts firm funds from more productive use. Holding too little, on the other hand, may put the firm at the risk of unexpected downtime because of disruptions in the supply chain. As far as stock of completed products is concerned, it also poses a risk of not being able to quickly fulfill customer orders. When a firm is pressed for reducing costs and securing additional liquid funds, it may decide to lower its inventory holdings. Column 4 of Table 8 confirms such a reaction: after the boycott high leverage firms significantly reduce their level of inventory. While this can partially be explained by the fact that they reduce sales more than low leverage firms, the drop in inventory (almost 11%) is much larger than the drop in sales. It therefore suggests that high leverage firms decrease their inventory holdings to avoid freezing their liquid funds which are in high demand after the boycott.

5 Robustness

Our results are based on a simple and intuitive research design: we categorize firms as low- or high leverage and compare firms who were exposed to the boycott, controlling for outcomes of firms with the same leverage status but not exposed to the boycott. In this section, we present key robustness checks for our analysis, related to the degree of exposure, the definition of leverage and controlling for additional firm characteristics.

Table 9 reports the results of robustness checks. Each panel of the table reports results for a separate specification. In Panel A-C, we first use alternative measures of leverage. Panel A replaces the binary indicator for high versus low leverage before the boycott by the continuous measure of total debt over total assets before the boycott. This specification yields highly significant results of similar magnitude as our main results. In Panel B, we limit our attention to debt that is related to financial leverage, specifically using short-term and long-term bank debt rather than total liabilities. The coefficient estimates in this specification are slightly smaller than the main results, suggesting that all sources of liabilities contribute to the financial pressure that firms face after the boycott. Ignoring debt to suppliers, for example, reduces the precision in specifying the set of firms that face financial distress. Panel C defines high versus low leverage within industry, and shows that the main results are not explained by differences in leverage across industries. Arguably, this leverage definition within industry ignores valuable variation in the level of leverage across firms in different industries, which explains the reduction in power for these results.

Panel D focuses on the size of the shock. In this model, we replace the binary treatment indicator for boycott exposure with a continuous measure of the share of exports to Muslim countries in 2005. The results show that more exposed firms reduce employment more strongly, and are much more likely to increase their leasing activity. The point estimates for the share of outsourcing in total sales and for own investment are also about twice the size of the main estimates, suggesting that the effects are stronger for highly exposed firms, but these results are not precisely estimated. Panel E replicates the results of Panel D with an alternative measure of exposure, i.e. the share of export to Muslim countries in total sales (as opposed to total exports). The typical values for this measure are very different (the average share in total exports is 23% vs share in sales of 3.6%, obtained after dropping outlier firms with very large exposure), which changes the magnitudes of the coefficients. The effects of one standard deviation change, however, remain similar, which confirms that the choice of exposure measure is not driving our results. In panel F, we include the continuous exposure measure as control variable, and the results are unchanged. Finally, in Panel G, we redefine the treatment indicator by using only previous exports to Arab countries. This specification ignores informal boycott in many other countries, thereby slightly understating the main effects and reducing precision.

Table 9: Robustness Results

Each panel in the table reports results for a separate regression. All regressions include firm fixed effects, industry-year fixed effects, as well as the main regressor of interest interacted with year indicators. The main independent variable is the triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). In all regressions standard errors are clustered at the industry level.

Model Extension	(1) Δln(FTE Employment)	(2) Any Outside Labor	(3) Outside Labor (% of Sales)	(4) Any Leasing	(5) ln(Own Investment)
Panel A: Continuous Leverage					
Treated X 2006	0.0531***	-0.0540**	-0.0061*	-0.0608**	0.2725
	(0.013)	(0.022)	(0.003)	(0.027)	(0.167)
Treated X 2006	-0.0763***	0.0820**	0.0078	0.0773**	-0.1529
X Leverage	(0.022)	(0.030)	(0.005)	(0.029)	(0.211)
Panel B: Financial Leverage					
Treated X 2006	0.0163	-0.0128	-0.0038**	-0.0389	0.1973***
	(0.011)	(0.015)	(0.002)	(0.027)	(0.1056)
Treated X 2006	-0.0296**	0.0236	0.0058**	0.0598**	-0.0553
X High Leverage	(0.014)	(0.027)	(0.002)	(0.027)	(0.149)
Panel C: Leverage By Industry					
Treated X 2006	0.0296***	-0.0163	-0.0028*	-0.0296	0.2863***
	(0.010)	(0.012)	(0.001)	(0.018)	(0.080)
Treated X 2006	-0.0587***	0.0316*	0.0036	0.0410*	-0.2268***
X High Leverage	(0.014)	(0.018)	(0.003)	(0.022)	(0.081)
Panel D: Continuous Exposure					
Exposure X 2006	0.0874	0.0076	-0.0011	-0.0270	0.5887**
	(0.062)	(0.039)	(0.003)	(0.046)	(0.216)
Exposure X 2006	-0.1915***	0.0494	0.0073	0.1215***	-0.7135
X High Leverage	(0.047)	(0.045)	(0.005)	(0.044)	(0.498)
Panel E: Continuous Exposure					
Exposure X 2006	0.2079	-0.1831	0.0407	-0.5673	4.3338*
	(0.173)	(0.190)	(0.031)	(0.480)	(2.254)
Exposure X 2006	-0.7049**	0.7767	-0.0266	1.3950**	-3.2197*
X High Leverage	(0.259)	(0.492)	(0.038)	(0.597)	(1.861)
Panel F: Control For Exposure					
Treated X 2006	0.0400**	-0.0255	-0.0030	-0.0437***	0.3309***
	(0.011)	(0.016)	(0.002)	(0.018)	(0.061)
Treated X 2006	-0.0609***	0.0503**	0.0047*	0.0592**	-0.2678***
X High Leverage	(0.019)	(0.020)	(0.003)	(0.023)	(0.084)
Panel G: Arab Countries as Treatment					
Treated X 2006	0.0207*	-0.0102	-0.0022	-0.0299	0.2274
	(0.011)	(0.025)	(0.002)	(0.023)	(0.169)
Treated X 2006	-0.0370**	0.0390	0.0032	0.0587*	-0.3396**
X High Leverage	(0.022)	(0.028)	(0.002)	(0.031)	(0.142)

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

Table 10: Alternative Explanations for Differential Adjustment of High and Low Leverage Firms
Each panel in the table reports results for a separate regression. All regressions include firm fixed effects, industry-year fixed effects, as well as the main regressor of interest interacted with year indicators. The main independent variable is the triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). In all regressions standard errors are clustered at the industry level.

Model Extension	(1) Δln(FTE Employment)	(2) Any Outside Labor	(3) Outside Labor (% of Sales)	(4) Any Leasing	(5) ln(Own Investment)
Panel A: Employment Bins X Year FE					
Treated X 2006	0.0330***	-0.0142	-0.0028*	-0.0391*	0.2616***
	(0.011)	(0.019)	(0.002)	(0.022)	(0.060)
Treated X 2006	-0.0555***	0.0530**	0.0049*	0.0623**	-0.2323***
X High Leverage	(0.019)	(0.020)	(0.003)	(0.024)	(0.082)
Panel B: Sales Bins X Year FE					
Treated X 2006	0.0265**	-0.0053	-0.0024	-0.0291	0.2551***
	(0.012)	(0.021)	(0.001)	(0.023)	(0.054)
Treated X 2006	-0.0543***	0.0504**	0.0048*	0.0581**	-0.2143**
X High Leverage	(0.018)	(0.019)	(0.003)	(0.023)	(0.081)
Panel C: Number of Export Products X Year FE					
Treated X 2006	0.0170	-0.0006	-0.0024	-0.0336*	0.2726***
	(0.013)	(0.016)	(0.002)	(0.020)	(0.064)
Treated X 2006	-0.0561***	0.0510**	0.0045*	0.0583**	-0.2659***
X High Leverage	(0.018)	(0.020)	(0.003)	(0.024)	(0.084)

Standard errors clustered at the industry level
*** p<0.01, ** p<0.05, * p<0.1

6 Mechanisms and Alternative Explanations

In this section, we shed more light on the underlying mechanism for the main results. We first address the concern that leverage not only captures the role of financial constraints at the time of the boycott, but may also proxy for other unobserved differences across firms, in particular differences in firm size, industry, and product variety. In the second step, we focus on the mechanism through which leverage affects firms' ability to adapt to the negative demand shock – reduced liquidity. First, reduced liquidity is the result of higher payments that highly leveraged firms need to make while facing a decrease in cash flows from the boycott. Second, reduced liquidity can be exacerbated if highly leveraged firms face limited access to additional capital. We illustrate this mechanism by analyzing the role of cash holdings as a buffer to provide liquidity, and by analyzing the role of debt maturity on firms' responses after the boycott.

Table 10 analyzes the role of other firm characteristics that may influence firms' responses during a crisis, and whose influence the main analysis may partly attribute to the effects to leverage. To this end, we extend the main specification in equation (1) by adding additional control variables. Panels A and B show that the differences between high and low leverage firms are not explained by differences in firm size. Specifically, we group firms in ten bins according to firm size in 2005 and include interaction terms for each bin with each year of the sample period to allow for differential

trends in the most flexible way. The results from this model are quantitatively similar to the main results and very precisely estimated. This is an important robustness check because Table 1 shows some differences in firm size between these two groups among exposed firms. Panel C provides an alternative check whether highly leveraged firms suffer more because they have fewer opportunities to redirect sales, measured by the number of export products before the boycott. This regression also rejects product variety as a main factor to explain the differences between high and low leverage firms that we find.

Another way of looking at firm's liquidity, ignored by our measure of leverage, is the size of cash holdings. The question is to what extent high leverage is correlated with low cash holdings that limit the firm's ability to respond to changes in the market environment. In order to shed light on this mechanism, Table 11 first analyzes the role of the quick ratio, defined as cash holdings relative to total liabilities. Panel A uses an indicator for high versus low quick ratio, where the cutoff is the median quick ratio among all exposed and non-exposed exporters in 2005. The results suggest that firms with higher cash holdings as a share of total liabilities reduce employment and investment less, and are less likely to use outsourcing and leasing. This is consistent with the shielding role of cash holdings in the face of adverse shocks. Yet, these results are non precisely estimated. Panel B replaces the binary indicator for high versus low quick ratio with the continuous measure of cash relative to liabilities in 2005. This additional variation provides more power to find statistically significant patterns of lower flight to flexibility among exposed firms with higher cash holdings. Yet, comparing the magnitude of these effects with the main results for high versus low leverage indicates that cash constraints only explain a small part of the adjustment pattern. The average quick ratio among exposed firms is 5% of total liabilities, with a standard deviation of 10%. This implies that an increase in the quick ratio by one standard deviation yields a muted employment reduction by 0.1%, compared to the average effect of -6% in Table 3. Another way of showing the small effect of cash holdings on firms' responses is to use the ratio of cash holdings compared to assets in Panel C. The insignificant results in this specification suggest that the findings in Panel B are mostly driven by liabilities in the denominator of the quick ratio, rather than by the size of cash holdings. The small cash buffer effect may be partially explained by the fact that cash holdings of most firms are small compared to the size of the economic shock. Another way to analyze the importance of cash would be to look at the cash flow instead of cash holdings. Unfortunately, cash flows are not available in our data and hence cash stock has to be used for our proxy for how cash-rich the firm is.

We provide additional suggestive evidence for the mechanism of reduced liquidity in Panel D of Table 11. Unfortunately we do not observe loan-level data on maturity. Instead, we can only use changes in net debt stocks in the years before the boycott to approximate for maturity after the boycott starts. In particular, we define firms as likely to face a high stock of maturing long-term debt in 2006 if less than half of their stock of long-term debt at the end of 2005 is accounted for by an increase in long-term debt during 2005. As a result these firms with lower share of recent increase in long-term debt face a higher liquidity constraint during the boycott when a larger share

Table 11: Results: Cash Holdings and Debt Maturity

Each panel in the table reports results for a separate regression. All regressions include firm fixed effects, industry-year fixed effects, as well as the main regressor of interest interacted with year indicators. The main independent variable is the triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). In all regressions standard errors are clustered at the industry level.

Model Extension	(1) Δln(FTE Employment)	(2) Any Outside Labor	(3) Outside Labor (% of Sales)	(4) Any Leasing	(5) ln(Own Investment)
Panel A: Quick Ratio					
Treatment X 2006	-0.0129	0.0102	-0.0000	0.0013	0.1240
	(0.019)	(0.018)	(0.002)	(0.024)	(0.126)
Treatment X 2006	0.0293	-0.0257	-0.0022	-0.0243	0.0911
X High Quick	(0.018)	(0.024)	(0.002)	(0.025)	(0.141)
Panel B: Continuous Cash/Liabilities					
Treatment X 2006	-0.0122	0.0131	-0.0003	0.0053	0.1268
	(0.013)	(0.018)	(0.002)	(0.016)	(0.093)
Treatment X 2006	0.0118**	-0.0126*	-0.0007*	-0.0132***	0.0361
X Quick Ratio	(0.005)	(0.007)	(0.000)	(0.003)	(0.028)
Panel C: Continuous Cash/Assets					
Treatment X 2006	-0.0163	0.0093	-0.0048*	0.0053	0.1551
	(0.022)	(0.029)	(0.003)	(0.033)	(0.169)
Treatment X 2006	0.0404	-0.0257	0.0081	-0.0358	0.0428
X Quick Ratio	(0.036)	(0.053)	(0.005)	(0.060)	(0.297)
Panel D: High Share of Long-Term Debt Maturing Soon					
Treatment X 2006	0.0140	-0.0250	-0.0015	-0.0226	0.2641***
	(0.015)	(0.016)	(0.002)	(0.021)	(0.085)
Treatment X 2006	-0.0221*	0.0428*	0.0007	0.0219	-0.1547
X Debt Maturing Soon	(0.012)	(0.021)	(0.002)	(0.022)	(0.112)

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

of their debt will mature.

Panel D of Table 11 replaces the indicator for high leverage with an indicator for high stock of long-term debt that will mature soon during the boycott. We also include interactions of this indicator variable with year dummies to flexibly account for different time trends of firms with high or low share of maturing debt during the boycott. We find a significant reduction in employment for firms with a higher share of maturing long-term debt. This response goes along with a significant increase in outsourcing of labor services and a reduction in own investment. The sign of leasing response and intensive margin of outsourcing response is as expected, but the coefficients are imprecisely estimated. These findings emphasize the role of liquidity constraints in explaining the differential responses across firms. Yet, long-term debt is only one part of total obligations of firms. This is consistent with the smaller effects that we find in Panel D compared to the main analysis.

In sum, these exercises first highlight that leverage does not simply capture differences across exposed firms based on firm size, industry, or product variety. Second, we show that differences in cash holdings relative to total liabilities are related to firm's ability to adapt to the boycott. But cash holdings are relatively small and therefore can only explain a small share of the overall differences in firms' adaptation. Third, we provide evidence based on long-term debt maturity to further highlight the role of liquidity constraints.

7 Conclusion

This paper shows how financial leverage influences firms' responses to an unexpected demand shock. We take advantage of a natural experiment in Denmark, the Muslim boycott of Danish exporters after a major Danish newspaper published Muhammad cartoons in 2005, which led to a sudden and unexpected reduction of foreign demand for a small set of firms in an otherwise growing economy. We find evidence of systematically different adaptation to this shock by high and low leverage firms. While firms with low and high leverage have similar exposure to the boycott, only the former are able to withstand the shock without reducing employment or investment and to redirect their sales elsewhere. High leverage firms, on the other hand, reduce their sales, employment, and investment, and exhibit flight to flexibility: they partially substitute employment with outsourcing and owning assets with leasing.

Our results highlight the importance of liquidity constraints in determining the ability to adapt to a changing environment. Low leverage firms are able to increase their investment and add new product categories in their non-Muslim destination markets to counteract the negative demand shock. They also benefit from their relationships along the supply chain to stabilize their business, receiving additional trade credit from suppliers.. High leverage firms are less able to extend their trade credit or to make investments; instead, their main focus seems on reducing their financial obligations in the face of this negative shock. This comparison emphasizes implicit costs of high leverage that firms have to take into account as they choose their capital structure to begin with. Importantly, we characterize the nature of these costs as a competitive disadvantage in times of

crisis, even if a firm is not close to bankruptcy.

We note that all our results about firms' adaptation to this shock capture short-term responses within one year after the boycott started. This means we do not take a stand on the long-run costs or benefits of these differential adjustments. Financial distress at highly leveraged firms will be temporary and these firms might be able to regain market share from their less leveraged competitors in the future. Even more, it is possible that financial distress forces firms to engage in necessary change (Jensen, 1986) that may imply short-term losses, but could make the firm more profitable in the long run. This suggests that part of the response we document may represent short-term adjustments, while other parts may constitute structural change in firm organization triggered by financial distress and a negative demand shock. Without analyzing the role of capital structure, Friedrich (2016) shows that a small share of exposed firms decide to delayer and systematically change their occupational hierarchy and internal wage structure. We view these questions about the relationship between financial distress, organizational change and persistent consequences on competitive advantage as a promising avenue for future research.

References

Aghion, Philippe, Antonin Bergeaud, Mathieu Lequien, and Marc Melitz (2017). "The Impact of Exports on Innovation: Theory and Evidence". *Unpublished working paper. Harvard University.*

Amiti, Mary and David E. Weinstein (2011). "Exports and Financial Shocks". *The Quarterly Journal of Economics* 126.4, pp. 1841–1877.

Andrade, Gregor and Steven N. Kaplan (1998). "How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed". *The Journal of Finance* 53.5, pp. 1443–1493.

Antràs, Pol and Esteban Rossi-Hansberg (2009). "Organizations and Trade". *Annual Review of Economics* 1.1, pp. 43–64.

Asquith, Paul, Robert Gertner, and David Scharfstein (1994). "Anatomy of financial distress: An examination of junk-bond issuers". *The Quarterly Journal of Economics* 109.3, pp. 625–658.

Autor, David, David Dorn, Gordon H. Hanson, Gary Pisano, and Pian Shu (2016). *Foreign Competition and Domestic Innovation: Evidence from U.S. Patents.* Working Paper 22879. National Bureau of Economic Research.

Baghai, Ramin, Rui Silva, Viktor Thell, and Vikrant Vig (2016). "Talent in distressed firms: Investigating the labor costs of financial distress".

Baker, George P. and Thomas N. Hubbard (2003). "Make versus buy in trucking: asset ownership, job design, and information". *American Economic Review* 93.3, pp. 551–572.

Bloom, Nicholas, Mirko Draca, and John Van Reenen (2016). "Trade Induced Technical Change? The Impact of Chinese Imports on Innovation, IT and Productivity". *The Review of Economic Studies* 83.1, pp. 87–117.

Brown, Jennifer and David A. Matsa (2016). "Boarding a sinking ship? An investigation of job applications to distressed firms". *The Journal of Finance* 71.2, pp. 507–550.

Burkart, Mike and Tore Ellingsen (2004). "In-kind finance: A theory of trade credit". *American Economic Review* 94.3, pp. 569–590.

Busse, Meghan (2002). "Firm financial condition and airline price wars". *RAND Journal of Economics* 33.2, pp. 298–318.

Caggese, Andrea, Vicente Cuñat, and Daniel Metzger (2016). "Firing the wrong workers: financing constraints and labor misallocation".

Chan, Mons (2017). "How Substitutable are Labor and Intermediates?" *Unpublished working paper. University of Minnesota.*

Chaney, Thomas (2016). "Liquidity constrained exporters". *Journal of Economic Dynamics and Control* 72, pp. 141–154.

Chevalier, Judith A. (1995). "Do LBO supermarkets charge more? An empirical analysis of the effects of LBOs on supermarket pricing". *The Journal of Finance* 50.4, pp. 1095–1112.

Cunat, Vicente (2006). "Trade credit: suppliers as debt collectors and insurance providers". *The Review of Financial Studies* 20.2, pp. 491–527.

Desai, Mihir A., C. Fritz Foley, and Kristin J. Forbes (2008). "Financial Constraints and Growth: Multinational and Local Firm Responses to Currency Depreciations". *The Review of Financial Studies* 21.6, pp. 2857–2888.

Eisfeldt, Andrea L. and Adriano A. Rampini (2007). "New or used? Investment with credit constraints". *Journal of Monetary Economics* 54.8, pp. 2656–2681.

— (2009). "Leasing, Ability to Repossess, and Debt Capacity". *The Review of Financial Studies* 22.4, pp. 1621–1657.

Fahn, Matthias, Valeria Merlo, and Georg Wamser (2017). "Relational Contracts, the Cost of Enforcing Formal Contracts, and Capital Structure Choice-Theory and Evidence". *CESifo Working Paper.*

— (2018). "The Commitment Role of Equity Financing". *Journal of the European Economic Association*, pp. 1–29.

Foley, C. Fritz and Kalina Manova (2015). "International Trade, Multinational Activity, and Corporate Finance". *Annual Review of Economics* 7.1, pp. 119–146.

Friedrich, Benjamin U. (2016). "Trade shocks, firm hierarchies and wage inequality". *Unpublished working paper. Yale University.*

Giroud, Xavier and Holger M. Mueller (2016). "Firm leverage, consumer demand, and employment losses during the Great Recession". *The Quarterly Journal of Economics.*

Graham, John R., Hyunseob Kim, Si Li, and Jiaping Qiu (2016). "Employee Costs of Corporate Bankruptcy".

Grossman, Gene M. and Elhanan Helpman (2002). "Integration versus Outsourcing in Industry Equilibrium". *The Quarterly Journal of Economics* 117.1, pp. 85–120.

Hiller, Sanne, Philipp J.H. Schröder, and Allan Sørensen (2014). "Foreign Demand Shifts and the Reallocation of Exports - Evidence from the Danish Cartoon Crisis". *Aarhus University*.

Hortaçsu, Ali, Gregor Matvos, Chad Syverson, and Sriram Venkataraman (2013). "Indirect costs of financial distress in durable goods industries: The case of auto manufacturers". *The Review of Financial Studies* 26.5, pp. 1248–1290.

Jensen, Hans Rask (2008). "The Mohammed cartoons controversy and the boycott of Danish products in the Middle East". *European Business Review* 20.3, pp. 275–289.

Jensen, Michael C. (1986). "Agency costs of free cash flow, corporate finance, and takeovers". *American Economic Review* 76.2, pp. 323–329.

Kanatas, George and Jianping Qi (2016). "Outsourcing and Financing Decisions in Industry Equilibrium". *Review of Finance* 20.6, pp. 2247–2271.

Kuzmina, Olga (2013). "Operating flexibility and capital structure: Evidence from a natural experiment".

Lafontaine, Francine and Margaret Slade (2007). "Vertical integration and firm boundaries: The evidence". *Journal of Economic Literature* 45.3, pp. 629–685.

Lazear, Edward P., Kathryn L. Shaw, and Christopher Stanton (2016). "Making do with less: working harder during recessions". *Journal of Labor Economics* 34.S1, S333–S360.

Manova, Kalina (2013). "Credit Constraints, Heterogeneous Firms, and International Trade". *Review of Economic Studies* 80.2, pp. 711–744.

Matsa, David A. (2010). "Capital structure as a strategic variable: Evidence from collective bargaining". *The Journal of Finance* 65.3, pp. 1197–1232.

— (2017). "Capital Structure and a Firm's Workforce". Unpublished Manuscript.

Mayer, Thierry, Marc J. Melitz, and Gianmarco I. P. Ottaviano (2014). "Market Size, Competition, and the Product Mix of Exporters". *American Economic Review* 104.2, pp. 495–536.

Mayer, Thierry, Marc J. Melitz, and Gianmarco I.P. Ottaviano (2016). *Product Mix and Firm Productivity Responses to Trade Competition*. Working Paper 22433. National Bureau of Economic Research.

Michaels, Guy and Xiaojia Zhi (2010). "Freedom Fries". *American Economic Journal: Applied Economics* 2.3, pp. 256–81.

Moon, S. Katie and Gordon M. Phillips (2014). "Outside purchase contracts, human capital and firm capital structure". *National Bureau of Economic Research*.

Nocke, Volker and John Thanassoulis (2014). "Vertical relations under credit constraints". *Journal of the European Economic Association* 12.2, pp. 337–367.

Okun, Arthur M. (1963). *Potential GNP: its measurement and significance*. Yale University, Cowles Foundation for Research in Economics.

Opler, Tim C. and Sheridan Titman (1994). "Financial distress and corporate performance". *The Journal of Finance* 49.3, pp. 1015–1040.

Paravisini, Daniel, Veronica Rappoport, Philipp Schnabl, and Daniel Wolfenzon (2015). "Dissecting the Effect of Credit Supply on Trade: Evidence from Matched Credit-Export Data". *The Review of Economic Studies* 82.1, pp. 333–359.

Serfling, Matthew (2016). "Firing costs and capital structure decisions". *The Journal of Finance* 71.5, pp. 2239–2286.

Sharpe, Steven A. (1994). "Financial market imperfections, firm leverage, and the cyclicality of employment". *The American Economic Review* 84.4, pp. 1060–1074.

Simintzi, Elena, Vikrant Vig, and Paolo Volpin (2014). "Labor protection and leverage". *The Review of Financial Studies* 28.2, pp. 561–591.

Smeets, Valerie and Frederic Warzynski (2013). "Estimating productivity with multi-product firms, pricing heterogeneity and the role of international trade". *Journal of International Economics* 90.2, pp. 237–244.

Strebulaev, Ilya A and Baozhong Yang (2013). "The mystery of zero-leverage firms". *Journal of Financial Economics* 109.1, pp. 1–23.

Syverson, Chad (2011). "What Determines Productivity?" *Journal of Economic Literature* 49.2, pp. 326–65.

Zingales, Luigi (1998). "Survival of the Fittest or the Fattest? Exit and Financing in the Trucking Industry". *The Journal of Finance* 53.3, pp. 905–938.

A Online Appendix

A.1 Distributions of Leverage and Exposure

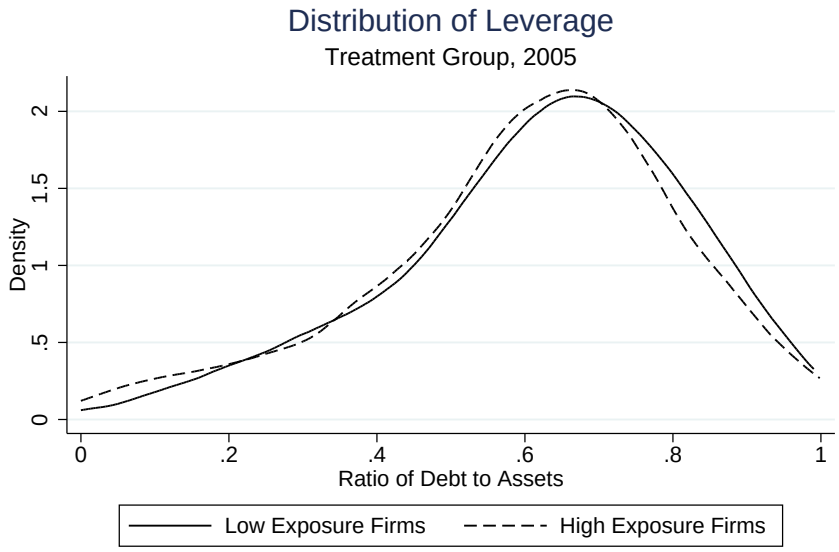

Figure A.1: Distribution of Leverage for Firms with Low and High Exposure to the Boycott

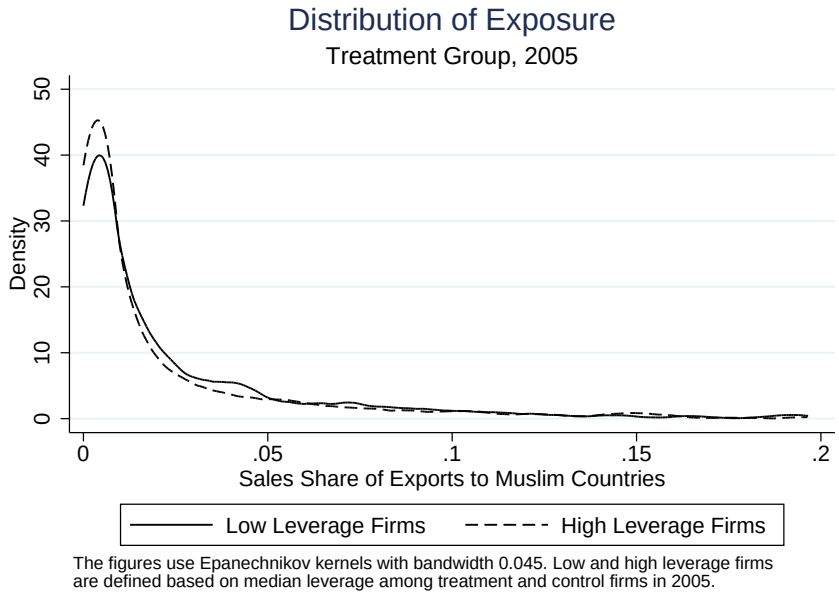

Figure A.2: Distribution of Exposure to Muslim Countries (Measured as Share of Exports to Muslim Countries in Sales) for Firms with Low Leverage

A.2 Boycott Intensity Across Industries

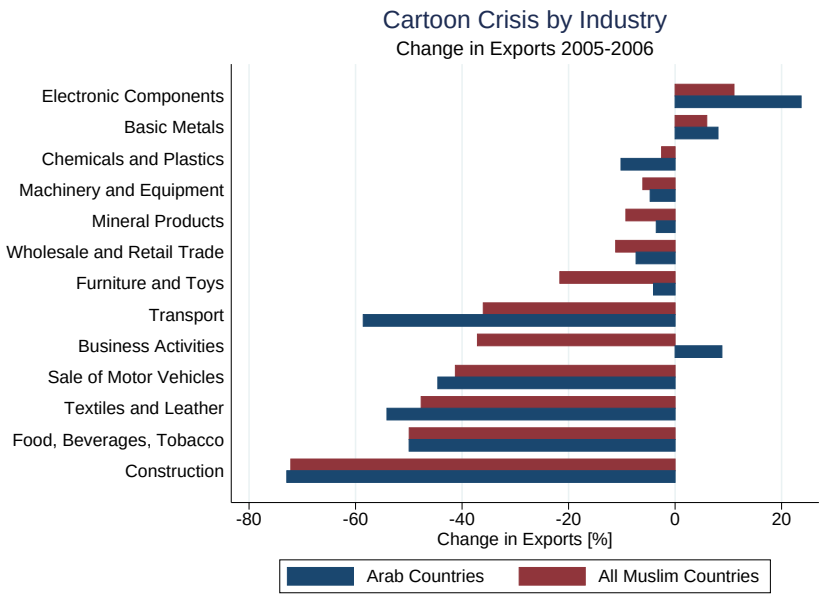

Figure A.3: Boycott across Industries

A.3 Details of Firms' Changes in Exports to Muslim Countries

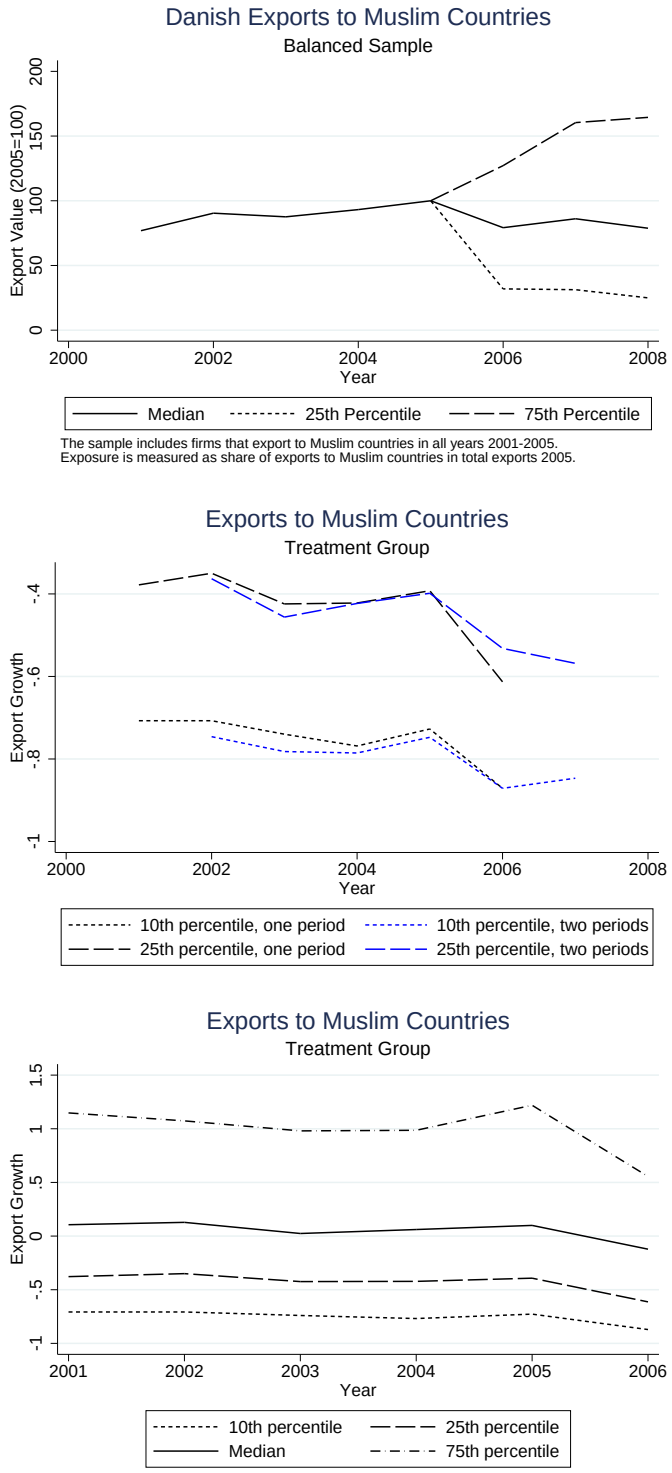

Figure A.4: Exports to Muslim Countries for Danish Firms

A.4 Changes in Workforce Composition

Whom do high leverage firms fire? While the simple story of downsizing would suggest a proportional decrease in employment across all types of workers, there are reasons to expect that this may not be the case. High skilled workers are more expensive and hence hoarding them is costly. They are also more likely to have good outside options and may not be willing to accept temporary reductions in wages and uncertain prospects for the future. On the other hand, it may be more costly to hire high skill workers and hence hoarding them may be more beneficial. Another dimension influencing the decision whom to fire is the relation to the core activity of the firm: while it may be hard to reduce employment of production workers who perform a crucial part of the production process, it may be easier to fire an accountant and outsource the bookkeeping.

The effects of the boycott on the workforce composition are presented in Table A.1. The share of high-skilled workers goes down by 0.8 pp which corresponds to 4% of the base value and is twice the magnitude of average yearly change. The result for all high-skill workers ratio lacks precision but the decrease in the share of college-educated workers is significant and similar in magnitude, which suggests that college-educated workers (as opposed to PhD holders) are driving the effect. Compared to college graduates, firms are less likely to fire workers with vocational training, who comprise another large share of the workforce and may have accumulated more firm-specific human capital during their longer average tenure.

Table A.1: Changes in Workforce Composition

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are changes in share of workers of given category (college or more, college, PhD, vocational education). The bottom row presents mean of levels variables corresponding to the dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1)	(2)	(3)	(4)
	Δ%College+	Δ%College	Δ%PhD	Δ%Vocational
Treatment X	0.0009	0.0011	-0.0002	0.0056
2006	(0.004)	(0.003)	(0.002)	(0.005)
Treatment X	-0.0080*	-0.0068**	-0.0012	-0.0019
2006 X High	(0.005)	(0.003)	(0.002)	(0.007)
Observations	76,469	76,469	76,469	76,469
R-squared	0.171	0.174	0.179	0.156
Firms	15,146	15,146	15,146	15,146
Sample Average 2001-2005	0.00388	0.00273	0.00115	0.00118

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

A.5 Details of Leasing Response

Table A.2: Leasing and Own Investment Response

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are indicators for any leasing (columns 1-3), share of value of new financial lease in total investment (column 4) and share of operating leasing costs in total costs (column 5). Column 6 and 7 show logs of own investment - a synthetic variable calculated as the difference between investment and new financial leases. The bottom row presents mean of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1) Any Lease	(2) Any Lease (Financial)	(3) Any Lease (Operating)	(4) Fin Lease (% of Invst)	Op Lease (% of Sales)	Ln(Own Investment)
Treatment X 2006	-0.0367*	-0.0092	-0.0240	-0.0011	-0.0086	0.3035***
	(0.019)	(0.020)	(0.016)	(0.0079)	(0.009)	(0.073)
Treatment X 2006 X High	0.0589***	0.0761***	0.0487**	0.0169***	0.0167	-0.2661**
	(0.023)	(0.016)	(0.024)	(0.0055)	(0.013)	(0.084)
Observations	76,826	76,826	76,826	69,321	76,826	45,414
R-squared	0.397	0.352	0.397	0.319	0.263	0.793
Firms	15,208	15,208	15,208	14,992	15,208	13,411
Sample Avg 2001-2005	0.762	0.112	0.745	0.0178	0.036	4.178

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

Table A.3: Details: Relationships with Customers

All regressions include firm and industry-time fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are log-changes of account receivable positions, specifically short-term total receivables, short-term finished goods, ongoing work, and other short-term receivables, as well as long-term receivables with deadlines beyond one year. The bottom row presents mean of levels of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1)	(2)	(3)	(4)	(5)
Δln(Receivables)	Short-Term	Goods	Ongoing Work	Other	Long-Term
Treatment X	0.0554	0.0718*	0.2506***	0.1003	0.0525
2006	(0.047)	(0.043)	(0.101)	(0.108)	(0.114)
Treatment X	-0.0894**	-0.1568***	-0.0837	0.0153	-0.1869*
High X 2006	(0.035)	(0.044)	(0.184)	(0.047)	(0.110)
Observations	76,711	75,060	18,467	74,966	47,357
R-squared	0.127	0.138	0.467	0.097	0.217
Firms	15,203	15,136	7,844	15,162	13,327
Sample Avg 01-05	20,121	11,284	2,702	8,567	3,795

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

A.6 Details for Accounts Receivable

A.7 New Export Products - Log Specification

Table A.4: Redirecting Sales: New Export Markets and Products (Log Specification)

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage and exposure to the boycott. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are log-changes of number of export destinations and number of exported products defined as non-zero flows in 6-, 4- and 2-digits product category in HS system. The bottom row presents mean of the level of dependent variables in the pre-boycott period. In all regressions standard errors are clustered at the industry level.

	(1) Δln(Export Destinations)	(2) Δln(Num Exp Products) (6-digit)	(3) Δln(Num Exp Exp Products) (4-digit)	(4) Δln(Num Exp Exp Products) (2-digit)
Treated X 2006	-0.2024***	0.0481	0.0659***	0.0468**
	(0.021)	(0.029)	(0.024)	(0.020)
Treated X High X 2006	-0.0378**	-0.0876***	-0.0919***	-0.0638**
	(0.017)	(0.029)	(0.028)	(0.025)
Observations	53,910	53,910	53,910	53,910
R-squared	0.178	0.185	0.176	0.153
Firms	13,307	13,307	13,307	13,307
Sample Avg 01-05	7.810	11	7.878	4.149

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

A.8 Details on Estimation Results

Table A.5: Coefficients from Figures from the Main Text

All regressions include firm fixed effects, industry-year fixed effects, and binary variables for each year interacted with indicators for high leverage. The main independent variable is triple interaction of being exposed to the boycott (treatment), having high leverage and post-boycott period (year 2006). Dependent variables are log-changes of full-time employment, an indicator for any outsourcing, the share of external labor expenses in total sales, an indicator for any leasing (operational or financial), and the change in the number and an indicator for any new products at 4-digit HS level. In all regressions standard errors are clustered at the industry level.

	(1) Δln(FTE Empl)	(2) Any Out-side Labor	(3) Outside Labor (% of Sales)	(4) Any Leasing	(5) ΔNum New Prod (4-digit)	(6) Any New Prod (4-digit)
Treatment X 2001	0.0106	0.0417	0.1192	0.0091	0.0968	-0.0092
	(0.014)	(0.041)	(0.139)	(0.025)	(0.189)	(0.018)
Treatment X 2002	0.0012	-0.0131	-0.0036	-0.0191	0.0239	-0.0080
	(0.013)	(0.026)	(0.168)	(0.019)	(0.225)	(0.025)
Treatment X 2003	0.0073	-0.0263	0.1351	-0.0217	0.0160	-0.0079
	(0.015)	(0.026)	(0.191)	(0.025)	(0.117)	(0.018)
Treatment X 2004	0.0357***	-0.0196	-0.1452	-0.0094	0.0332	-0.0009
	(0.011)	(0.022)	(0.134)	(0.018)	(0.097)	(0.019)
Treatment X 2006	0.0350***	-0.0257	0.2513**	-0.0294*	0.2673*	0.0332*
	(0.011)	(0.027)	(0.121)	(0.018)	(0.154)	(0.018)
Treatment X 2001	-0.0309*	-0.0351	0.2171	-0.0435*	-0.0028	-0.0427
X High Leverage	(0.018)	(0.027)	(0.161)	(0.025)	(0.230)	(0.026)
Treatment X 2002	-0.0185	-0.0030	0.1290	-0.0115	0.2158	0.0096
X High Leverage	(0.013)	(0.031)	(0.157)	(0.028)	(0.222)	(0.025)
Treatment X 2003	-0.0108	0.0206	0.0292	-0.0138	-0.0260	-0.0029
X High Leverage	(0.018)	(0.024)	(0.203)	(0.030)	(0.111)	(0.028)
Treatment X 2004	-0.0070	0.0219	0.2579*	-0.0178	-0.1507	-0.0146
X High Leverage	(0.012)	(0.021)	(0.139)	(0.023)	(0.102)	(0.025)
Treatment X 2006	-0.0706***	0.0529**	-0.0713	0.0431*	-0.2482	0.0009
X High Leverage	(0.018)	(0.026)	(0.142)	(0.024)	(0.168)	(0.026)
Observations	76,826	76,826	45,821	76,826	15,863	16,479
R-squared	0.330	0.371	0.792	0.397	0.230	0.421
Firms	15,208	15,208	13,437	15,208	3,298	3,416

Standard errors clustered at the industry level

*** p<0.01, ** p<0.05, * p<0.1

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