Chokepoints: Identifying Economic Pressure

Christopher Clayton* Antonio Coppola† Matteo Maggiori‡ Jesse Schreger§

March 2025

Abstract

Economic pressure—the use of economic means by governments to achieve geopolitical ends—has become a prominent feature of global power dynamics. This paper introduces a methodology using large language models (LLMs) to systematically extract signals of geoeconomic pressure from large textual corpora. We quantify not just the direct effects of implemented policies but also the off-path threats that induce compliance without formal action. We systematically identify governments, firms, tools, and activities that are involved in this pressure. We demonstrate that firms respond differently to various forms of economic pressure, as well responding differently to policies that have been implemented versus the threat of future pressure.

Keywords: Geoeconomics, Geopolitics, Artificial Intelligence, LLMs, Economic Coercion, Economic Security, Economic Dependency, Sanctions, Export Controls, Tariffs.

JEL Codes: C4, F3, F4, G3.

*Yale School of Management and NBER; christopher.clayton@yale.edu.

†Stanford University Graduate School of Business and CEPR; acoppola@stanford.edu.

‡Stanford University Graduate School of Business, NBER, and CEPR; maggiori@stanford.edu.

§Columbia Business School, NBER, and CEPR; jesse.schreger@columbia.edu.

We thank Nick Bloom, Matt Gentzkow, and Christoph Trebesch for useful comments. We thank Chiara Bargellesi, Max Feng, Serdil Tinda, Yihcheng Yang, and Zhongyu Yin for outstanding research assistance.

1 Introduction

A defining feature of the modern global system is the rising willingness of the Great Powers to use their economic and financial strength for geopolitical ends. This rise of geoeconomics is a major departure from the last twenty years of policymaking and has the potential to dramatically alter the landscape of the global economic and financial system.

Prominent examples of this new wave of geoeconomic pressure are well-known. For instance, in the waning days of the Biden administration, the United States announced a new "Framework for Artificial Intelligence Diffusion" to restrict the ability of American firms to sell cutting-edge semiconductors to China and its allies, and in addition aimed to prevent countries around the world from doing the same. Only a month later, in the early days of the second Trump administration, the President threatened Colombia with major tariffs and financial sanctions unless the country agreed to accept deportation flights from the United States. When later that month the Trump administration announced widespread tariffs on Chinese goods, the Chinese government announced a round of targeted export controls on rare earth materials to select American firms.

As these events drive major policy shifts, it is all the more important to understand how these types of threats and actions affect the decisions of firms and governments around the world. The fundamental challenge in answering this question is that geoeconomic pressure is applied via threats that often do not actually materialize because the targeted entity complies with the demand. We refer to these as off-path threats because their purpose is to induce the targeted entity to change its behavior on-path. Clayton et al. (2023) build a theoretical framework for how hegemonic countries wield power using economic threats to induce the targeted entities to take costly actions.

The primary contribution of this paper is to overcome this measurement challenge by systematically identifying instances of geoeconomic pressure using textual data and recent advances in large language models (LLMs). We aim to measure who applies economic pressure, to whom, how, and what the target's response is. In particular, we aim to measure how both firms' and governments' behavior is altered by a range of geoeconomic pressure that is implemented, as well as how firm behavior is altered by the *threat* that such policies would be implemented if a targeted entity does not comply. The classic book on economic statecraft by Baldwin (1985) provides an extensive overview of the geoeconomic tools and historical examples. In recent years, there has been substantial interest in methods to identify "chokepoints": parts of the economy (at either the sector or firm level) that are particularly vulnerable to economic pressure. Our approach in this paper is to use large-scale text to systematically identify these entities and activities, and characterize how the pressure is applied and what the reported outcomes were. We focus on three tools of geoeconomic pressure—financial sanctions, export controls, and tariffs—although the methodology could be applied more broadly to other instruments such as inward or outward investment restrictions with additional compute time.

We combine a range of firm-level text, including earnings calls featuring discussions between executives and analysts, and sell-side analyst research reports from a major global investment bank. We analyze these textual corpora by performing large-scale inference using open-source,

open-weights large language models (LLMs) including Meta's Llama 3.3 and Alibaba's Qwen 2.5. Importantly, we perform all inference locally on private GPU computing infrastructure, which ensures complete computational reproducibility of our results. We examine whether executives or analysts report that a firm is directly affected by ongoing forms of geoeconomic pressure or if it is altering its behavior in any way due to concerns or expectations about future pressure. We use the LLMs to establish whether firms are affected by the various forms of economic pressure, who does the pressuring, who is pressured, whether the pressure is currently implemented or contemplated in the future, how the firm responds to the pressure, and a variety of other measures. Unlike traditional dictionary-based NLP methods, transformer-based LLM architectures are substantially more suited to identifying geoeconomic pressure, as their self-attention mechanisms enable a nuanced interpretation of subtle language, implicit threats, and temporal distinctions between present actions and anticipated future actions by understanding the text in its entirety.

With our measures of geoeconomic pressure in hand, we then present a range of new stylized facts on the nature of global economic pressure. First, we document the aggregate time series of firms affected by ongoing tariffs, sanctions, export controls, as well as the future threat of them. We begin by validating our measures by showing that they spike during well-known periods of geoeconomic pressure, with firms affected by tariffs spiking during the US-China Trade War, and firms' affected by financial sanctions and export controls spiking after Russia's invasion of Ukraine in 2022. We demonstrate that the aggregate time series patterns of geoeconomic pressure display remarkably similarity across distinct text samples from corporate earnings calls and sell-side analyst reports. Next, we document the geographic distribution of whose business is affected by geoeconomic pressure. For tariffs, we see that Mexican firms are disproportionately affected, whereas for financial sanctions and export controls, we see Russia being the primary target as expected. Further, we show that industries situated more upstream in global value chains are more likely to be affected by geoeconomic pressure.

We then turn to exploring whether firms that report their business being impacted by geoeconomic pressure are being affected by currently implemented policies or the threat of future policies. Although throughout the sample we generally find that firms reporting enacted current policies have a more prominent role, there are important and illustrative exceptions to this rule. First, we find that firms report their plans being more affected by the threat of future tariffs in the run-up to Donald Trump's election in 2016. The second time we see this pattern is in the run-up to and aftermath of the 2024 Presidential election. During this period, we find that the risk of future tariffs spikes much more than that of future export controls or financial sanctions.

After identifying firms that discuss their business plans being affected by geoeconomic pressure or the threat of them being enacted in the future, we turn to analyzing how the firms responded to such pressure. In particular, we explore how firms report changing their plans. In a second-stage classification, we ask the LLM to take its own first-stage summary of the firm's response to geoeconomic pressure and report whether or not the firm's response includes actions in ten different categories, such as adjusting their supply chains, changing their pricing policy, or even expanding

into other markets or products. This ability to systematize the response of firms to geoeconomic pressure is one more clear advantage of an LLM approach: the ability to distill the range of responses to various forms of pressure would have been infeasible in the absence of these new developments.

Using this classification, we demonstrate that firms respond differently to the various forms of geoeconomic pressure. For instance, we find that in response to financial sanctions or export controls, firms are more likely to exit a market than they are in response to tariffs. By contrast, firms are far more likely to change their pricing strategy in response to tariffs than they are in response to financial sanctions or export controls. Next, we demonstrate that firms in different countries respond heterogeneously to pressure, with firms based in China far more likely than those in the United States or Euro Area to expand their operations when they report being affected by tariffs, export controls or financial sanctions. When turning to the response to enacted versus future pressure, we find that generally firms respond more strongly to current than future pressure, except that the firms that expect future pressure are more likely to report "monitoring" the situation when faced with the threat of future geoeconomic pressure. The raw differences in these responses could potentially be driven by the compositional differences in firms affected by the instruments, or the timing of when pressure is applied. In the final section of the paper, we explore these patterns in a simple regression framework. While some of the differences are attenuated by country, industry, and quarter fixed effects, we continue to estimate these heterogeneous effects of pressure.

Related Literature. Our paper relates methodologically to the literature on natural language processing (NLP) in economics, and in particular to the nascent literature using transformer-based large language model architectures. The economic focus of the paper relates to the literature on geoeconomics, building on international economics and political science.

NLP has become an integral tool of analysis in economics at least since the classic work of Gentzkow and Shapiro (2010) and Baker et al. (2016).[1] In particular, we relate to the pioneering work on firm-level uncertainty using NLP by Hassan et al. (2019).[2] Caldara and Iacoviello (2022) measure discussions of risk of war, military buildups and terrorism using daily newspaper data. Juhász et al. (2022) measure industrial policy by undertaking natural language processing from text from Global Trade Alert, while Goldberg et al. (2024) explore industrial policy in semiconductors. These papers largely use more traditional dictionary-based approaches in NLP. Our methodological approach is instead to leverage recent advances in artificial intelligence and in particular LLMs to extract more information out of the text. This nascent literature includes contribution by Chen et al. (2022), Ottonello et al. (2024), Bybee (2023), Sarkar (2025), and Lagakos et al. (2025).[3]

Second, we connect to the literature in economics and political science on geoeconomics. One strand of the literature studies the effectiveness of and responses to economic sanctions. In an important contribution, Baldwin (1985) studies the tools of economic statecraft and challenges the

[1] See also Gentzkow et al. (2019) for a review of the literature.

[2] For additional NLP at the firm-level see Hassan et al. (2024b), Hassan et al. (2024a), and Flynn and Sastry (2022).

[3] See Dell (2024) for a review of deep learning methods for economists.

idea that these instruments of foreign policy are not effective. The modern empirical literature largely attempts to understand the response to sanctions across various domains. This literature is primarily in political science and is surveyed in Drezner (2024). Drezner (2003) emphasizes that if sanctions are a tool of pressure, then sanctions should frequently be threatened and rarely imposed. Morgan et al. (2009) introduce the the Threat and Imposition of Economic Sanctions (TIES) dataset, separately measuring realized sanctions and their threat from newspapers. Recent papers in economics include Ahn and Ludema (2020), Nigmatulina (2022), and Keerati (2022). More recently, Felbermayr et al. (2020) assembled a bilateral database of sanctions around the world. A recent literature has focused on the idea of "weaponized interdependence" in Farrell and Newman (2019), Drezner et al. (2021), and Farrell and Newman (2023). Fishman (2025) provides an overview of chokepoints that proved relevant to recent geopolitical tensions.

Lastly, we also connect to the fast-growing literature on models of geoeconomics and economic statecraft, which includes Hirschman (1945), Kindleberger (1973), Keohane and Nye (1977), Blackwill and Harris (2016), Dreher et al. (2022), Clayton et al. (2023), Clayton et al. (2024), Thoenig (2023), Kleinman et al. (2024), Alekseev and Lin (2024), Becko and O'Connor (2024), Broner et al. (2024), Liu and Yang (2024), Kooi (2024), Mattoo et al. (2024), and Pflueger and Yared (2024).[4]

2 Identifying Pressure Episodes

2.1 Textual Data

In order to measure geoeconomic pressure at the firm-level, we need sources of firm-level text. Here, we use two primary sources: firm earnings calls and sell-side analyst reports.

Earnings Calls. Our first source of text is the earnings conference calls of publicly traded firms. As discussed in detail in Hassan et al. (2024b), earnings calls are a valuable source of textual information relative to regulatory filings such as 10-K because they allow market participants to ask firm leadership questions of their choosing. While the calls begin with a prepared presentation from management, this means that market participants have the opportunity to ask about the issues that they find most pressing. Of course, this in principle also generates the possibility that questions reflect analyst priorities rather than the primary concerns of the firm. However, given the prepared statement, this should not be a major issue. We compile our dataset of global earnings call transcript from Capital IQ via Wharton Research Data Services (WRDS). The current dataset contains 356,848 transcripts. Of these, 207,491 are from American firms, with the remainder from firms around the world. Table 1 and Appendix Figure A.II show the number of earnings calls by the location of the firms. A few features stand out. First, international coverage is increasing over time, with the earlier part of the sample more heavily tilted towards the United States. Second, there

[4]See also Fernández-Villaverde et al. (2024), Gopinath et al. (2024), Aiyar et al. (2024), Hakobyan et al. (2023), Aiyar et al. (2023), Flynn et al. (2025), Bonadio et al. (2024), Crosignani et al. (2024), Broner et al. (2025), and Clayton et al. (2025). Mohr and Trebesch (2024) surveys the burgeoning literature.

is important selection in which firms enter the dataset. For instance, in the aftermath of Russia's invasion of Ukraine in 2022, we see far fewer Russian firms holding earnings calls that enter this dataset.

Table 1: **Sample sizes of text corpora**

	Earnings Calls		Analyst Reports	
Year	**Non-US Firms**	**US Firms**	**Non-US Firms**	**US Firms**
2008	676	9,177	—	—
2009	971	9,454	—	—
2010	2,650	11,063	—	—
2011	4,926	12,852	5,143	3,356
2012	5,588	12,583	5,759	3,719
2013	5,704	12,202	4,861	3,241
2014	5,795	12,217	5,001	3,231
2015	6,052	11,933	4,799	3,723
2016	6,304	11,580	4,900	4,094
2017	8,203	12,113	5,165	4,372
2018	10,712	12,272	4,017	3,932
2019	11,765	12,255	4,832	5,077
2020	14,321	12,387	4,932	5,468
2021	14,901	12,947	5,143	5,690
2022	16,005	13,481	4,920	5,345
2023	16,701	13,208	5,349	5,557
2024	16,061	12,194	4,506	5,110

Notes: We show the number of earnings calls and analyst reports in our textual corpus, broken down by year and firm geography. For analyst reports, we only show the number of documents that are single-firm analyses (as opposed to industry, macro, or other types of reports).

Sell-Side Research Reports. Our second source of firm-level textual data comes from the Research Reports of JP Morgan. Our coverage runs from January 2011 through November 2024 and includes 348,649 individual research reports. There are several types of analyst reports included, such as industry-level reports (e.g., "Pharmaceutical Sector Weekly"), country-level reports, and global macro reports (e.g., "Global Data Watch"). The focus of the present paper is on those 178,500 reports that are about a single company, as these can be more easily matched to underlying fundamentals and analyzed in parallel to the earnings calls. The most common structure of the report is to begin with a one-page summary of the recent quarterly earnings before turning to a more in-depth analysis of the firms' prospects and the broader environment. The analysts then turn to the "Summary Investment Thesis and Valuation", in which they explain their decision to recommend being overweight, underweight or neutral on the firm's equity. Analysts generally discuss a price target and justify the accompanying multiple of earnings, and the "Investment Thesis" digs in more depth on justifying the analysts' views. The final section of the report contains a myriad of standardized disclosures from JP Morgan, such as whether they are a market-maker and liquidity provider for the equity, their client relationships and other features. We truncate our analysis at

the point where we observe the text "Analyst Certification", which corresponds to the start of the disclosures.[5]

2.2 Methodology

Our methodology performs large-scale inference on the two textual corpora (earnings calls and analyst reports) using frontier pre-trained, open-source large language models (LLMs). All the baseline results shown in the paper use the 70 billion parameter version of the Llama 3.3-Instruct model released by Meta, but we have also repeated all analyses using Alibaba's 72 billion parameter Qwen 2.5-Instruct model and confirmed the robustness of our results to this different choice of model. We structure the inference task using a two-part prompt design. First, we construct detailed system prompts with explicit instructions on the analysis to be performed. Second, the full text of each document is passed as the user prompt, so that every document is analyzed under the same standardized guidelines.

To ensure complete computation reproducibility of our analysis, we execute all inference locally using open-weight models (rather than through external APIs), and all data is stored on local hardware. The primary local cluster used for inference is based within the Stanford Sherlock high-performance computing system, and it contains eight NVIDIA A100-80GB GPUs and four NVIDIA H100-80GB GPUs, which are supplemented with additional on-demand GPU resources when scaling flexibility is required. To minimize stochastic variation in the LLM outputs across repeated runs, we set the sampling temperature to zero.

Finally, we implement frontier model quantization techniques. Specifically, we deploy 4-bit quantized versions of our models using the AWQ framework. This quantization dramatically reduces the memory footprint, allowing the entire model to fit on a single GPU without sacrificing performance, hence allowing for a higher degree of parallelization during the inference procedure.

2.3 Prompt Structure

The computational challenge that we face is to analyze several hundred thousand earnings calls and analyst reports. The advantage of our approach is that it can extract detailed information about a firm's response, such as changes to its investment patterns. However, that comes with a substantial computational requirement. Therefore, we take a multi-step approach in measuring whether firms are affected by geoeconomic pressure, which forms they are affected by, the nature of the pressure, and, finally, how they respond to this pressure. Specifically, we split the inference procedure into two separate stages to minimize computational burden. A first-stage prompt is applied to the entire text corpora, and it identifies the subsample of firms that are affected by geoeconomic pressure at all. A longer second-stage prompt, which requires significantly longer run-time, is only evaluated on

[5]One concern at present is that it is not clear whether our dataset covers the universe of JP Morgan reports, and if the coverage is incomplete, what might determine selection. For instance, as we discuss later, the country coverage of the reports appears to underweight some key markets such as China.

the subsample identified by the first-stage prompt—so as to avoid running the more computationally heavy part of the inference procedure on hundreds of thousands of firm-level documents.

In the first step, we aim to classify whether a firm has been affected by tariffs or sanctions (including export controls, financial sanctions, or other forms of sanctions). The full text of our first-stage prompt for earnings calls is reproduced below. The first-stage prompt for analyst reports is analogous—with minimal changes to adapt the language to the different document type—and all prompts used in the paper are shown in their entirety in Appendix Section A. As can be seen below, we prompt the LLM to not simply look for certain keywords or define a dictionary. We allow for the possibility that the words "tariffs," "sanctions," and "export controls" do not even appear in the firm-text to decide whether firms are affected by these forces:

```
You are assisting me in analyzing companies' earnings calls. The transcript of the
    earnings call will be supplied as the user prompt. Your goal is to determine whether
     the company discusses impacts on its business due to any of the following economic
    policies:

1. Tariffs: Taxes imposed by a government on imported goods or services.

2. Financial or Trade Sanctions: Penalties or restrictive measures imposed by one or
    more countries against a targeted country, organization, or individual for political
     or security reasons. These can include:

    - Trade embargoes: Bans on trade with specific countries or entities.
    - Asset freezes: Blocking access to funds and financial assets.
    - Restrictions on financial transactions: Limiting or prohibiting financial dealings
        with certain parties.
    - Export controls: Restrictions on the sale of certain goods, technology, or
       services.
    - Travel bans: Prohibiting individuals from entering or leaving certain countries.

## Important Notes: ##

- Discussions may be explicit, such as directly mentioning "tariffs", "sanctions", or
    specific policy names.
- Discussions may be indirect, referring to impacts like inability to trade with certain
     countries, compliance with new export regulations, or financial losses due to
    exiting a sanctioned market.
- Do not consider general market volatility, economic downturns, or supply chain issues
    unrelated to the above policies as indications of tariffs or sanctions.

## Examples of Relevant Discussions: ##

- Mentioning increased costs due to new tariffs on imported materials.
- Discussing loss of a market due to trade sanctions against a country (e.g., exits from
     Russia due to sanctions following the Russia-Ukraine conflict).
- Referring to compliance challenges with new export controls.

## Examples of Non-Relevant Discussions: ##

- Talking about decreased sales due to a general economic recession.
- Discussing delays caused by a natural disaster.
- Discussing purely domestic regulations (e.g., changes in US domestic tax laws or
```

```
    Federal Reserve policies).
- Mentioning fluctuations in currency exchange rates.

## Response Instructions: ##

- First Part: Provide a short analysis (50 words or less) on whether the firm discusses
    one or more of the policies above impacting its business. Enclose this analysis
    between the tags <ANALYSIS> and </ANALYSIS>.

- Second Part: Provide a boolean flag, 1 if the company discusses one or more of the
    policies impacting its business, 0 if it does not. Enclose this flag between <BOOL>
    and </BOOL>.
- Do not include any additional text outside of these tags.

## Ensure you: ##

- Use the tags exactly as written.
- Choose a boolean flag (0 or 1) that is consistent with your analysis.
- Do not interpret general economic issues as tariffs or sanctions unless directly
    linked.
```

The output of this first-stage prompt indicates which of the earnings calls or analyst reports discuss the firm being affected by any of tariffs, exports controls, or financial or trade sanctions. Our prompt requests a short analysis (of 50 words or less) of whether the firm discusses any of these policies, and also a boolean flag indicating whether the firm discusses these issues. When we run this first-step procedure with Llama 3.3, we identify 30,181 documents where these issues are discussed.

In the second step, we run more detailed second-stage prompt on those 30,181 documents that we flagged as discussing these issues in the first stage. We use three versions of this longer second-stage prompt, which are all run independently: one for export controls, one for tariffs, and one for financial sanctions. Each version of the second-stage prompt is structured in three parts: (1) analysis, (2) producing a structured output in JSON format, and finally (3) an evaluation of the LLM's own response. We show here, for illustration, excerpts from the second-stage prompt for export controls used for the earnings calls sample:[6]

```
## Response Instructions: Part 1 (Analysis) ##

The first part of your response should be an analysis of whether the firm is reporting
    that its  decisions are being affected by changes in export control policies. Export
     control policies are  defined as restrictions on which countries or foreign firms a
     company is allowed to sell their  goods or services to. These must be imposed by
    the exporting countries, in contrast to import tariffs, which are instead taxes
    imposed by the importing country.

This first part of your response should be enclosed between the tags <ANALYSIS> and </
    ANALYSIS>. Keep your analysis to 300 words or less. Make sure to cover all of the
    following points in your summary analysis:
```

[6]The full second-stage prompts—including the versions for financial sanctions and tariffs, and those adapted to the sample of analyst reports—are shown in Appendix Section A.

```
- Whether export controls are discussed explicitly or implicitly (e.g., by not using the
     word "export controls" but referencing impacts on the firm's business that clearly
    relate to export controls).
- Whether the firm discusses current export controls (i.e., export controls that have
    already been imposed) or the potential of future export controls (i.e., export
    controls that have not yet been imposed).
- Whether the firm discusses export controls on the goods or services it sells, or on
    those that it buys.
- The nature and details of the export controls policies that are discussed.
- The countries that are imposing the export controls and the entities (e.g., countries
    or firms) that are subject to the export controls.
- Any impacts on the firms' current profits.
- Any concerns that export controls will negatively impact the firm's future profits.
- Any impacts on the firms' behavior (e.g., in terms of investment or other future plans
    ).
- Any details on the geographies affected by the changes in the firms' behavior (e.g.,
    if the firm reports lowering investment, give details on which countries the firm
    reduces its investment in).
- Any other salient impact (negative or positive) on the firms' business.

## Response Instructions: Part 2 (Structured JSON Output) ##

The second part of your response should be a structured output in JSON format that
    recaps your analysis in a structured way.  This part of your response should be
    enclosed between the tags <JSON> and </JSON>. The JSON output must have the
    following fields exactly. Please make sure to enforce the JSON schema specified
    below strictly: i.e., the column names should correspond exactly to those listed
    below:

                                        [...]

## Response Instructions: Part 3 (Evaluation) ##

The third part of your response should be an evaluation of how well the JSON structured
    summary agrees with your initial analysis. Keep the evaluation to 100 words or less.
     This part of your response should be enclosed between the tags <EVAL> and </EVAL>
    and be 100 words or less.

## Important Notes ##

- Do not consider import tariffs or generic financial sanctions that do not relate to
    trade as indications of export controls. Export control measures must be imposed by
    the country of the firm which is selling the goods or services.
```

The brief analytical summary that we ask the LLM to write provides the basis for the structured output for our analysis. In particular, we request structured information containing the fields that are listed in Table 2, such as a booleans for whether the firms are discussing export controls that have already been imposed or potential future export controls, as well as listing the countries imposing the export controls. Finally, we request a response evaluating how well the JSON structured output agrees with the initial analysis.

Table 2: **Structured output: field definitions**

A. Export Controls	
Field	**Description**
Export Controls: Any	Boolean: Whether export controls are discussed.
Current Controls on Sales	Boolean: Discussion of current export controls on goods/services sold.
Future Controls on Sales	Boolean: Discussion of potential future export controls on goods/services sold.
Current Controls on Purchases	Boolean: Discussion of current export controls on goods/services purchased.
Future Controls on Purchases	Boolean: Discussion of potential future export controls on goods/services purchased.
Export Controls Details	Specifics of the export control policies discussed.
Countries Imposing Controls	Countries that impose the export controls.
Entities Receiving Controls	Countries or firms targeted by the export controls.
Reduced Profits	Boolean: Whether current profits are reduced due to export controls.
Future Profit Concerns	Boolean: Whether future profits may be negatively affected by export controls.
Plans Affected by Current Controls	Boolean: Whether current business plans/behavior have changed.
Plans Affected by Future Controls	Boolean: Whether anticipated controls might change future plans/behavior.
Current Control Plan Details	Details of changes (e.g., investment, hiring) due to current controls.
Future Control Plan Details	Details of anticipated changes due to potential future controls.
Negative Impact from Current Controls	Boolean: Whether a negative impact is reported from current controls.
Negative Impact from Future Controls	Boolean: Whether a negative impact is expected from future controls.
Positive Impact from Current Controls	Boolean: Whether a positive impact is reported from current controls.
Positive Impact from Future Controls	Boolean: Whether a positive impact is expected from future controls.
Affected Geographies	Regions impacted by the export controls.
Affected Goods or Services	Goods or services targeted by the export controls.
B. Financial Sanctions	
Field	**Description**
Financial Sanctions: Any	Boolean: Whether financial sanctions are discussed.
Current Sanctions on Firm	Boolean: Discussion of current financial sanctions affecting the firm.
Future Sanctions on Firm	Boolean: Discussion of potential future financial sanctions affecting the firm.
Current Sanctions on Suppliers	Boolean: Discussion of current sanctions affecting the firm's suppliers.
Future Sanctions on Suppliers	Boolean: Discussion of potential future sanctions affecting the firm's suppliers.
Current Sanctions on Customers	Boolean: Discussion of current sanctions affecting the firm's customers.
Future Sanctions on Customers	Boolean: Discussion of potential future sanctions affecting the firm's customers.
Sanctions Details	Specifics of the financial sanctions policies discussed.
Countries Imposing Sanctions	Countries that impose the financial sanctions.
Countries Receiving Sanctions	Countries targeted by the financial sanctions.
Reduced Profits	Boolean: Whether current profits are reduced due to sanctions.
Future Profit Concerns	Boolean: Whether future profits may be negatively affected by sanctions.
Plans Affected by Current Sanctions	Boolean: Whether current business plans/behavior have changed in response to sanctions.
Plans Affected by Future Sanctions	Boolean: Whether anticipated sanctions might change future plans/behavior.
Current Sanctions Plan Details	Details of changes (e.g., investment, hiring) due to current sanctions.
Future Sanctions Plan Details	Details of anticipated changes due to potential future sanctions.
Negative Impact from Current Sanctions	Boolean: Whether a negative impact is reported from current sanctions.
Negative Impact from Future Sanctions	Boolean: Whether a negative impact is expected from future sanctions.
Positive Impact from Current Sanctions	Boolean: Whether a positive impact is reported from current sanctions.
Positive Impact from Future Sanctions	Boolean: Whether a positive impact is expected from future sanctions.
Affected Geographies	Regions impacted by the financial sanctions.
C. Tariffs	
Field	**Description**
Tariffs: Any	Boolean: Whether tariffs are discussed.
Current Tariffs on Sales	Boolean: Discussion of current tariffs on goods/services sold.
Future Tariffs on Sales	Boolean: Discussion of potential future tariffs on goods/services sold.
Current Tariffs on Purchases	Boolean: Discussion of current tariffs on goods/services purchased.
Future Tariffs on Purchases	Boolean: Discussion of potential future tariffs on goods/services purchased.
Tariffs Details	Specifics of the tariffs policies discussed.
Countries Imposing Tariffs	Countries that levy the tariffs.
Countries Receiving Tariffs	Countries or entities targeted by the tariffs.
Reduced Profits	Boolean: Whether current profits are reduced due to tariffs.
Future Profit Concerns	Boolean: Whether future profits may be negatively affected by tariffs.
Plans Affected by Current Tariffs	Boolean: Whether current business plans/behavior have changed in response to tariffs.
Plans Affected by Future Tariffs	Boolean: Whether anticipated tariffs might change future plans/behavior.
Current Tariffs Plan Details	Details of changes (e.g., investment, hiring) due to current tariffs.
Future Tariffs Plan Details	Details of anticipated changes due to potential future tariffs.
Negative Impact from Current Tariffs	Boolean: Whether a negative impact is reported from current tariffs.
Negative Impact from Future Tariffs	Boolean: Whether a negative impact is expected from future tariffs.
Positive Impact from Current Tariffs	Boolean: Whether a positive impact is reported from current tariffs.
Positive Impact from Future Tariffs	Boolean: Whether a positive impact is expected from future tariffs.
Affected Geographies	Regions impacted by the tariffs.
Affected Goods/Services	Goods or services targeted by the tariffs.

3 Geoeconomic Pressure: Validation and Stylized Facts

3.1 Qualitative Validation: The Case of NVIDIA

Before turning to a quantitative analysis, we begin by exploring how our procedure performs on well-known instances of geoeconomic pressure. We begin with the particularly well-known case of the export controls on semi-conductors that affected NVIDIA in recent years. In its earnings call on November 16, 2022, NVIDIA focuses extensively on the new export controls announced by the United States on cutting edge semiconductor sales to China. NVIDIA's Chief Financial Officer Colette Kress begins by summarizing the situation:

> During the quarter, the U.S. government announced new restrictions impacting exports of our A100 and H-100 based products to China, and any product destined for certain systems or entities in China. These restrictions impacted third quarter revenue, largely offset by sales of alternative products into China. That said, demand in China more broadly remains soft, and we expect that to continue in the current quarter. We started shipping our flagship H-100 data center GPU based on the new Hopper Architecture in Q3. H-100-based systems are available starting this month from leading server makers including Dell, Hewlett Packard Enterprise, Lenovo and Supermicro.

To begin, our short prompt summarizes the geoeconomic pressure on NVIDIA succinctly as follows: "The company discusses impacts of new export controls and US government restrictions on exports to China." As such, the LLM successfully generates a positive identifier for the firm being affected by current export controls. Turning to the details on the export controls, the LLM-generated summary reads: "U.S. government restrictions on exports of A100 and H-100 based products to China." This, in turn, leads to a successful classification of the country imposing the export controls as "USA" and the country receiving export controls as "China." Based on the discussion in the call, the LLM classifies that NVIDIA's profits were reduced by the current controls, its future profits were reduced by current controls, and its plans were affected by current export controls rather than the risk of future export controls.

Turning to how NVIDIA responded to the export controls, the detailed response from the LLM for how NVIDIA changed its plans reads: "Finding alternative products to sell in China." When we subsequently ask the LLM to classify this change of plans into one of ten categories (as detailed in Section 5), it reports that NVIDIA responded via "Product Adjustment"—successfully capturing the fact that the firm was changing its product mix. The LLM's concluding analysis on how NVIDIA was affected by export controls states:

> The company discusses export controls explicitly, mentioning that the U.S. government announced new restrictions impacting exports of their A100 and H-100 based products to China. These restrictions affected third-quarter revenue but were largely offset by sales of alternative products into China. The firm also mentions that demand in China remains soft and is expected to continue in the current quarter.

On the one hand, this example is appealing as a validation exercise, as it was widely reported in the news and so the details are well-known. On the other hand, focusing on a case that was captured by standard reporting may make it appear as if the LLM-based approach is not generating new information. We therefore turn to a larger-scale validation of our measurement by looking at aggregate patterns in the time series.

3.2 Aggregate Trends in Geoeconomic Pressure

We begin by exploring the aggregate time series and confirming that they conform with well-known events. In particular, we begin by exploring quantitative patterns in the boolean fields indicating whether export controls, financial sanctions, or tariffs are discussed at all in the documents. These boolean fields are generated by our second-stage prompt. For illustration, for export controls the second-stage prompt instructs the LLM to generate this variable follows (with analogous instructions given in the second-stage prompts for financial sanctions and tariffs):

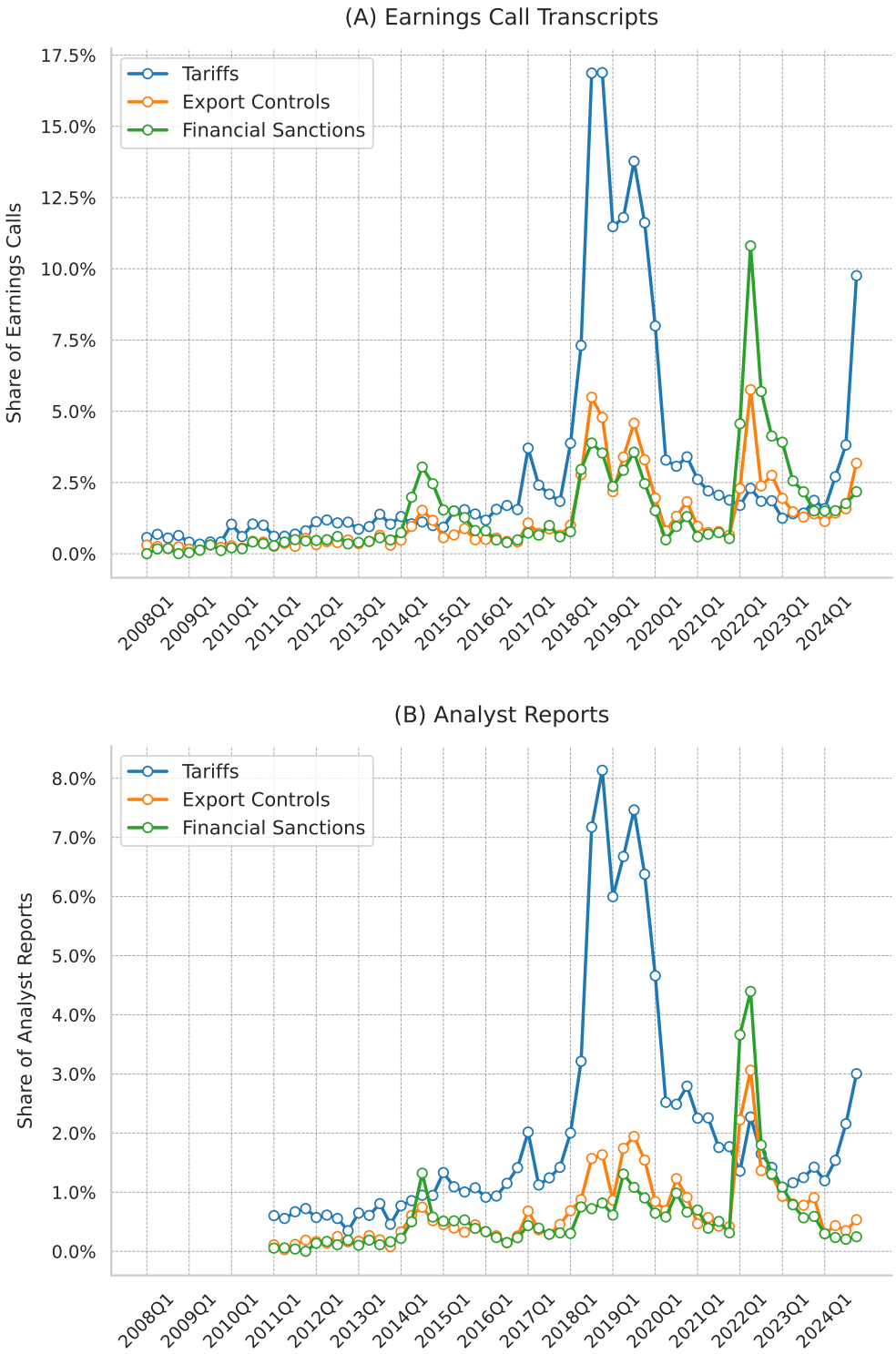
```
A boolean flag called "export_controls_any", which should be 1 if the firm discusses
    export controls at any point in the call, and 0 otherwise. Even if the term "export
    controls" is not explicitly used throughout the call, you should return a 1 if the
    firm discusses impacts on its business that clearly relate to export controls.
```

While we focus our analysis here on export controls, financial sanctions, and tariffs, one could conceivably cover the range of geoeconomic pressure tools discussed in Baldwin (1985) or applied in practice.

In Figure 1a, we report the share of firms discussing being affected by these three tools of geoeconomic pressure in their earnings calls, while in Figure 1b we report the share of JP Morgan analyst reports discussing how the firms that are the focus of the report are affected by the three tools. There are a number of key findings that emerge from this analysis. First, we observe spikes for each of the three tools around well-known episodes when geoeconomic pressure was applied or anticipated. For instance, the largest spike is in tariffs during the US-China Trade War of 2018-2019. The second largest spike comes in 2022 with Russia's invasion of Ukraine and the commensurate rise in financial sanctions and export controls. We also see smaller spikes in sanctions prevalence following Russia's invasion of Crimea in 2014 and a spike in tariffs discussion around Trump's first election in late 2016. Finally, we see a major rise in tariffs in late 2024 in anticipation of the second Trump administration—a point that we turn to in detail in the next section.

Second, we see remarkable co-movement between the time series measured across these two very different domains. We see a consistent ranking of the relative importance of the three tools across the two datasets. This, in and of itself, is striking and displays the power of conducting this type of analysis using LLMs. Despite completely different formats, with the earnings calls transcripts capturing a recorded executive presentation and Q&A session, and the analysts reports being a combination of textual company analysis and data on company financials, the same prompt across these two very different contexts returns the same aggregate pattern with little to no differences.

Figure 1: **Geoeconomic pressure: aggregate trends**



3.3 Which Countries and Sectors Are Most Affected by Pressure?

Having demonstrated that aggregate measured instances of geoeconomic pressure align well with well-known episodes, we next turn to exploring how firms around world differ in the extent to which they report being affected by the various tools. In Figure 2, we map every earnings call in the sample to the headquarters location of a firm (based on the Capital IQ classification). We then ask what share of firms based in each country ever report being affected by each form of geoeconomic pressure. Because this is looking across many earnings calls, it is mechanical that the share of firms reporting being affected is higher here than in our aggregate time series in which we restricted attention quarter-by-quarter.

A number of patterns are clearly visible in Figure 2. In panel A, which focuses on tariffs, we find that Mexico is the country whose firms are most likely to report being affected (with 42% ever affected). Inspecting the data, we find that the pattern for Mexico is driven largely by the Trump administration tariffs. Turning to financial sanctions, we find that Russia is the country whose firms disproportionately report being affected. This is not surprising because Russia was the target of extensive Western financial sanctions following the 2014 and 2022 invasions of Ukraine. One notable feature of the data is that in the wake of the 2022 invasion, very few Russian firms continue to hold earnings calls that are included in the dataset—presumably because they stop interacting with foreign investors as a consequence of the sanctions.

More interestingly, we find that firms in Finland, Turkey, and Austria, countries with strong economic ties to Russia prior to the invasion of Ukraine, are the other most prominent reporters. When we focus on the 151 earnings calls of Finnish firms that report being affected by sanctions, 82% of these report they are affected by the sanctions imposed on Russia. The share of Austrian firms affected by sanctions that report Russia as one of the targeted countries is nearly identical at 81%. Turkey, on the other hand, displays a different pattern. Turkish firms affected by financial sanctions report Russia as one of the targeted countries 53% of the time, as Turkish firms are relatively more likely to also discuss being affected by sanctions targeting Iran. When we turn to export controls in panel C, we find a relatively similar pattern as for financial sanctions, with Russian firms disproportionately likely to be affected.

In Figure 3, we undertake a complementary analysis examining which industries report being disproportionately affected by geoeconomic pressure. Industries most prominently affected include primary metals, water transportation (i.e., sea shipping), rubber and plastics, industrial machinery, and computer equipment, among others. The significant exposure of these sectors to economic pressure can be partly attributed to their position within global value chains, where disruptions from tariffs, sanctions, or export controls impact upstream industries more intensely.

To investigate this upstreamness hypothesis more systematically, Figure 4 plots the relationship between our measure of geoeconomic pressure exposure and the measure of industry upstreamness from Antràs et al. (2012). Upstream industries are those whose outputs are primarily inputs into other industries' production processes, making them inherently more likely to be a chokepoint for international trade and production flows. Consistent with this logic, we find a significantly positive

Figure 2: **Geoeconomic pressure: geographic distribution**

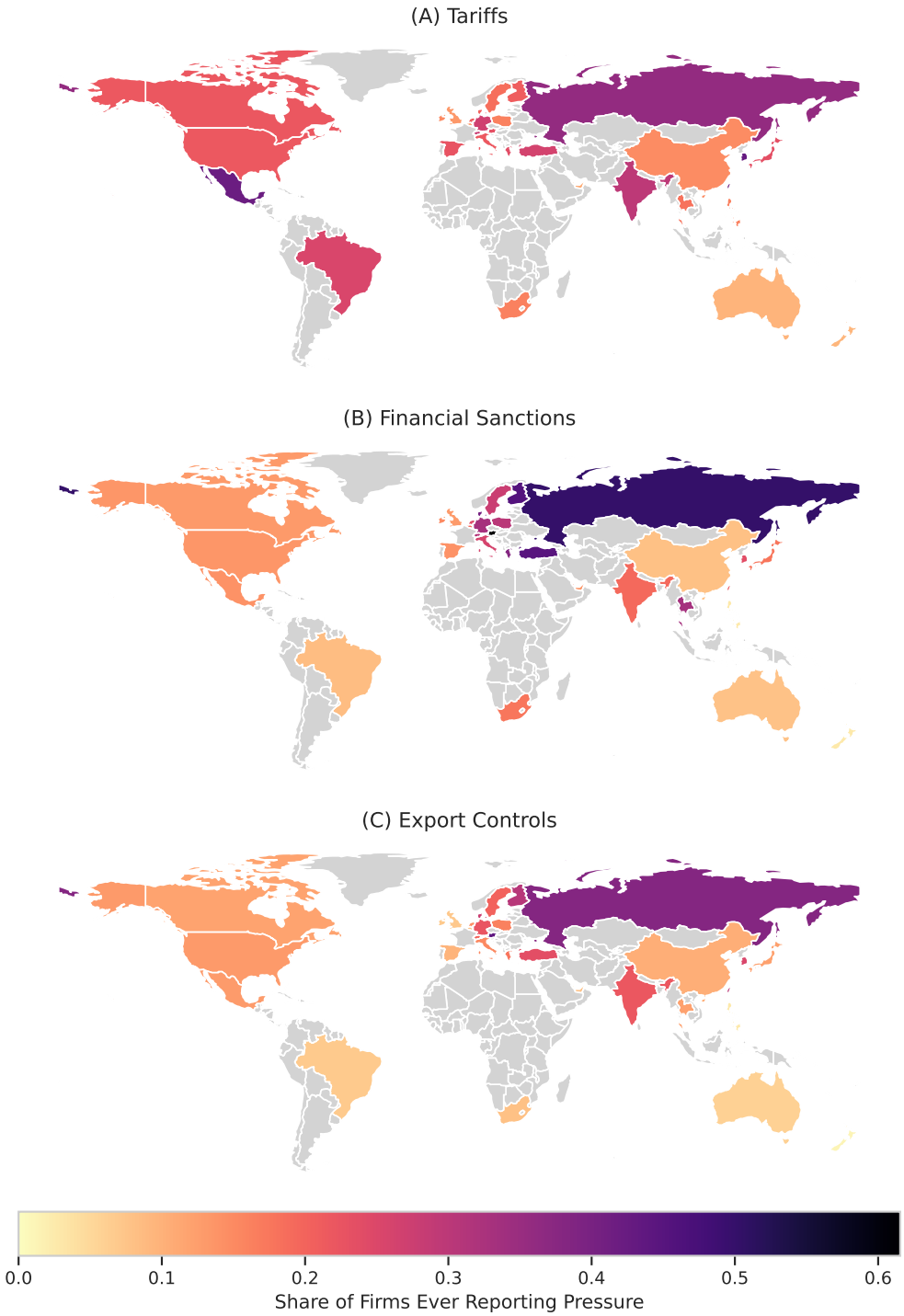


Figure 3: **Geoeconomic pressure, by industry**

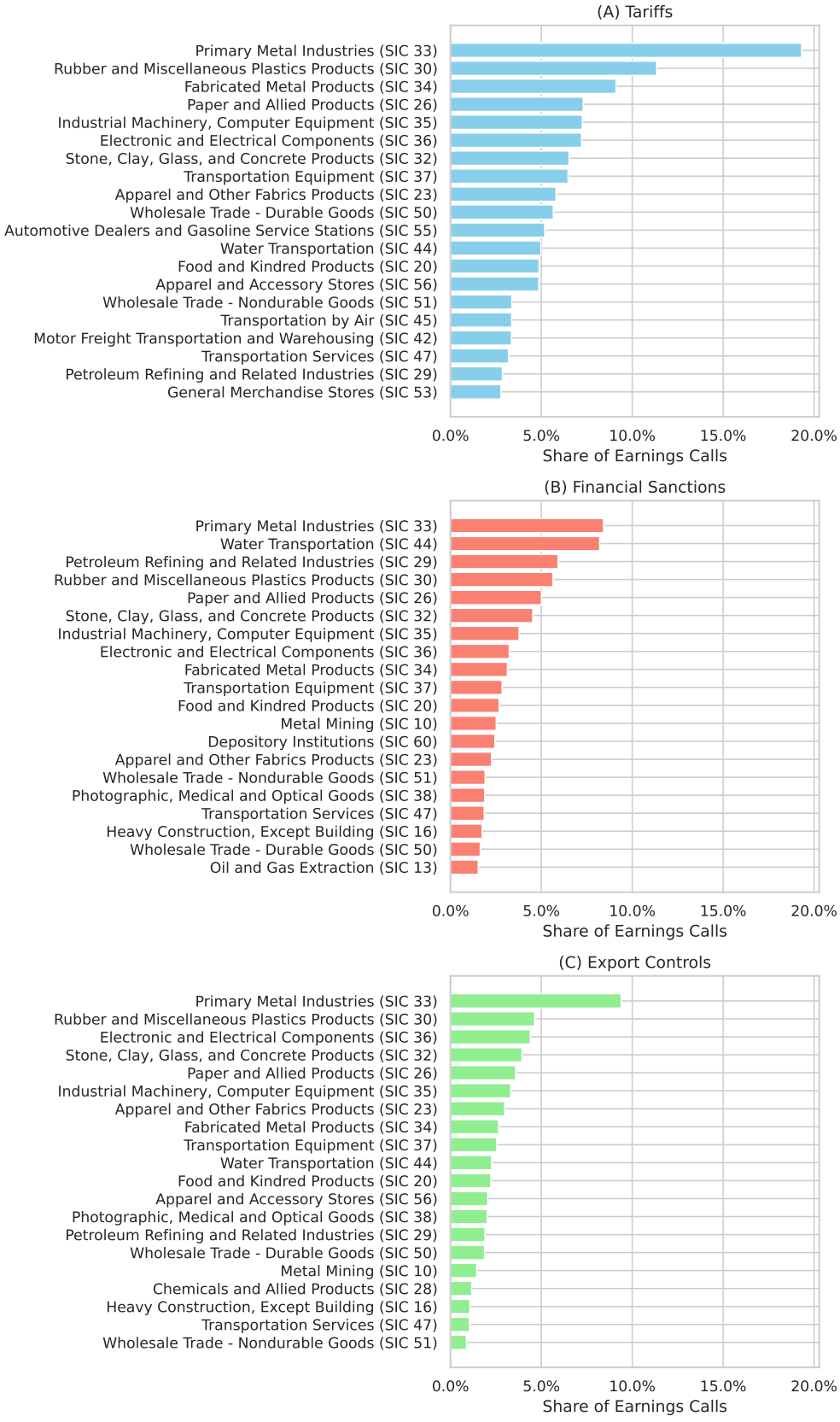
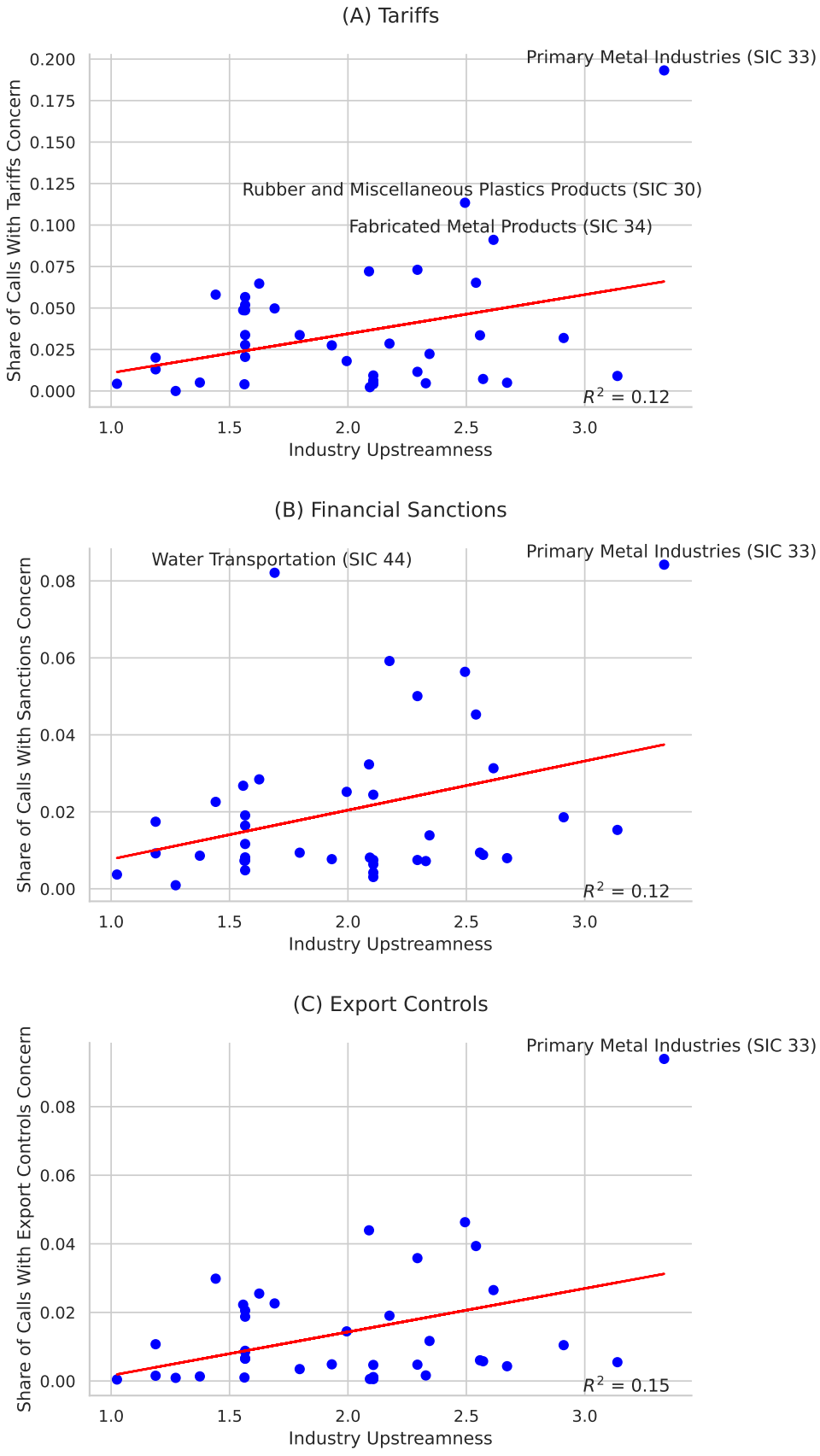


Figure 4: **Geoeconomic pressure concerns and industry upstreamness**



correlation between upstreamness and the intensity of estimated exposure to geoeconomic pressure: industries positioned higher up the value chain, such as primary metals and industrial machinery, exhibit greater exposure.

4 Realized vs. Threatened Pressure

In this section, we analyze whether firms' business plans are affected by actual implemented geoeconomic pressure or if they are influenced by the threat or possibility of future policies. This is an application where the power of large language models (LLMs) for economic research can be seen clearly. Although dictionary methods can be used to distinguish the temporal dimension of text, they rely on predefined semantic definitions.[7] By contrast, our approach allows us to directly query this distinction. In particular, we focus on the following two variables, which are defined in the second-stage prompts as follows (again taking the example of export controls, with the ones for financial sanctions and tariffs defined analogously):

```
- A boolean flag called "plans_affected_by_current_export_controls", which should be set
    to 1 if the firm reports changing any of its behavior or plans in response to
  current export controls.

- A boolean flag called "plans_affected_by_future_export_controls", which should be set
  to 1 if the firm reports changing any of its behavior or plans in response to
  potential future export controls.
```

In Figure 5, we explore the prevalence of firms discussing how current or future tariffs affect their plans. In the case of tariffs, we document a strong co-movement between the two, with both spiking during the 2018-2019 US-China Trade War. Importantly, however, we find significant divergences between the two. In particular, we see a spike in concern over future tariffs in late 2016 with the election of Donald Trump. More starkly, we see a similar pattern in late 2024 with his second election, as concerns over future tariffs swamp concerns over actually implemented tariffs. We see a similar pattern for export controls in the most recent quarter, and a more muted spike for financial sanctions. When we turn to the analyst reports in Figure 6, we find a similarly striking spike in firms' discussions of future tariff concerns.

A manual validation confirms the power of this approach. We begin by looking at a reported case of current tariffs affecting a firm's business. We identify Caterpillar—a prominent U.S. construction, mining, and engineering equipment manufacturer—as being affected by current tariffs in April 2019. Looking to the LLM-generated summary of how Caterpillar is affected by current tariffs, it reads: "Direct tariff expense of $70 million in Q1, imposed by US government on steel purchases." Turning to a manual reading of the earnings call, we see that the first discussion of tariffs is executives discussing the impact of the current tariffs on the firm's costs:

> Manufacturing costs increased by $375 million due to higher material costs, freight and

[7] See Teoh (2024) for a dictionary based approach to measure current versus future constraints in a different context.

> variable labor. These higher costs, while unfavorable, were improved from the fourth quarter levels. Material costs included a direct tariff expense in the first quarter of about $70 million, in line with what we expected. Remember tariffs only started in July of last year, so these will have an impact in Q1 and Q2 until we are past their original implementation date.

This discussion of how tariffs are raising their current costs demonstrates that this is a successful classification and assessment. The more challenging one would then be separating such cases from when firms are focused on the future. To examine how this works, we turn to the earnings call of Dollar Tree, the American discount retailer, from December 4, 2024. Our classification reports that the firm is affected by future but not current tariffs. The detailed analysis of tariffs from the LLM is reported to be: "Potential tariffs on goods purchased, plans to mitigate impact by negotiating lower costs with suppliers, changing product specs or pack sizes, or dropping non-economical items." When we then look at the underlying earnings call, we indeed verify this, as the first discussion of tariffs in the call is this section:

> Shifting gears, we have received questions about the potential impact of tariffs in the new administration. While the situation remains fluid and the exact nature, scope and eventual timing of any new tariffs is not yet clear, we are prepared to act on multiple fronts. Rick McNeely and his team of merchants have many years of experience successfully navigating a variety of tariff landscapes. Back in 2018 and 2019, when we last dealt with this issue, we were able to mitigate the majority of the potential impact by negotiating lower costs with our suppliers, changing product specs or pack sizes or dropping noneconomical items. Today, all 3 of those options are still at our disposal.

In the next section, we explore how firms differentially respond to enacted current pressure versus the threat of future actions.

5 Firm-Level Responses to Geoeconomic Pressure

In this section, we analyze how firms respond to geoeconomic pressure by examining qualitative details extracted from the earnings calls and analyst reports. We focus on the various strategies firms adopt in reaction to current or potential future sanctions, tariffs, and export controls. To systematically categorize these responses, we run an auxiliary prompt on the response detail fields extracted in the prior steps. The goal is to classify the nature of a firm's response into distinct categories such as immediate action versus monitoring, and to identify specific types of strategic adjustments such as price changes, supply chain modifications, or financial hedges.

To categorize the unstructured textual data on firm responses, we designed a prompt that instructs the model to assign one or more response categories from a predefined list. The prompt, provided below, enumerates ten possible response categories along with brief examples to guide the classification. This auxiliary prompt is as follows:

Figure 5: **Present vs. future geoeconomic pressure: earnings calls sample**

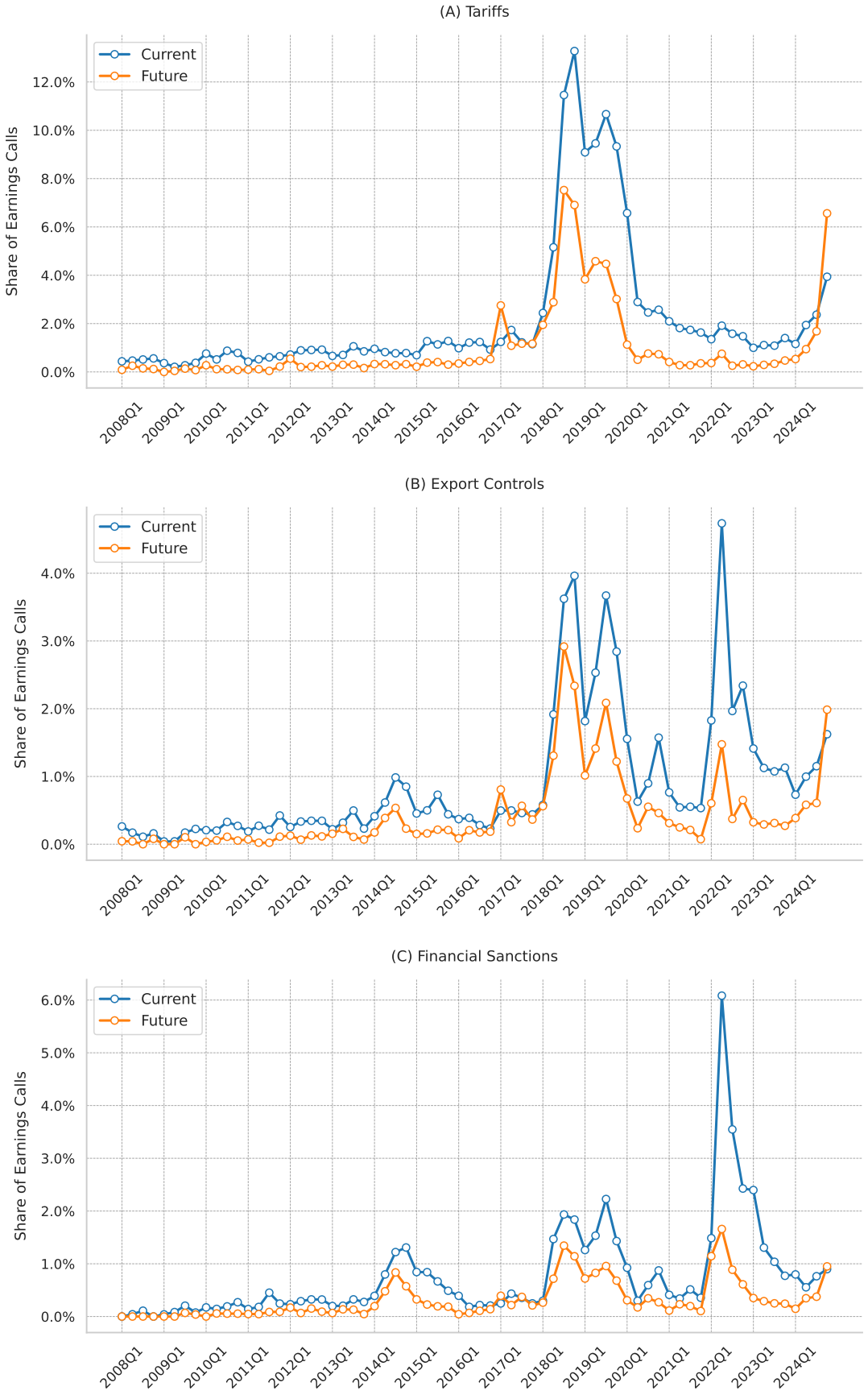
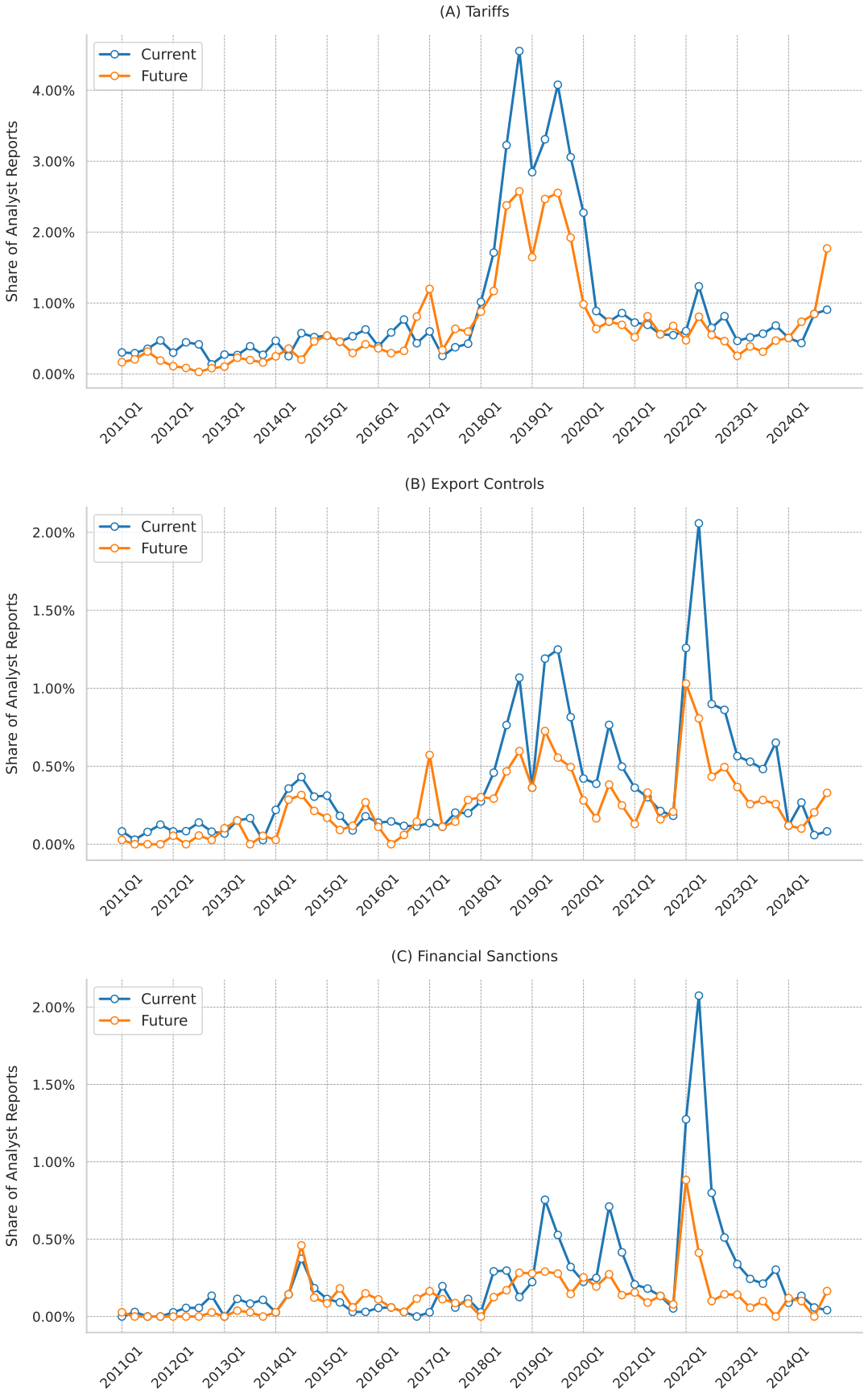


Figure 6: **Present vs. future geoeconomic pressure: analyst reports sample**



```
You are a helpful assistant. You have a list of categories describing how companies may
    change their plans in response to government policies (category IDs are given in
    parentheses):

0. Exiting a market: examples involve halting sales to or purchases from a particular
    country, selling non-financial assets such as physical capital based in a particular
    country (MARKET_EXIT)

1. Cost-cutting measures: examples involve reducing costs, reducing workforce or input
    purchases (COST_CUT)

2. Adjusting supply chain and shifting production: examples involve altering suppliers,
    production locations, or distribution networks (SUPPLY_CHAIN_ADJ)

3. Compliance measures: examples include engaging with regulators, obtaining permits,
    communicating with authorities, or implementing compliance processes (COMPLIANCE)

4. Adjusting products or business Focus: examples include shifting focus to different
    products, services, or business lines (PRODUCT_ADJ)

5. Financial adjustments: examples include adjusting the financial structure of the firm,
     implementing financial hedges, or changing financial capital allocation (
    FINANCIAL_ADJ)

6. Monitoring the situation and being cautious: examples include delaying major decisions
     or simply monitoring changes without immediate action (MONITOR)

7. Adjusting prices and passing costs to customers: examples include increasing or
    decreasing prices in response to policy changes (PRICING)

8. Litigation and legal actions: examples inclue filing lawsuits, appealing regulations,
    or engaging in legal disputes (LEGAL)

9. Investing in new projects and expansion: examples include expanding capacity, entering
     new markets, or launching new initiatives (EXPANSION)

A description of a company's behavior will be passed as the user prompt. Your task is to
    categorize the behavior passed as the user prompt. If the behavior fits multiple
    categories, list all of the category IDs, separated by a comma. If no categories
    apply, respond with "None" (without quotes).

## Instructions:

- Reply only with the applicable category ID(s) or "None".
- Do not include category numbers, explanations, or any additional text.
```

This prompt is used to process the "firm response details" field extracted from the documents. The responses describe various strategic adjustments made by firms in response to geoeconomic pressure. Our categorization reveals important heterogeneity in how firms react to different types of geoeconomic pressure. Table 3 demonstrates how this process works in the case of financial sanctions with ten examples. While, of course, we do not know precisely how the LLM draws on the various portions of the text to create a summary, an inspection of the earnings calls is illustrative. In the case of Pirelli, the Italian tires manufacturer, in August 2022:

> In Russia, U.S. sanctions effective since July 10 provide the extra ban on tires produced in Russia to the EU and the import ban of selected raw materials and technical equipment from EU to Russia. Pirelli confirms its presence in Russia, in full compliance with international sanctions. We activated alternative supplies for both exports from the country, Turkey and Romania and imports of raw materials, mainly local suppliers. We diversified our logistics to ensure the ongoing supply of finished products and raw materials. We directed production to the domestic market, focusing on the most profitable product segments, increasing prices to offset the increase in raw materials and transportation costs and maintaining a cautious approach to continuous monitoring of inventories and taking measures to protect trade receivables.

Throughout the full call, Russia is mentioned repeatedly beyond this brief excerpt, and so a summary requires synthesizing information through the long call. Nevertheless the text of the summary generated by the LLM of "Pirelli has adapted its business model to comply with the sanctions, including activating alternative supplies, diversifying logistics, and directing production to the domestic market" broadly corresponds to the selected text. When we then prompt the LLM to establish which of the ten categories enumerated above apply to Pirelli's response, it classifies this as instances of compliance and supply chain adjustment. Interestingly, the model does not classify the firm as changing its pricing in response to financial sanctions. This is despite the fact that the latter part of this paragraph discusses "increasing prices to offset the increase in raw materials and transportation costs."

When we turn to examining how we classify the response of Pirelli in this call to export controls, we see that the response is actually different. In this case, our analysis classifies the US and the EU as imposing export controls on Russian firms, and it also classifies Pirelli as affected by this. In response to the export controls, however, the model classifies Pirelli as responding by adjusting its supply chains and changing its pricing. The LLM's summary justification for these classifications is that the firm responded by "adjusting supply chain and production, increasing prices." This example highlights the power and also subtlety of our approach. Could we imagine a human reader, or a different LLM, deciding that the price increases were linked also to financial sanctions and not just export controls, in contrast with the analysis generated by Llama 3.3? Certainly. In ongoing work, we are implementing many of the suggestions detailed in Ludwig et al. (2025) to validate how close the classifications of the LLMs come to those of human validators—although given the high quality of the analysis by the LLMs, at present it is not clear what should be considered the "gold standard."

In Figure 7, we summarize how firms respond to the different forms of geoeconomic pressure throughout our sample period. In the top panel, we measure responses uses the earnings call sample and in the bottom panel we use the analyst reports. For every earnings call where the firm reports being affected by the particular form of geoeconomic future (either present of future), we classify whether the firm responded using any of our ten summary actions. We allow firms to be classified as taking multiple responses. A number of novel finding emerge. We see that firms respond differently

Figure 7: **Responding to pressure, by instrument**

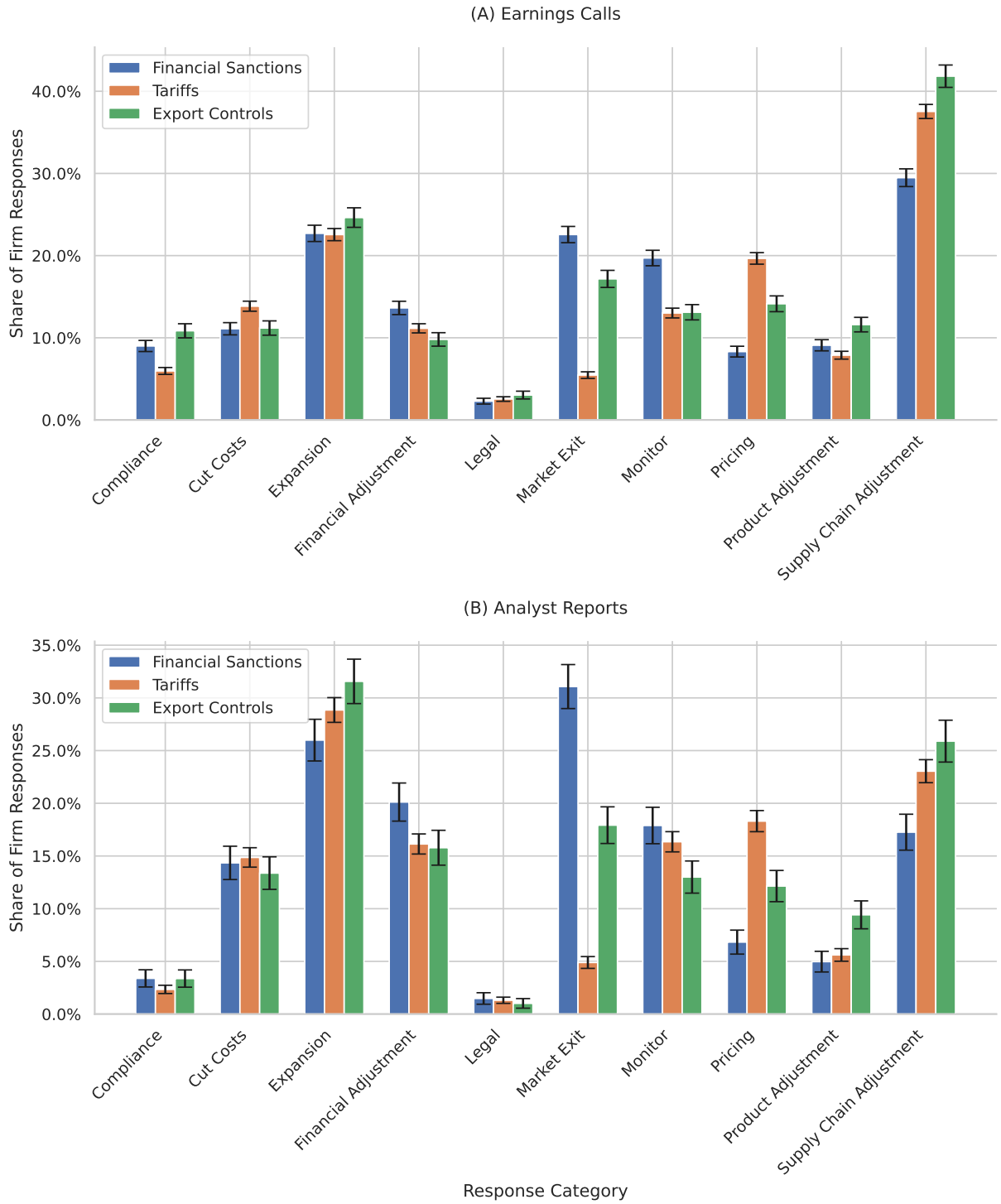


Table 3: **Understanding the response to sanctions**

Company	Quarter	Detail	Classification
OceanaGold Corporation	7/1/19	Suspension of underground mining operations and appeal of court decision	Legal
Rockwool A/S	7/1/22	Adjusting pricing strategy, hedging energy prices, and considering changes to investment plans	Pricing
Barloworld Limited	4/1/22	Cost containment, working capital management, and cash preservation	Cut Costs
Pirelli & C. S.p.A.	7/1/22	Pirelli has adapted its business model to comply with the sanctions, including activating alternative supplies, diversifying logistics, and directing production to the domestic market	Adjust Supply Chains
Halliburton Company	7/1/22	Exiting Russia	Market Exit
Uponor Oyj	7/1/22	Reclassification of assets and potential sale of operations	Compliance
Enento Group Oyj	7/1/22	Development of new services to support customers in navigating the changing regulatory environment	Product Adjustment
TMC the metals company Inc.	7/1/22	Exploring options to raise capital at the asset level, considering locating processing and refining facilities in American free trade partners	Financial Adjustment
Stem, Inc.	1/1/23	Diversifying supply chain and adjusting pricing strategy	Monitor
Ayvens	4/1/23	Disposal of Russian activities and expansion into Thailand	Expansion

to the various forms of pressure. In particular, we see that firms are most likely to exit a market in response to financial sanctions and then second most likely with export controls, but are far less likely to do so in response to tariffs. By contrast, firms are much more likely to change their pricing strategy in response to tariffs than they are in the face of financial sanctions and export controls. We also see that firms are more likely to adjust their product mix in response to export controls than to the other forms of geoeconomic pressure, and they are more likely to undertake financial adjustment after financial sanctions. Broadly, the results appear sensible and correspond to the properties of these different tools of geoeconomic pressure.

In Figure 8, we separate the responses of firms based on where they are headquartered. We focus on the earnings calls sample given its broader geographic coverage. We divide firms into whether they are headquartered in the Euro Area, the United States, China, or the Rest of the World (RoW). A few clear findings arise immediately. First, we see a remarkable degree of similarity in how firms in different countries respond to the various forms of pressure. For instance, we always see that companies are more likely to respond to tariffs with price changes than they are to financial sanctions. Second, we see that Chinese firms appear to respond differently to pressure than do firms from other countries. Most clearly, they expand their activities in respond to geoeconomic pressure far more than firms elsewhere around the world. At present, we have a limited number of earnings calls from firms based in China, so this result comes both with large standard errors and an important selection effect caveat. We are actively working on improving our coverage of Chinese firms in ongoing work.

While the nature of the geoeconomic pressure instrument plays a significant role in determining

Figure 8: **Responding to pressure, by firm's geography**

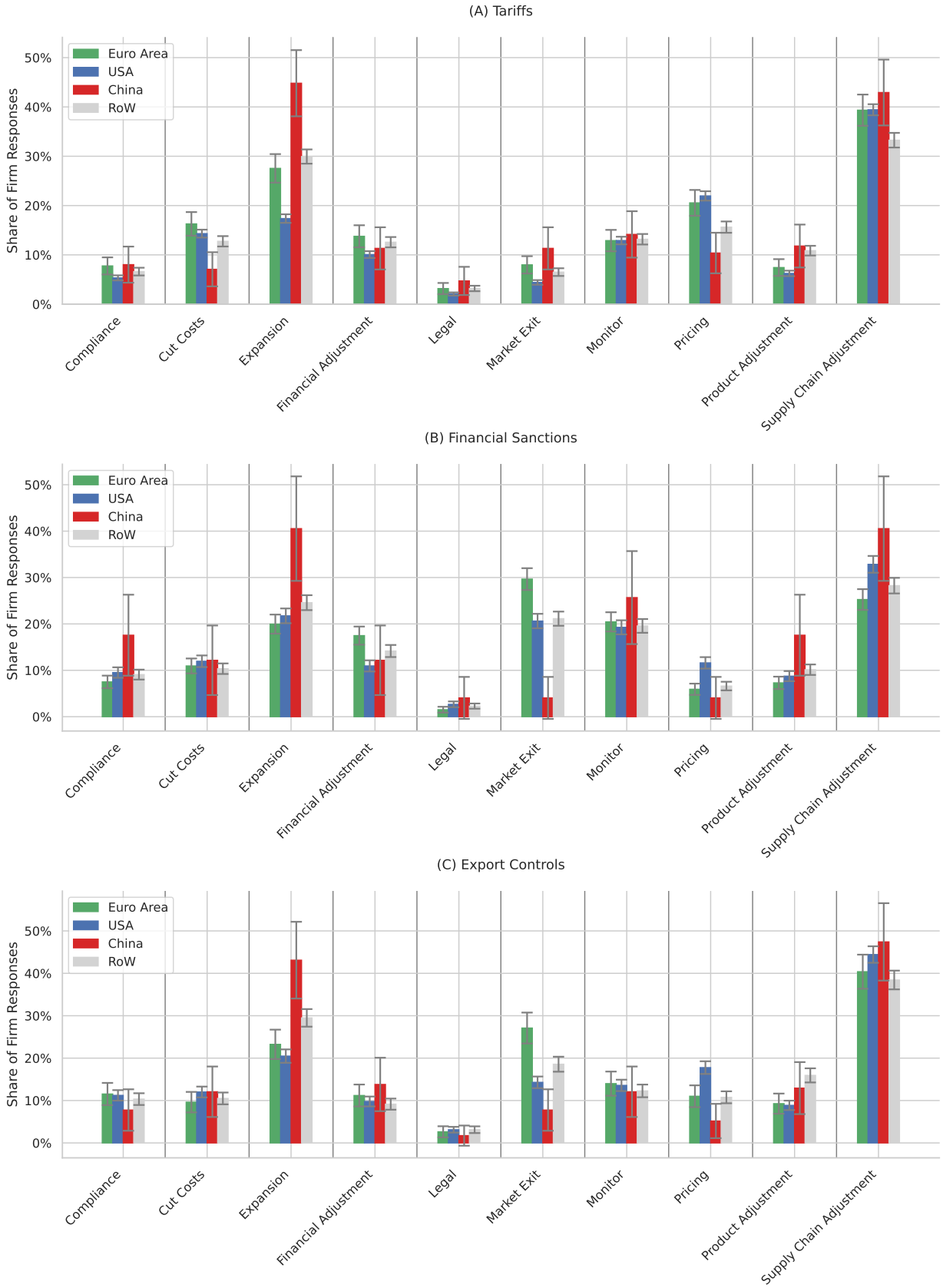
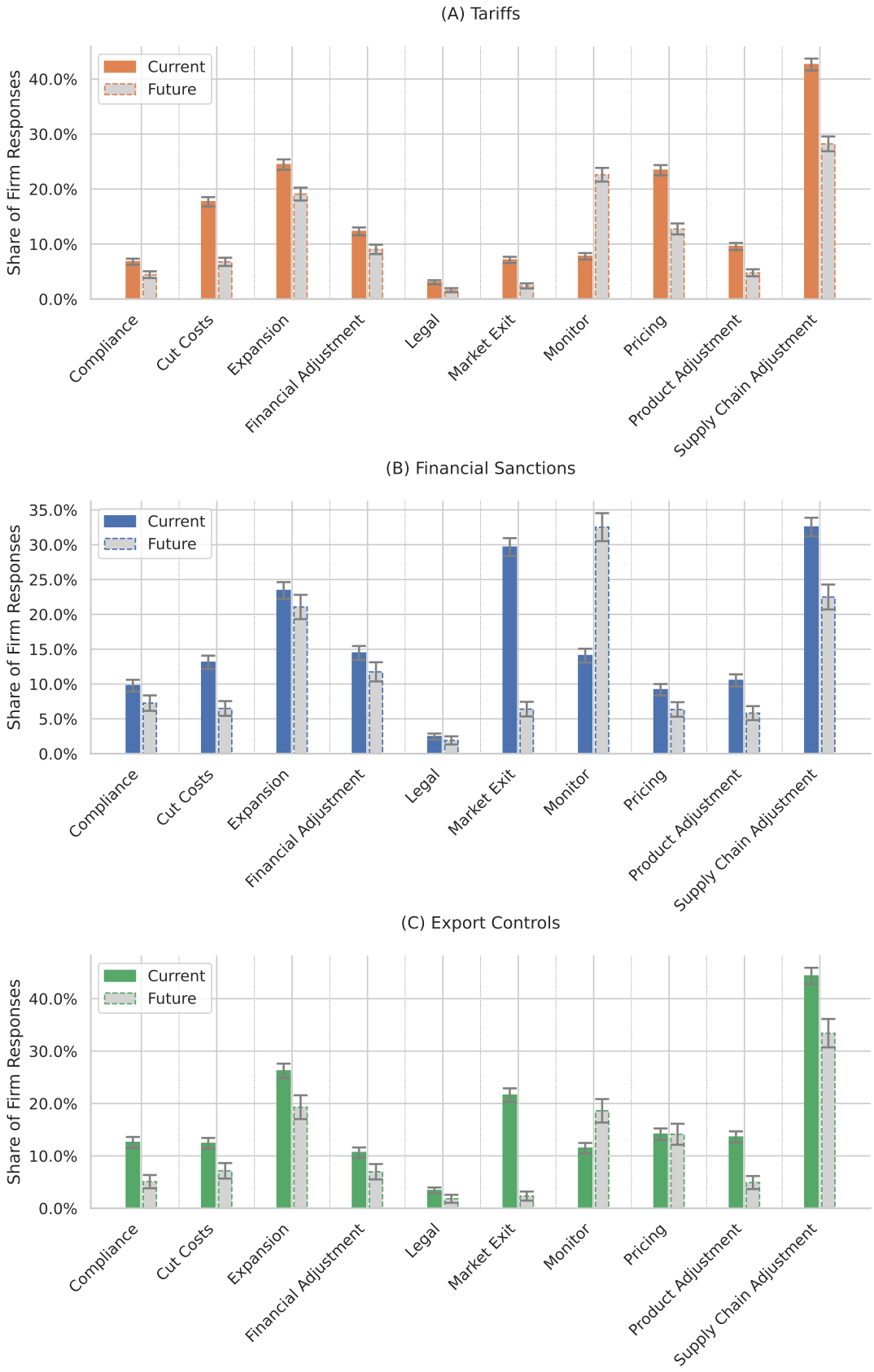


Figure 9: **Responding to pressure: current actions vs. future threats**



the type of response, the timing of the threat (current versus future) also critically shapes strategic decisions. In Figure 9, we see significant differences in how firms that are affected by implemented current policy versus those affected by future policies respond. For nearly every possible response across the three forms of geoeconomic pressure, firms are more likely to respond to current pressure than to the risk of future pressure. The only exceptions are that firms are more inclined to respond by "monitoring" if they report being affected by future pressure rather than current one. However, there are also interesting patterns in the differences. We see that firms that are only affected by the risk of future pressure are far more likely to adjust their supply chains or expand than they are to do things like exit a market altogether.

Of course, these summary statistics may reflect a number of confounding factors: for example, the identity of the coercer, the nature of the pressure, and the industrial composition of the affected firms may all differ. In the next section, we analyze these patterns in a regression framework to address these issues by absorbing part of the potential confounding variation.

5.1 Responses to Pressure: Accounting for Potential Confounders

We use a regression framework to study firms' responses while accounting for potential confounder variables. The regressions are estimated using the sample of firms' earnings calls. We let $\mathcal{R}_{c,i,e}$ be indicator variables for whether firm i exhibits a response in category c (one of the ten response categories outlined above) to the pressure event $e \in \mathcal{E}$. The set of pressure events $\mathcal{E}$ corresponds to all instances in which a firm reports adjusting its plans (along any of the ten categories) in response to current or future tariffs, financial sanctions, or export controls. Hence, our regressions estimate the probability of adjusting along a particular margin conditionally on adjusting on *any* margin. Each earnings call can contribute up to six events e to the sample $\mathcal{E}$: one for the firm's responses to current tariffs, one for the responses to the threat of future tariffs, and analogously for financial sanctions and export controls.

First, to study the heterogeneity in firms' adjustment plans in response to different geoeconomic pressure instruments, we estimate specifications of the following form:

$$\mathcal{R}_{c,i,e} = \alpha_{\text{Country}(i)} + \delta_{\text{Quarter}(e)} + \gamma_{\text{Industry}(i)} + \beta_{\text{Tariffs}}\, D^{\text{Tariffs}}_{c,i,e} + \beta_{\text{EC}}\, D^{\text{EC}}_{c,i,e} + \varepsilon_{c,i,e}, \tag{1}$$

where the response indicators $\mathcal{R}_{c,i,e}$ are regressed on a categorical variable indicating the instrument involved in the pressure event e. Specifically, we span the instrument categories using dummies for whether event e involves tariffs ($D^{\text{Tariffs}}_{c,i,e}$) or export controls ($D^{\text{EC}}_{c,i,e}$). Financial sanctions acts as the excluded category, for which we do not include a dummy: hence, the coefficients β_{Tariffs} and β_{EC} quantify the effects relative to events that involve financial sanctions. The terms $\alpha_{\text{Country}(i)}$, $\delta_{\text{Quarter}(e)}$, and $\gamma_{\text{Industry}(i)}$ correspond respectively to fixed effects for a firm's country of headquarters, for the pressure event's quarter (i.e., time fixed effects), and for the firm's industry at the level of two-digit SIC codes.

We estimate one regression for each of the ten categories c, pooling the events for the three

instrument types. For all regressions, in this section, we report estimates from independent OLS regressions in the main text—however, it is plausible to expect that the ten regressions specifications for the different response categories c may have correlated errors, and therefore in the appendix we also provide results estimated using the Seemingly Unrelated Regressions (SUR) methodology, which accounts for correlation in the residuals across the ten specifications. Since the set of regressors included in each of the ten specifications is the same, the point estimates from OLS and SUR are identical, but the estimated standard errors can vary, and all results remain significant using SUR estimates instead of OLS.

The OLS estimates for the specification in regression (1) are shown in Table 4. For each response category, we report estimates both including and excluding the three-way fixed effects: hence, the change in the coefficient going from one the other quantifies how much of the estimated effects are due to compositional effects coming from country, quarter, and industry composition. The betas in the fixed effect regressions instead show the magnitude of the estimated effects after partialing out for potential confounders acting along these three key dimensions. The regressions without fixed effects confirm the results established in Figure 7: firms' responses vary systematically by pressure instrument—with, for example, market exits being most pronounced in response to financial sanctions, and pricing adjustments occurring more frequently in response to tariffs. These relationships remain robust, although somewhat quantitatively attenuated, when country, quarter, and industry fixed effects are added. For example, without fixed effects, the estimate is that firms have a 10.4 percentage points higher propensity to respond to tariffs (relative to financial sanctions) with pricing adjustment: this point estimate becomes 6.1 percentage points in the regressions with fixed effects, indicating that only about 40% of the original effect is compositional.

Second, to study heterogeneity in the responses of firms of different countries, we estimate the following regression specification:

$$\mathcal{R}_{c,i,e} = \alpha_{\text{Country}(i)} + \delta_{\text{Quarter}(e)} + \gamma_{\text{Industry}(i)} + \beta_{\text{USA}}\, D^{\text{USA}}_{c,i,e} + \beta_{\text{CHN}}\, D^{\text{CHN}}_{c,i,e} + \beta_{\text{RoW}}\, D^{\text{RoW}}_{c,i,e} + \varepsilon_{c,i,e}, \quad (2)$$

where $D^{\text{USA}}_{c,i,e}$, $D^{\text{CHN}}_{c,i,e}$, and $D^{\text{Row}}_{c,i,e}$ are dummies for a firm's country of headquarters (respectively the United States, China, and the Rest of the World excluding the Euro Area), with the Euro Area being the excluded category. We estimate regressions for each instrument type (tariffs, financial sanctions, export controls) separately. For each instrument, we estimate ten regressions for the ten categories c. The OLS results are shown in Table 2. These confirm the findings that had been established in Figure 8. The regressions show that Chinese firms, for instance, tend to exhibit more pronounced expansion responses, compared to firms in other countries. Again, the results remain robust to the inclusion of the fixed effects: for example, the point estimate β_{CHN} for expansion responses to export controls is 17.2 percentage points in the fixed effect regressions, compared to 18.5 percentage points in the specification without fixed effects.

Third, to study heterogeneity in the responses to current pressure versus the threat of future

pressure, we estimate:

$$\mathcal{R}_{c,i,e} = \alpha_{\text{Country}(i)} + \delta_{\text{Quarter}(e)} + \gamma_{\text{Industry}(i)} + \beta_{\text{Current}} D^{\text{Current}}_{c,i,e} + \varepsilon_{c,i,e}, \tag{3}$$

where $D^{\text{Current}}_{c,i,e}$ is a dummy indicating whether event e concerns responses to current geoeconomic pressure, with threats of future pressure acting as the excluded category. Table 6 shows the results separately for the subsamples of tariff events, financial sanction events, and export control events. These regression results directly correspond to the findings established in Figure 9: the estimates confirm that firms respond more strongly to current geoeconomic pressure across nearly all response categories, with the notable exception that monitoring behavior is much more prevalent in response to future threats. These patterns remain largely unchanged quantitatively after incorporating the fixed effects, and in fact in some cases enhanced—with, for instance, the estimate β_{Current} for monitoring responses to export controls increasing in magnitude from -6.3 to -6.7 percentage points with the addition of the fixed effects.

6 Conclusion

This paper develops a systematic methodology leveraging large language models to measure and analyze the growing role of geoeconomic pressure in global economic relations. By leveraging advanced NLP techniques and large language models, we construct a comprehensive database of coercive economic actions and link them to firm-level economic data. We document a substantial rise in the frequency and variety of coercive economic actions, including tariffs, financial sanctions, and export controls. Using firm-level textual data from earnings calls and analyst reports, we find that firms significantly adjust their strategic decisions—such as pricing, market participation, and supply chain structures—in response to both implemented and threatened economic pressure. Our results reveal important heterogeneity across industries and countries, with upstream sectors and firms in targeted nations particularly vulnerable.

Table 4: **Firms' responses to geoeconomic pressure: heterogeneity by instrument**

(Estimates in %)	(1) Compliance	(2) Compliance	(3) Cut Costs	(4) Cut Costs	(5) Expansion	(6) Expansion	(7) Financial Adj.	(8) Financial Adj.	(9) Legal	(10) Legal
Tariffs ($D^{\text{Tariffs}}_{c,i,e}$)	-3.0***	-3.0***	2.6***	0.7	1.9**	1.4	-2.7***	-0.7	0.2	-0.2
	(0.5)	(0.6)	(0.6)	(0.7)	(0.8)	(0.9)	(0.6)	(0.7)	(0.3)	(0.3)
Export Controls ($D^{\text{EC}}_{c,i,e}$)	2.2***	2.4***	0.5	-0.2	3.2***	0.9	-4.2***	-1.4*	0.9**	0.3
	(0.7)	(0.7)	(0.7)	(0.7)	(1.0)	(1.0)	(0.7)	(0.7)	(0.4)	(0.4)
Constant	9.1***	23.5*	10.7***	-13.4**	22.8***	15.5	14.1***	-2.9	2.3***	10.2
	(0.4)	(12.5)	(0.4)	(5.6)	(0.6)	(12.0)	(0.5)	(8.3)	(0.2)	(9.6)
Observations	16,137	16,137	16,137	16,137	16,137	16,137	16,137	16,137	16,137	16,137
R^2	0.01	0.04	0.00	0.04	0.00	0.07	0.00	0.05	0.00	0.02
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

(Estimates in %)	(11) Market Exit	(12) Market Exit	(13) Monitor	(14) Monitor	(15) Pricing	(16) Pricing	(17) Product Adj.	(18) Product Adj.	(19) Supply Chain	(20) Supply Chain
Tariffs ($D^{\text{Tariffs}}_{c,i,e}$)	-17.3***	-7.6***	-7.0***	-6.3***	10.4***	6.1***	-0.5	-1.9***	8.3***	2.8***
	(0.6)	(0.7)	(0.7)	(0.8)	(0.6)	(0.7)	(0.5)	(0.6)	(0.8)	(1.0)
Export Controls ($D^{\text{EC}}_{c,i,e}$)	-4.0***	1.2	-6.6***	-5.7***	5.1***	3.0***	3.5***	1.7**	12.7***	6.9***
	(0.9)	(0.9)	(0.8)	(0.8)	(0.7)	(0.7)	(0.7)	(0.7)	(1.0)	(1.1)
Constant	23.3***	1.4	19.6***	-1.7	6.9***	8.1	9.2***	62.1***	28.0***	12.8
	(0.6)	(11.2)	(0.6)	(7.7)	(0.4)	(9.3)	(0.4)	(17.0)	(0.6)	(17.1)
Observations	16,137	16,137	16,137	16,137	16,137	16,137	16,137	16,137	16,137	16,137
R^2	0.05	0.14	0.01	0.05	0.02	0.08	0.00	0.05	0.01	0.09
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes: We show OLS estimates from the regression specification in equation (1) for each response category c, with heteroskedasticity-robust standard errors displayed in parentheses:

$$\mathcal{R}_{c,i,e} = \alpha_{\text{Country}(i)} + \delta_{\text{Quarter}(e)} + \gamma_{\text{Industry}(i)} + \beta_{\text{Tariffs}}\, D^{\text{Tariffs}}_{c,i,e} + \beta_{\text{EC}}\, D^{\text{EC}}_{c,i,e} + \varepsilon_{c,i,e}.$$

$^{***}p<0.01$,$^{**}p<0.05$,$^{*}p<0.1$

Table 5: **Firms' responses to geoeconomic pressure: heterogeneity by country**

Panel A: Tariffs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(Estimates in %)	Expansion	Expansion	Market Exit	Market Exit	Monitor	Monitor	Pricing	Pricing	Supply Chain	Supply Chain
China ($D^{\text{CHN}}_{c,i,e}$)	14.6***	7.9*	3.5	1.1	1.5	0.0	-9.3***	-1.6	7.0*	0.8
	(3.9)	(4.2)	(2.5)	(2.7)	(2.8)	(3.0)	(2.6)	(2.9)	(3.9)	(4.2)
RoW ($D^{\text{RoW}}_{c,i,e}$)	1.4	0.2	-1.6	-1.3	-0.7	-1.1	-4.6***	-2.8*	-5.2***	-3.1
	(1.8)	(1.8)	(1.1)	(1.1)	(1.3)	(1.4)	(1.5)	(1.6)	(1.9)	(1.9)
USA ($D^{\text{USA}}_{c,i,e}$)	-11.6***	-9.2***	-3.5***	-2.9***	-0.7	-1.3	0.4	0.4	2.1	-0.8
	(1.7)	(1.9)	(1.0)	(1.1)	(1.3)	(1.4)	(1.6)	(1.7)	(1.9)	(2.0)
Constant	28.8***	19.9	8.2***	16.0	13.1***	6.6	19.4***	4.7	37.5***	19.0
	(1.6)	(13.6)	(1.0)	(14.4)	(1.2)	(10.5)	(1.4)	(11.2)	(1.7)	(18.5)
Observations	7,555	7,555	7,555	7,555	7,555	7,555	7,555	7,555	7,555	7,555
R^2	0.03	0.07	0.00	0.03	0.00	0.03	0.00	0.06	0.01	0.09
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Panel B: Financial Sanctions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(Estimates in %)	Expansion	Expansion	Market Exit	Market Exit	Monitor	Monitor	Pricing	Pricing	Supply Chain	Supply Chain
China ($D^{\text{CHN}}_{c,i,e}$)	21.7***	9.4	-26.4***	-24.7***	5.1	10.1*	-1.2	-0.3	17.3***	13.4**
	(5.9)	(6.4)	(2.7)	(3.5)	(5.2)	(5.9)	(2.4)	(2.6)	(5.9)	(6.1)
RoW ($D^{\text{RoW}}_{c,i,e}$)	5.2***	3.3**	-9.1***	-6.6***	-0.6	0.6	0.6	0.4	3.3**	2.0
	(1.4)	(1.5)	(1.5)	(1.6)	(1.4)	(1.4)	(0.8)	(0.9)	(1.5)	(1.5)
USA ($D^{\text{USA}}_{c,i,e}$)	0.4	-2.2	-9.9***	-8.0***	-0.6	1.3	4.8***	3.5***	7.2***	3.1*
	(1.6)	(1.8)	(1.7)	(1.8)	(1.5)	(1.7)	(1.0)	(1.2)	(1.7)	(1.9)
Constant	19.9***	-6.0	30.6***	-0.6	19.9***	-17.3***	5.4***	-7.7***	24.3***	-0.5
	(1.1)	(13.4)	(1.3)	(12.5)	(1.1)	(2.8)	(0.6)	(1.9)	(1.2)	(12.8)
Observations	5,182	5,182	5,182	5,182	5,182	5,182	5,182	5,182	5,182	5,182
R^2	0.01	0.06	0.01	0.13	0.00	0.05	0.01	0.07	0.00	0.12
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Panel C: Export Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(Estimates in %)	Expansion	Expansion	Market Exit	Market Exit	Monitor	Monitor	Pricing	Pricing	Supply Chain	Supply Chain
China ($D^{\text{CHN}}_{c,i,e}$)	18.5***	17.2***	-19.7***	-13.0***	-1.8	-3.2	-5.0**	-0.1	6.4	7.0
	(5.1)	(5.7)	(3.3)	(3.7)	(3.5)	(3.9)	(2.5)	(3.2)	(5.2)	(5.9)
RoW ($D^{\text{RoW}}_{c,i,e}$)	6.7***	3.3	-8.4***	-4.0*	-2.7	-3.1	-0.7	-0.8	-2.6	-1.6
	(2.2)	(2.4)	(2.2)	(2.2)	(1.8)	(1.9)	(1.6)	(1.7)	(2.5)	(2.7)
USA ($D^{\text{USA}}_{c,i,e}$)	-4.4**	-3.4	-11.0***	-4.9**	-0.2	-0.9	6.1***	4.2**	3.7	-0.2
	(2.2)	(2.6)	(2.3)	(2.3)	(1.9)	(2.1)	(1.7)	(2.0)	(2.6)	(3.0)
Constant	23.8***	2.2	27.8***	-17.9	14.4***	-0.3	10.4***	-4.3	40.4***	81.3***
	(1.9)	(14.7)	(2.0)	(12.3)	(1.6)	(9.7)	(1.4)	(3.7)	(2.2)	(27.5)
Observations	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400
R^2	0.02	0.08	0.01	0.18	0.00	0.06	0.01	0.12	0.00	0.08
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes: We show OLS estimates from the regression specification in equation (2) for each response category c, with heteroskedasticity-robust standard errors displayed in parentheses:

$$\mathcal{R}_{c,i,e} = \alpha_{\text{Country}(i)} + \delta_{\text{Quarter}(e)} + \gamma_{\text{Industry}(i)} + \beta_{\text{USA}}\, D^{\text{USA}}_{c,i,e} + \beta_{\text{CHN}}\, D^{\text{CHN}}_{c,i,e} + \beta_{\text{RoW}}\, D^{\text{RoW}}_{c,i,e} + \varepsilon_{c,i,e}.$$

$^{***}p<0.01$,$^{**}p<0.05$,$^{*}p<0.1$

Table 6: **Firms' responses to geoeconomic pressure: present actions vs. future threats**

Panel A: Tariffs

(Estimates in %)	(1) Expansion	(2) Expansion	(3) Market Exit	(4) Market Exit	(5) Monitor	(6) Monitor	(7) Pricing	(8) Pricing	(9) Supply Chain	(10) Supply Chain
Current ($D^{\text{Current}}_{c,i,e}$)	5.7***	4.6***	4.9***	4.6***	-13.6***	-13.2***	9.3***	9.2***	13.8***	13.9***
	(1.0)	(1.0)	(0.5)	(0.5)	(0.9)	(0.9)	(0.8)	(0.8)	(1.1)	(1.1)
Constant	21.0***	22.5	2.8***	7.0	21.4***	4.0	11.2***	11.4	27.3***	-31.1
	(0.8)	(18.9)	(0.3)	(14.7)	(0.8)	(10.5)	(0.6)	(16.8)	(0.9)	(19.3)
Observations	7,555	7,555	7,555	7,555	7,555	7,555	7,555	7,555	7,555	7,555
R^2	0.00	0.09	0.01	0.05	0.04	0.08	0.01	0.09	0.02	0.12
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Panel B: Financial Sanctions

(Estimates in %)	(1) Expansion	(2) Expansion	(3) Market Exit	(4) Market Exit	(5) Monitor	(6) Monitor	(7) Pricing	(8) Pricing	(9) Supply Chain	(10) Supply Chain
Current ($D^{\text{Current}}_{c,i,e}$)	2.9**	2.6**	23.7***	22.4***	-18.1***	-16.7***	2.7***	2.4***	10.9***	10.6***
	(1.2)	(1.2)	(1.0)	(1.0)	(1.3)	(1.3)	(0.7)	(0.7)	(1.3)	(1.2)
Constant	20.7***	4.7	6.8***	-36.6**	32.2***	1.3	5.0***	17.3	20.4***	-29.2**
	(1.0)	(19.7)	(0.6)	(16.2)	(1.2)	(13.9)	(0.5)	(13.1)	(1.0)	(14.1)
Observations	5,182	5,182	5,182	5,182	5,182	5,182	5,182	5,182	5,182	5,182
R^2	0.00	0.09	0.07	0.21	0.04	0.11	0.00	0.10	0.01	0.15
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Panel C: Export Controls

(Estimates in %)	(1) Expansion	(2) Expansion	(3) Market Exit	(4) Market Exit	(5) Monitor	(6) Monitor	(7) Pricing	(8) Pricing	(9) Supply Chain	(10) Supply Chain
Current ($D^{\text{Current}}_{c,i,e}$)	6.8***	7.9***	20.3***	12.5***	-6.3***	-6.7***	2.2	5.7***	12.2***	18.9***
	(1.7)	(1.9)	(1.1)	(1.1)	(1.6)	(1.6)	(1.3)	(1.4)	(2.0)	(2.1)
Constant	20.7***	15.8	3.3***	-32.7**	18.0***	10.1	10.3***	0.0	31.0***	34.5
	(1.5)	(25.8)	(0.7)	(16.5)	(1.4)	(19.8)	(1.1)	(16.2)	(1.7)	(29.4)
Observations	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400	3,400
R^2	0.00	0.11	0.04	0.24	0.01	0.09	0.00	0.14	0.01	0.12
Country FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Industry FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes: We show OLS estimates from the regression specification in equation (3) for each response category c, with heteroskedasticity-robust standard errors displayed in parentheses:

$$\mathcal{R}_{c,i,e} = \alpha_{\text{Country}(i)} + \delta_{\text{Quarter}(e)} + \gamma_{\text{Industry}(i)} + \beta_{\text{Current}}\, D^{\text{Current}}_{c,i,e} + \varepsilon_{c,i,e}.$$

$^{***}p<0.01, ^{**}p<0.05, ^{*}p<0.1$

References

Ahn, Daniel P and Rodney D Ludema, "The sword and the shield: The economics of targeted sanctions," *European Economic Review*, 2020, *130*, 103587.

Aiyar, Shekhar, Andrea Presbitero, and Michele Ruta, *Geoeconomic Fragmentation the Economic Risks from a Fractured World Economy*, Centre for Economic Policy Research, 2023.

Aiyar, Shekhar, Davide Malacrino, and Andrea F Presbitero, "Investing in friends: The role of geopolitical alignment in fdi flows," *European Journal of Political Economy*, 2024, p. 102508.

Alekseev, Maxim and Xinyue Lin, "Trade policy in the shadow of conflict: the case of dual-use goods."," 2024.

Antràs, Pol, Davin Chor, Thibault Fally, and Russell Hillberry, "Measuring the upstreamness of production and trade flows," *American Economic Review*, 2012, *102* (3), 412–416.

Baker, Scott R, Nicholas Bloom, and Steven J Davis, "Measuring economic policy uncertainty," *The quarterly journal of economics*, 2016, *131* (4), 1593–1636.

Baldwin, David A, *Economic Statecraft*, Princeton University Press, 1985.

Becko, John Sturm and Dangiel G. O'Connor, "Strategic (Dis)Integration," 2024.

Blackwill, Robert D and Jennifer M Harris, *War by other means: Geoeconomics and statecraft*, Harvard University Press, 2016.

Bonadio, Barthélémy, Zhen Huo, Elliot Kang, Andrei A. Levchenko, Nitya Pandalai-Nayar, Hiroshi Toma, and Petia Topalova, "Playing with blocs: Quantifying decoupling," 2024.

Broner, Fernando, Alberto Martin, Josefin Meyer, and Christoph Trebesch, "Hegemonic Globalization," 2024.

Broner, Fernando, Alberto Martin, Josefin Meyer, Christoph Trebesch, and Jiaxian Zhou Wu, "Hegemony and International Alignment," 2025.

Bybee, J Leland, "The ghost in the machine: Generating beliefs with large language models," *arXiv preprint arXiv:2305.02823*, 2023.

Caldara, Dario and Matteo Iacoviello, "Measuring geopolitical risk," *American Economic Review*, 2022, *112* (4), 1194–1225.

Chen, Yifei, Bryan T Kelly, and Dacheng Xiu, "Expected returns and large language models," *Available at SSRN 4416687*, 2022.

Clayton, Christopher, Matteo Maggiori, and Jesse Schreger, "A Framework for Geoeco-

nomics," Working Paper 31852, National Bureau of Economic Research November 2023.

Clayton, Christopher, Matteo Maggiori, and Jesse Schreger, "A Theory of Economic Coercion and Fragmentation," *Available at SSRN 4767131*, 2024.

Clayton, Christopher, Matteo Maggiori, and Jesse Schreger, "The Political Economy of Geoeconomic Power," 2025.

Crosignani, Matteo, Lina Han, Marco Macchiavelli, and André F Silva, "Geopolitical Risk and Decoupling: Evidence from US Export Controls," *FRB of New York Staff Report*, 2024, (1096).

Dell, Melissa, "Deep learning for economists," Technical Report, National Bureau of Economic Research 2024.

Dreher, Axel, Andreas Fuchs, Bradley Parks, Austin Strange, and Michael J Tierney, *Banking on Beijing: The Aims and Impacts of China's Overseas Development Program*, Cambridge University Press, 2022.

Drezner, Daniel W, "The hidden hand of economic coercion," *International organization*, 2003, *57* (3), 643–659.

Drezner, Daniel W, "Global economic sanctions," *Annual Review of Political Science*, 2024, *27*.

Drezner, Daniel W, Henry Farrell, and Abraham L Newman, *The uses and abuses of weaponized interdependence*, Brookings Institution Press, 2021.

Farrell, Henry and Abraham L Newman, "Weaponized interdependence: How global economic networks shape state coercion," *International security*, 2019, *44* (1), 42–79.

Farrell, Henry and Abraham Newman, *Underground Empire: How America Weaponized the World Economy*, Henry Holt and Co., 2023.

Felbermayr, Gabriel, Aleksandra Kirilakha, Constantinos Syropoulos, Erdal Yalcin, and Yoto V Yotov, "The global sanctions data base," *European Economic Review*, 2020, *129*, 103561.

Fernández-Villaverde, Jesús, Tomohide Mineyama, and Dongho Song, "Are We Fragmented Yet? Measuring Geopolitical Fragmentation and its Causal Effects," 2024.

Fishman, E., *Chokepoints: American Power in the Age of Economic Warfare*, Penguin Publishing Group, 2025.

Flynn, Joel P and Karthik Sastry, "The macroeconomics of narratives," *Available at SSRN 4140751*, 2022.

Flynn, Joel P., Antoine Levy, Jacob Moscona, and Mai Wo, "Foreign Political Risk and

Technological Change," 2025.

Gentzkow, Matthew and Jesse M Shapiro, "What drives media slant? Evidence from US daily newspapers," *Econometrica*, 2010, *78* (1), 35–71.

Gentzkow, Matthew, Bryan Kelly, and Matt Taddy, "Text as data," *Journal of Economic Literature*, 2019, *57* (3), 535–574.

Goldberg, Pinelopi K, Réka Juhász, Nathan J Lane, Giulia Lo Forte, and Jeff Thurk, "Industrial policy in the global semiconductor sector," Technical Report, National Bureau of Economic Research 2024.

Gopinath, Gita, Pierre-Olivier Gourinchas, Andrea Presbitero, and Petia B Topalova, "Changing Global Linkages: A New Cold War?," 2024.

Hakobyan, Shushanik, Sergii Meleshchuk, and Robert Zymek, "Divided We Fall: Differential Exposure to Geopolitical Fragmentation in Trade," Technical Report, International Monetary Fund 2023.

Hassan, Tarek A, Jesse Schreger, Markus Schwedeler, and Ahmed Tahoun, "Sources and transmission of country risk," *Review of Economic Studies*, 2024, *91* (4), 2307–2346.

Hassan, Tarek A, Stephan Hollander, Laurence Van Lent, and Ahmed Tahoun, "Firm-level political risk: Measurement and effects," *The Quarterly Journal of Economics*, 2019, *134* (4), 2135–2202.

Hassan, Tarek Alexander, Stephan Hollander, Aakash Kalyani, Laurence van Lent, Markus Schwedeler, and Ahmed Tahoun, "Economic Surveillance using Corporate Text," Technical Report, National Bureau of Economic Research 2024.

Hirschman, Albert O, *National power and the structure of foreign trade*, Vol. 105, Univ of California Press, 1945.

Juhász, Réka, Nathan Lane, Emily Oehlsen, and Verónica C Pérez, "The Who, What, When, and How of Industrial Policy: A Text-Based Approach," *What, When, and How of Industrial Policy: A Text-Based Approach (August 15, 2022)*, 2022.

Keerati, Ritt, "The unintended consequences of financial sanctions," *Available at SSRN 4049281*, 2022.

Keohane, R.O. and J.S. Nye, *Power and Interdependence*, Little Brown, 1977.

Kindleberger, Charles Poor, *The world in depression, 1929-1939*, Univ of California, 1973.

Kleinman, Benny, Ernest Liu, and Stephen Redding, "International Friends and Enemies," *American Economic Journal: Macroeconomics*, 2024.

Kooi, Oliver, "Power and Resilience: An Economic Approach to National Security Policy," *working paper*, 2024.

Lagakos, David, Stelios Michalopoulos, and Hans-Joachim Voth, "American Life Histories," Technical Report, National Bureau of Economic Research 2025.

Liu, Ernest and David Yang, "International Power," 2024.

Ludwig, Jens, Sendhil Mullainathan, and Ashesh Rambachan, "Large language models: An applied econometric framework," *Working Paper*, 2025.

Mattoo, Aaditya, Michele Ruta, and Robert W. Staiger, "Geopolitics and the World Trading System," 2024.

Mohr, Cathrin and Christoph Trebesch, "Geoeconomics," 2024.

Morgan, T Clifton, Navin Bapat, and Valentin Krustev, "The threat and imposition of economic sanctions, 1971—2000," *Conflict Management and Peace Science*, 2009, *26* (1), 92–110.

Nigmatulina, Dzhamilya, "Sanctions and misallocation. How sanctioned firms won and Russia lost," 2022.

Ottonello, Pablo, Wenting Song, and Sebastian Sotelo, "An Anatomy of Firms' Political Speech," Technical Report, National Bureau of Economic Research 2024.

Pflueger, Carolin and Pierre Yared, "Global Hegemony and Exorbitant Privilege," 2024.

Sarkar, Suproteem K., "Economic Representations," jan 2025.

Teoh, Ken, "Anticipating binding constraints: an analysis of debt covenants," 2024.

Thoenig, Mathias, "Trade Policy in the Shadow of War: Quantitative Tools for Geoeconomics," 2023.

Online Appendix for
"Chokepoints: Identifying Economic Pressure"

Christopher Clayton Antonio Coppola Matteo Maggiori Jesse Schreger

February 2025

A Large Language Model Prompts

Figure A.I: **Responding to Pressure: Current Actions vs. Future Threats, Analyst Reports Sample**

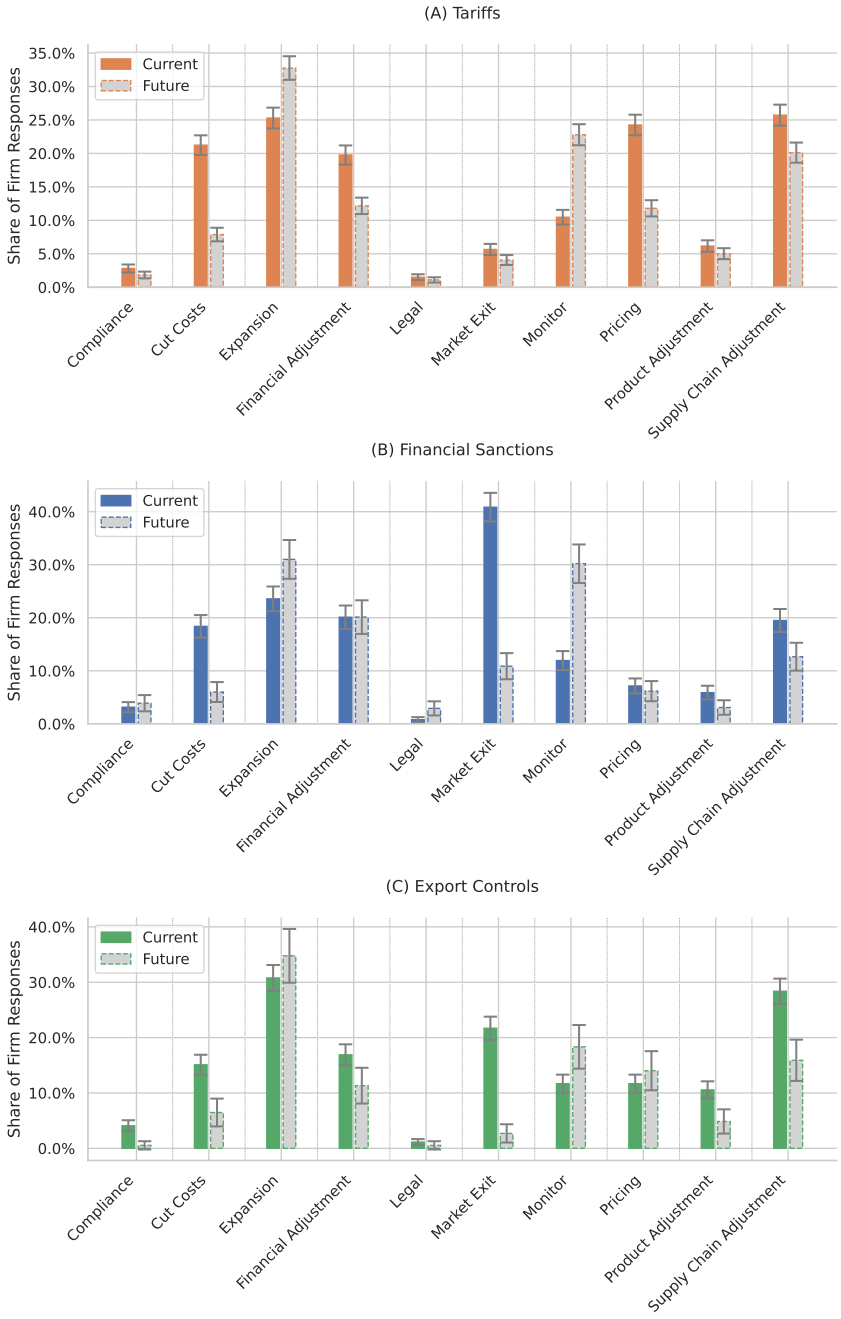
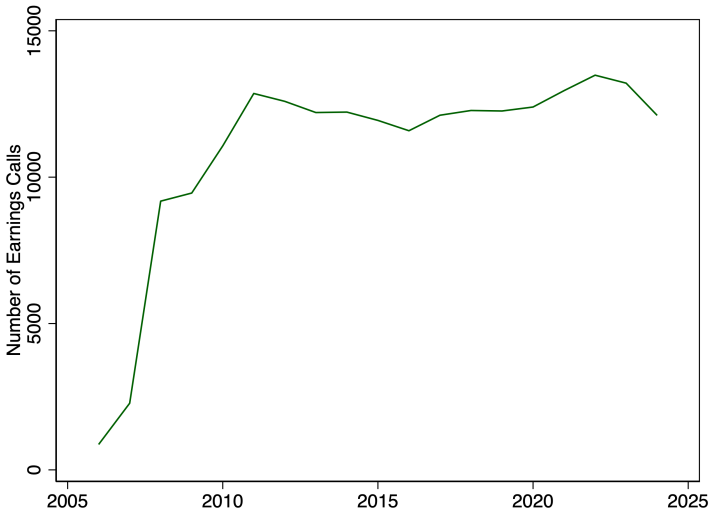
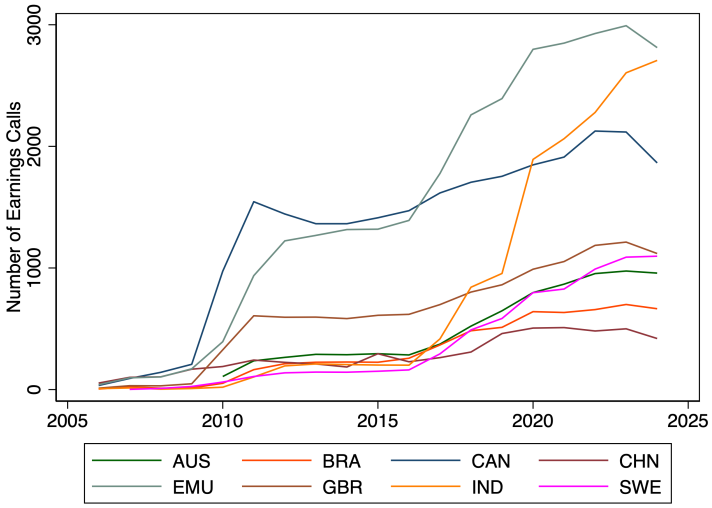


Figure A.II: **Coverage of Earnings Calls**

(a) Coverage of USA



(b) Coverage Outside of USA



(c) Coverage Outside of USA, Continued

