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RESEARCH ARTICLE

Active Contributors or Compliers? Using the Friedman Doctrine to Explain Multinational Enterprises' Response to Climate Change

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Abstract
This study examines how multinational enterprises (MNEs) in the automotive sector respond to stakeholder and institutional pressures to mitigate climate change. Drawing on institutional, stockholder (Friedman doctrine), and stakeholder theories, we analyze how formal regulatory frameworks and informal stakeholder demands influence corporate environmental strategies. The research demonstrates that, while MNEs face increasing pressure to be environmentally responsible, substantive sustainability initiatives are predominantly driven by formal institutional mechanisms rather than by voluntary stakeholder responses. This confirms the Friedman doctrine, which holds that firms will respond to mandates when required by law. Through a systematic analysis of two leading electric vehicle manufacturers, Tesla and BYD, we explore how varying institutional environments shape corporate climate strategies. The findings reveal that regulatory frameworks serve as primary catalysts for meaningful environmental action, while informal pressures primarily influence communication strategies and corporate social responsibility (CSR) initiatives. This study contributes to the growing literature on corporate environmental responsibility by illuminating the relationship between institutional pressures and strategic responses in the context of climate change mitigation.

Keywords Multinational enterprises · Climate change · Automotive industry · Institutional theory · Stockholder theory · Friedman doctrine · Corporate responsibility

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1 Introduction

Multinational Enterprises (MNEs), due to their sheer size and perceived power to influence economic and social outcomes, are seen as key players in achieving sustainability goals and targets (Battisti et al., 2025; Leonidou et al., 2024). Therefore, they face unprecedented pressure to adopt sustainable business practices (Burritt et al., 2020). However, the response of these firms to these pressures presents a complex paradigm that merits scholarly examination. While MNEs frequently employ sustainability-focused communication strategies and corporate social responsibility (CSR) initiatives, evidence suggests a significant gap between rhetorical commitments and concrete actions in addressing climate change (Wright & Nyberg, 2017). This disparity raises questions about the effectiveness of stakeholder pressure alone in driving meaningful environmental reforms within MNEs.

In this paper, we argue that, despite rising stakeholder demands for environmental responsibility (Khan et al., 2023), MNEs predominantly implement substantial sustainability initiatives only when compelled by formal institutional mechanisms, particularly regulatory frameworks. This phenomenon aligns with Friedman's (1970) assertion that businesses primarily respond to the "rules of the game" set by institutional structures rather than voluntary initiatives. Academic literature has discounted the Doctrine over the last two decades as a straw man philosophy with no relevance to the current business environment (Smith, 2025). However, evidence from business activities suggests that the key principles of Friedman's view, namely, that the primary responsibility of an organization is to maximize profits for its stockholders while operating within the rules mandated by institutions, remain valid, even in the context of CSR and sustainability (Jolliffe-Grimes, 2021). In this study, we test this theory using the extended case method across different institutional settings.

The automotive industry is undergoing a significant transformation, driven by the urgent need to address climate change. The industry is a major contributor to global greenhouse gas (GHG) emissions, with road transport accounting for 17% of them (UNFCCC, 2018). In the European Union, the transport sector accounts for around 25% of total GHG emissions (RSM Global, 2024). At the same time, in the USA, it accounts for about 29%, with road vehicles responsible for 81% of that amount (RSM Global, 2024). Globally, the transportation sector is the second largest contributor to GHG emissions, responsible for approximately 23% of energy-related carbon dioxide emissions (Just-Auto Magazine, 2021). These emissions have far-reaching consequences, contributing to global warming, diminished air quality, and environmental problems, including more severe and frequent natural disasters, loss of wildlife, acid rain, and droughts (Yoro & Daramola, 2020). Furthermore, vehicle emissions produce air pollution, including harmful byproducts that can lead to various health issues (RSM Global, 2024).

Considering these challenges, there is mounting pressure from stakeholders, including governments, the public, and investors, for MNEs in the automobile sector to adopt more sustainable practices (Kolk & Levy, 2003). Traditional automakers face intense pressure to transition from internal combustion engines to electric vehicles (EVs) (Dall-Orsoletta et al., 2022), which has opened the market to new

entrants focused solely on EV production, such as Tesla. Understanding how MNEs navigate this transition across different institutional environments, stakeholders, and stockholder concerns is crucial for theory and practice. Thus, we attempt to answer the following research question:

> *"To what extent do institutional pressures, rather than voluntary initiatives, drive the environmental strategies of multinational automotive companies in responding to climate change challenges?"*

To answer this question, we analyzed the operations of two leading electric vehicle manufacturers: Tesla, based in the USA, and BYD (Build Your Dreams) from China. These companies are dominant players in the global EV market, and studying them offers the opportunity to compare institutional pressures for sustainability across developed and emerging economies. The contrasting institutional environments provide insights into how differences in institutional structures in developed and emerging economies influence the responses of MNEs (Milosevic et al., 2023).

We employ textual analysis of national policies, annual reports, and corporate statements to evaluate whether these companies adopt active or passive approaches to addressing climate change. By combining institutional, stockholder, and stakeholder theories, we develop a comprehensive theoretical framework to understand how these MNEs navigate competing demands from various stakeholders while pursuing their sustainability objectives. The findings of this study contribute to both theoretical understanding of corporate sustainability responses and practical implementation of sustainable business practices, offering valuable insights for policymakers, corporate leaders, and academics studying the intersection of business strategy and environmental responsibility.

2 MNEs and Climate Change Action

The intersection of MNEs' strategy and climate change represents an important but often neglected area of research in contemporary business literature, particularly as global environmental challenges become increasingly pressing (Kanagaretnam et al., 2022). MNEs occupy a unique position in the global response to climate change, wielding significant influence through their operations, supply chains, and technological innovations. Steenbergen and Saurav (2023) argue that MNEs serve as contributors to and potential solutions for climate change, highlighting their dual role in this global challenge. Their research demonstrates that MNEs' responses to climate change vary significantly, ranging from reactive compliance to proactive leadership in sustainability initiatives. There are several mechanisms through which MNEs influence climate change, including direct environmental impacts, supply chain governance, and the diffusion of technological innovation (Dwivedi et al., 2022; Matos et al., 2022).

The literature reveals a growing trend among MNEs to adopt more sophisticated approaches to environmental management. A World Economic Forum (2025) study of Fortune 500 global companies shows that 78% of MNEs have

set climate targets, with climate change mitigation becoming a central strategic concern. The extant literature also highlights the role of institutional pressures in shaping MNEs' environmental strategies (Marano & Kostova, 2016). A comparative analysis across different regulatory environments demonstrates that while stringent environmental regulations accelerate corporate responses to climate change, market forces, and stakeholder expectations increasingly drive voluntary environmental initiatives among MNEs (Child & Tsai, 2005; Tatoglu et al., 2014).

Within the broader context of MNEs' environmental impact, the automotive sector is a significant player in climate change dynamics. Transportation accounts for approximately 24% of direct CO_2 emissions from fuel combustion globally, with passenger vehicles accounting for a substantial share of this figure (Ritchie, 2020). The automotive industry's response to climate change has evolved dramatically over the past decade, driven by technological advances, regulatory pressures, and changing consumer preferences. Research focusing specifically on automotive MNEs reveals complex patterns of innovation and adaptation, highlighting how leading automotive manufacturers have pivoted toward EV production. Analysis of patent applications shows an increase in EV- and power battery-related innovations, leading to lower carbon emissions (Zahoor et al., 2024).

The literature also addresses the challenges of coopetition within the automotive sector, which can lead to detrimental environmental and social impacts (Munten et al., 2021). While automotive MNEs have invested significantly in electric vehicle technology, in 2023 carbon emissions from cars and vans reverted to 2019 pre-pandemic levels (International Energy Agency, 2025), highlighting the sector's challenges in meeting its sustainability targets.

The importance of partnerships and ecosystems in addressing climate challenges has been recognized in previous studies (Dechezleprêtre et al., 2023). Studies document how automotive MNEs are forming new collaborative networks with technology companies, energy providers, and urban planners to develop integrated mobility solutions that reduce environmental impact (Lô & Geiger, 2022). These partnerships represent a shift from traditional competition-based industry structures to more collaborative approaches to addressing climate change.

The literature suggests several key trends that will likely shape the future relationship between MNEs, particularly in the automotive sector and in the context of climate change. First, technological innovation continues to accelerate, with a focus on battery technology, autonomous vehicles, and integrated mobility solutions. Second, regulatory frameworks are becoming more stringent and harmonized globally, pushing MNEs toward more standardized environmental practices (Wells & Nieuwenhuis, 2012). Finally, stakeholder expectations regarding corporate environmental responsibility continue to evolve, requiring more sophisticated and comprehensive responses from MNEs.

We extend this argument and suggest that MNEs' responses to stakeholder pressure depend on the stakeholder. The MNEs' response will translate into action if the stakeholder is a formal institution. Otherwise, MNEs may respond to pressure from the broader community through communication strategies that pay lip service to climate change concerns rather than concrete actions.

3 Theoretical Framework

MNEs' emphasis on and actions to address climate change can be understood through the integrated lens of institutional, stakeholder, and stockholder theories. While each theoretical framework offers distinct perspectives on organizational behavior and management, their interaction provides a rich analytical foundation for understanding how organizations navigate competing demands, legitimacy concerns, and performance expectations in contemporary business environments.

3.1 Institutional Theory

The United Nations Sustainable Development Goals (UNSDGs) represent a global commitment to addressing pressing environmental and social challenges, with 193 member states pledging to achieve these objectives by 2030 (United Nations Global Impact, 2024). Countries have translated these commitments into national policies, regulations, and frameworks that create binding obligations for businesses operating within their jurisdictions (Akhtar-Schuster et al., 2024). Some of these actions include creating carbon-pricing mechanisms, implementing mandatory emissions reporting requirements, and setting renewable energy targets that directly impact corporate operations. These national-level commitments are implemented across multiple institutional layers, creating a complex system of formal rules, regulations, and enforcement mechanisms that shapes the operating environment for multinational enterprises.

Institutional theory provides a powerful lens for understanding how these formal institutions shape the rules and policies that govern business behavior related to climate change and sustainability. Through coercive mechanisms such as environmental regulations, reporting requirements, and compliance standards, institutions create constraints and incentives that influence MNEs' strategic decisions and operational practices. The theory emphasizes how organizational structures and practices are shaped by their institutional environment rather than purely by rational efficiency considerations. Organizations seek legitimacy by conforming to institutionalized rules, norms, and expectations within their organizational field (Röell et al., 2024). This conformity often leads to isomorphism, in which organizations within the same field become increasingly similar in structure and practice. The theory posits that organizational survival depends not only on technical efficiency but also on gaining legitimacy by adhering to institutional pressures from regulatory bodies, professional associations, and societal expectations (Risi et al., 2023).

This institutional pressure becomes particularly significant in global climate action, where firms must navigate varying degrees of regulatory stringency across different markets while maintaining legitimacy in the eyes of multiple stakeholders (Milosevic et al., 2023). The theory helps explain why firms' environmental responses often align more closely with institutional requirements than with purely voluntary corporate initiatives, as organizations seek to maintain

their social license to operate within the institutional frameworks established by national and international governance bodies.

3.2 Stockholder Theory/Friedman Doctrine

Articulated by the economist Milton Friedman in his 1970 seminal essay in the New York Times, the stockholder theory, also referred to as the Friedman doctrine, argues that the primary responsibility of an organization is to maximize profit for its shareholders while operating within the established legal and ethical frameworks or the 'rules of the game' (Friedman, 1970). This shareholder-focused perspective argues that corporate executives, as agents of shareholders, have no mandate to pursue social objectives beyond those that directly contribute to profit maximization or are explicitly required by law (Fürst, 2017). Friedman contends that decisions to allocate corporate resources to social causes effectively impose an unauthorized tax on shareholders and attempt to assume the duties of governments in addressing societal challenges (Friedman, 1971).

While often criticized for its apparent moral narrowness, Friedman's position provides a sophisticated framework for analyzing how MNEs strategically respond to institutional pressures while maintaining their profit-maximizing imperative (Smith, 2025). In the context of institutional rules governing environmental behavior, the Friedman doctrine illuminates why MNEs often organize their responses precisely to regulatory requirements rather than exceeding them. This alignment occurs not because firms are inherently resistant to environmental action but because the doctrine's logic suggests that expenditures beyond compliance represent a misallocation of shareholder resources unless they generate tangible returns (Rammal, 2022). Thus, the doctrine serves as a theoretical bridge between institutional pressures and corporate behavior (Jolliffe-Grimes, 2021), explaining why firms treat environmental compliance as an optimized constraint rather than a maximized goal.

The doctrine's implications become clearer when considering MNEs operating across multiple jurisdictions with varying institutional demands (Zilja et al., 2022). In this context, Friedman's framework suggests that firms will engage in a regulatory balancing act, strategically allocating their environmental investments across markets based on the local institutional requirements and the potential impact on shareholder value (Williams & Aitken, 2011). This explains why MNEs might maintain different environmental standards across their global operations, calibrating their responses to local institutional pressures rather than adopting uniform global standards.

However, the doctrine's application to contemporary environmental challenges reveals its evolutionary nature. While Friedman emphasized profit maximization within legal constraints, modern interpretations increasingly recognize that shareholder value is tied to environmental performance through access to capital, reputational effects, and long-term risk management. This evolution suggests that while MNEs might still primarily respond to institutional pressures rather than voluntary impulses, their planning to enhance shareholder value has become more sophisticated, incorporating longer time horizons and broader risk considerations.

3.3 Stakeholder Theory

Stakeholder theory, as conceptualized by Freeman (1984), goes beyond the traditional shareholder-centric view of corporate responsibility by positing that firms must balance and address the interests of all parties affected by or affecting their operations (Schaltegger et al., 2019). In MNEs, this theoretical framework becomes particularly complex as these enterprises must navigate stakeholder relationships across diverse institutional environments and geographical boundaries. The theory's application to MNEs reveals how these organizations must simultaneously manage and respond to varying stakeholder expectations, power dynamics, and legitimacy demands across multiple institutional contexts (Park et al., 2014).

The theory's strength in explaining MNE behavior lies in its ability to capture the multifaceted nature of stakeholder salience, where power, legitimacy, and urgency intersect to influence corporate decision making (Kim et al., 2019). This is further complicated by the heterogeneous nature of stakeholder expectations across different markets and the potential for stakeholder interests to conflict across borders. This complexity is particularly evident in how MNEs must balance local responsiveness with global integration, often leading to stakeholder management strategies that vary by market while maintaining the organization's global vision and objectives (Surroca et al., 2013).

In developed markets, MNEs typically face well-organized stakeholder groups with established influence channels and clear expectations for corporate behavior. However, in emerging markets, stakeholder relationships may be more fluid and less formalized, requiring different approaches to stakeholder engagement and management (Reimann et al., 2012). Moreover, stakeholder theory helps highlight how MNEs' responses to global challenges, such as climate change and sustainability, are shaped by the complex interplay of stakeholder pressures across their global operations. The theory suggests that MNEs' environmental and social initiatives are not merely responses to direct regulatory pressure but are influenced by a broader network of stakeholder expectations and relationships. This understanding helps explain why some MNEs adopt sustainability practices that exceed regulatory requirements in certain markets while maintaining minimal compliance in others, reflecting the varying degrees of stakeholder pressure and salience across their global operations (Allen et al., 2025).

Integrating these three theoretical perspectives provides insights into organizational behavior and performance. Institutional theory helps explain how organizations respond to external pressures for legitimacy, which often requires attention to stakeholder concerns beyond pure profit maximization. This creates a natural bridge to stakeholder theory, as institutional pressures often arise from stakeholder groups' expectations and demands. The institutional environment shapes what stakeholders consider legitimate organizational behavior, while stakeholder power and interests influence which institutional pressures become most salient. Stockholder theory's emphasis on shareholder primacy exists in tension with both institutional and stakeholder perspectives; yet, this tension itself provides valuable insights. Organizations must navigate between institutional pressures for legitimacy, diverse stakeholder demands, and the imperative to generate financial returns for shareholders. This

balancing act often leads to hybrid approaches where organizations seek to optimize rather than maximize outcomes across multiple dimensions.

4 Research Method

This study takes a theory-testing-by-cases approach (Welch et al., 2022), using cases from the automotive sector to provide a robust contextual explanation of the strategic decisions MNEs make regarding climate change. Using the extended case method, we attempt to capture and contrast meso-level (organizations and stockholders) and macro-level (institutional and stakeholders) pressures, analyzing them through existing theories (Nguyen & Tull, 2022).

We employ a qualitative content analysis approach to explore the role of MNEs in addressing climate change-related issues within their extended value chains. We analyzed the climate change policies of the USA and China and published reports from Tesla and BYD, including annual, impact, and sustainability reports, to gain insights into their strategies, actions, and outcomes in climate action. Content analysis was chosen to systematically examine textual data to identify patterns, themes, and meanings relevant to the research question (Krippendorff, 2004). Tesla and BYD were selected as the focal cases for this study since they are global leaders in the EV market, a critical industry for reducing greenhouse gas (GHG) emissions (Qin, 2023).

Certain boundary conditions constrain our choice of the institutional environment, industry, and organizations. The primacy of institutional drivers over voluntary action may be strongest in capital-intensive industries with long investment cycles (such as automotive) and weaker in industries with lower switching costs. Pure-play EV manufacturers (such as Tesla and BYD) may exhibit different patterns than legacy automakers with sunk technology costs. Hence, we limited the comparison to the two firms. Finally, the Friedman doctrine's explanatory power may be stronger in contexts with well-developed regulatory frameworks and weaker in institutional voids. The USA and China have developed strong policies for EV manufacturers, which influenced our choice of comparative institutional contexts.

Tesla, headquartered in the USA, is widely recognized for its innovation and global impact on the EV and renewable energy markets (Tesla, 2020). BYD, based in China, is a key player in the world's largest EV market and is noted for its vertically integrated operations (BYD Commercial Vehicle Division, 2023). Together, these companies represent distinct yet influential approaches to sustainable business practices. Second, Tesla and BYD operate in markedly different institutional environments, with Tesla primarily operating within Western regulatory frameworks, including those of the USA and the European Union. In contrast, BYD operates from China, a centralized economy with decisive government intervention in renewable energy and climate policies. This contrast provides an opportunity to examine how institutional, stockholder, and stakeholder pressures shape the climate strategies of MNEs. Finally, both companies play significant roles in advancing global climate goals, such as reducing emissions and transitioning to renewable energy. Tesla reported a global reduction of

8.4 million metric tons of CO_2 equivalent emissions in 2022 due to its products and services (Tesla, 2023). BYD surpassed 4 million EV sales globally, contributing significantly to China's carbon neutrality objectives (BYD Commercial Vehicle Division, 2023). Analyzing these two companies provides insights into best practices and challenges in achieving sustainability within extended value chains.

Data for the case studies were sourced from reports published by Tesla and BYD, including annual reports, sustainability and impact reports, and supplementary disclosures, such as environmental, social, and governance (ESG) frameworks for 2014–2023. These reports were downloaded from the companies' official websites to ensure authenticity and accuracy. Each report was selected for its relevance to the research question and detailed coverage of supply chain management, sustainability initiatives, and climate-related actions.

A qualitative content analysis was conducted to evaluate the textual data systematically. This method enabled the identification and interpretation of recurring themes, patterns, and differences in Tesla's and BYD's approaches to addressing climate-related issues (Hsieh & Shannon, 2005). Using a hybrid coding approach (Fereday & Muir-Cochrane, 2006), both deductive and inductive codes were developed. Deductive codes were guided by theoretical frameworks, including stakeholder theory and institutional theory, while inductive codes emerged during the initial reading of the reports. Examples of codes included stakeholder pressure (government regulations and customer expectations), climate change actions (upstream, downstream, internal processes, and collaborations), and organizational leadership (technology innovations, resource mobilization, leadership, and advocacy).

The coding process was conducted independently by two members of the research team to ensure reliability and minimize potential bias. Each researcher systematically reviewed the source documents and applied the predetermined coding framework, documenting their interpretations and classifications without consultation. Following the completion of independent coding, the two researchers convened to compare their results and identify points of divergence. Areas of disagreement were discussed in detail, with each coder articulating their rationale for their classification decisions. Through this deliberative process, consensus was achieved on all coded items, with any remaining discrepancies resolved through discussion of the underlying evidence and mutual agreement on the most appropriate coding assignment. Following this manual process, data were coded in NVivo to ensure systematic and efficient analysis. Key text segments were tagged with relevant codes, and similar codes were grouped into categories. Once coding was completed, themes were generated by identifying patterns and relationships across the data (see Tables 1 and 2).

The primary themes deducted from the theories are: Institutional Pressures, Stakeholder Responses, and Shareholder Value Creation. The secondary themes developed inductively from the data include Technology Innovation Pathways, Market Adaptation Strategies, Supply Chain Configuration, and Communication and Legitimacy Building.

Table 1 Tesla's actions toward mitigating climate change under the US institutional context

Market-driven approach to climate change

1. Technological innovation	2. Supply chain control and diversification	3. Customer demand and market adaptation
a. Gigafactories and advanced battery technology *Evidence: "Building new, better designed, more efficient vehicle factories… Building a factory from the ground up with sustainability in mind can have a material impact on reducing energy use". (2020 Impact Report, p. 17). "In our quest for constant improvement, we build each new factory to be better and more sustainably designed than the previous one… further improvements will continue at Gigafactory Berlin-Brandenburg and Gigafactory Texas". (2020 Impact Report, p. 17). "Tesla continues to look for ways to reduce the amount of cobalt used in our battery cells with a goal of eliminating it entirely" (2018 Impact Report, p.33)* b. Use of blockchain *Evidence: "Tesla participates in the supply chain-wide Resource consortium to pilot blockchain-supported traceability in the cobalt supply chain". (2021 Impact Report, p. 110) "Tesla complemented the hotspot analysis with data collected during a pilot blockchain traceability project for nickel sourced from Tesla nickel supplier, BHP, that traced nickel from a mine site in Australia to Tesla and collected GHG emissions data for every step". (2021 Impact Report, p. 105)* c. Tesla Robotaxis *Evidence: "Tesla Robotaxis will be even more energy efficient… high-mileage products… designed for maximum energy efficiency as handling, acceleration and top speed become less relevant". (2020 Impact Report, p. 16)*	d. Solar Roof and Megapack projects *Evidence: "We began deliveries of the current generations of our Powerwall and Powerpack products in late 2016 and 2017, respectively, and of our Megapack product in late 2019". (2019 Annual Report, p. 2). "Powerpack and Megapack are fully integrated energy storage solutions for commercial, industrial, utility and energy generation customers". (2019 Annual Reprt, p. 2). "Mehapack is cheaper per MWh than many fossil fuel alternative". (2023 Impact Report, p.73) "Homeowners can install solar panels or Solar Roof to power their home using 100% renewable energy and store that energy in Powerwall, which makes electricity available during peak energy-use periods to help them save money" (2018 Impact Report, p.5)* e. Supercharger network throughout the world *Evidence: "…we have spent many years building our Supercharger Network across North America, Europe, China and APAC, which almost doubled in size between 2017 and 2019, and continues to expand today". (2019 Impact Report, p.23) "For 3 years in a row, our global Supercharger network was 100% renewable". (2023 Impact Report, p.40)* f. Highest energy efficiency *Evidence: "We make the most efficient electric SUV on the road". (2023 Impact Report, p. 33). "Model Y AWD achieves 4.2 EPA miles/kWh, which makes it the most efficient electric SUV produced to date". (2020 Impact Report, p. 16)* g. Expanding to SUVs and Pickup trucks *Evidence: "…we have unveiled a number of planned electric vehicles to address a broader cross-section of the vehicle market, including specialized consumer electric vehicles in Cybertruck and the new Tesla Roadster and a commercial electric vehicle in Tesla Semi". (2019 Annual Report, p. 2). "Model Y is a compact sport utility vehicle ("SUV") built on the Model 3 platform with the capability for seating for up to seven adults, which we began producing in January 2020 and expect to commence delivering in the first quarter of 2020". (2019 Annual Report, p. 2) "…we have several future electric vehicles in our product pipeline, including Model Y, Tesla Semi, a pickup truck and a new version of the Tesla Roadster".(2018 Annual Report, p. 42)". "We also intend to bring additional all-electric vehicles to market in the future, including… the Tesla Semi truck, a pickup truck and a new version of the Tesla Roadster". (2018 Annual Report, p. 1)*	h. Launching new models targeting European and the U.S customers *Evidence: "We also intend to further increase cost-competitiveness in our significant markets by adding local manufacturing, including at Gigafactory Berlin in Germany and Gigafactory Texas in Austin, Texas". (2020 Annual Report, p. 9) "We also laid the groundwork for our next phase of growth with… the selection of Berlin, Germany as the site for our next factory for the European market". (2019 Annual Report, p. 39)* i. Scaling production based on market trends (e.g., rising EV demand in the U.S. & Europe and China) *Evidence: "Since the vast majority of our demand comes from North America, Europe and China, we wanted to make sure we could produce and deliver vehicles locally from each of these locations". (2020 Impact Report, p. 18). "Tesla produced and delivered over 1.3 million EVs globally in 2022". (2022 Impact Report Highlights, p. 21). "we expect to continue to benefit from ongoing electrification of the automotive sector and increasing environmental regulations and initiatives". (2023 Annual Report, p.34)* j. Production Localization *Evidence: "Production localization… prior to the end of 2019, all vehicles were produced in California… we expanded to ensure we could produce and deliver vehicles locally in North America, Europe and China". (2020 Impact Report, p. 18). "Localizing suppliers reduces the distance parts need to travel before they are assembled into our vehicles, and reduces the emissions associated with transportation. Supplier localization also supports the local community and its workforce and reduces the risk of a supply disruption due to geopolitical dynamics". (2020 Impact Report, pp. 19). "We established Gigafactory Shanghai to increase the affordability of our vehicles for customers in local markets by reducing transportation and manufacturing costs and eliminating the impact of unfavorable tariffs. We continue to increase the degree of localized procurement and manufacturing there". (2020 Annual Report, p. 8)* k. Increasing margins through greater volumes *Evidence: "We have developed close relationships with vendors… components are shared or similar across many product lines, allowing us to take advantage of pricing efficiencies from economies of scale". (2020 Annual Report, p. 9). "We are committed to reducing the cost of our products to i.mprove access and foster mass adoption." (2023 Impact Report, p. 29). "Model 3 and Model Y are priced on par with premium ICE equivalents and below the average new car selling price in the U.S. Starting at $299 per month in the U.S., leasing Model 3 is more affordable than ever". (2023 Impact Report, p. 22),*

Table 2 BYD's actions toward mitigating climate change under the Chinese institutional context

State-driven approach to climate change		
1. Government policy alignment & incentive utilization	2. Localized, self-sufficient manufacturing	3. Infrastructure development for climate mitigation
a. Leveraging Chinese state subsidies to develop EV and battery technology *Evidence: "In 2010 and 2012, Changsha BYD Auto Co., Ltd. ("Changsha Auto"), a subsidiary of the Company, received government grants with an aggregate amount of RMB874,184,000 provided by the Changsha Yuhua District Development Zone Committee to support the industry development for the Changsha Automobile Zone". (2018 Annual Report, p. 103) "In 2014 and 2018, BYD Lithium Batteries Co., Ltd., a subsidiary of the Company, received government grants with an aggregate amount of RMB150,000,000 from the National Development and Reform Commission and the Ministry of Industry and Information Technology of PRC for the research and development for batteries of electronic vehicles". (2018 Annual Report, p. 103) "On 8 February 2014, a notice was jointly published by the four ministries, including the Ministry of Finance, stating that the subsidy standards for pure electric and plug-in hybrid passenger vehicle in 2014 and 2015 will be increased by 5% and 10%, respectively, based on the original policy. Meanwhile, it was made clear that the Ministry of Finance will continue to provide subsidy after the existing policy expires in 2015. With the strong support of such policies, the Group will actively promote the application of new energy automobile in the private car market and persistently continue to implement its public transportation electrification strategy". (2013 Annual Report, p.17)* b. Aligning corporate strategy with China's NEV (New Energy Vehicle) targets and emission regulations *Evidence: "In the field of battery electric buses, the Group worked with various partners to continuously improve the quality of urban public transportation services and lead the transformation of electrification of the global public transportation". (2022 Annual Report, P. 23) "In 202, after China announced to the world its goal of achieving peak carbon by 2030 and carbon neutrality by 2060, BYD quickly mobilized and launched a planning study on carbon neutral in February 2021 to explore carbon footprint for the electric vehicle industry". (2021 BYD Sustainability Report, p.11) "For new energy vehicles, the increasingly strong supporting policy from the government showed a clearer direction for developing new energy vehicles and it is expected that the promotion of new energy vehicles will be expedited". (2013 Annual Report, p.17)*	e. Internalizing battery and semiconductor manufacturing to reduce dependence on external suppliers *Evidence: "As a leader in new energy vehicles industry, BYD will grasp the opportunities for development and will make additional investments to expand production capacity, improve product competitiveness, accelerate research and development and launch of more new models" (2016 Annual Report, p.14) " …the proceeds raised are intended to be applied to the specified uses described in the Company's circular dated 3 July 2015, namely, (i) the expansion project for production of Li-ion ferrous power batteries; (ii) research and development project of new energy vehicles; and (iii) additional working capital and repayment of bank loans, respectively" (2016 Annual Report, p.36) "BYD launched the IGBT4.0 technology … As the only automobile enterprise in China with a comprehensive industry value chain of IGBT … fully grasped … design and manufacture of IGBT chips, module encapsulating, testing and application platform … breaking up overseas enterprises' technological monopoly". (Annual Report 2018, p. 13)* f. Sourcing raw materials and components predominantly from China to minimize external dependencies *Evidence: "The Commercial Vehicle Division has been committed to local purchasing, actively implemented the principle of 'nearby supplier selection'" (2023 Sustainability Development Report, p. 32) "BYD implements procurement localization and selects nearby suppliers, and the priority order are local companies—companies within the province—domestic companies and foreign companies. BYD has more than 11,000 cooperative suppliers, 41% of which are located in Southern China… (2022 BYD CSR Report, p. 32)*Evidence: "Policy support … will create a good environment … making contributions to energy conservation and emissions reduction worldwide as well as the 'carbon neutrality' vision of major economies". — BYD Annual Report 2022, p. 27. "Responded positively to "Dual-Carbon" by giving full play to its unique advantages in the field of new energy, the Group launched comprehensive green solutions including new energy vehicle, photovoltaics, energy storage, SkyRail and SkyShuttle, continuously explored its own potentials of energy saving and emission reduction, therefore, strived to become the benchmark enterprise in green manufacturing". (2021 Annual Report, p. 11)	i. Incorporating solar panels and battery storage to power manufacturing facilities *Evidence: "…the Group has also been actively developing energy storage batteries and solar cell products for application in storage power stations and photovoltaic power plants". (2018 Annual Report, p.14) "BYD's photovoltaic module and electric bus chassis factory buildings in Campinas (SP) are supplied with 100% renewable energy, coming from solar, wind, biomass and small hydroelectric power plants". (2021 BYD Sustainability Report, p.43)*

Table 2 (continued)

State-driven approach to climate change		
1. Government policy alignment & incentive utilization	2. Localized, self-sufficient manufacturing	3. Infrastructure development for climate mitigation
c. Partnering with state-owned enterprises for infrastructure development and technology sharing *Evidence: "Weichai Power and BYD signed a strategic cooperation agreement in Shenzhen. The two parties plan to use their respective advantages to establish a more comprehensive and in-depth strategic cooperative relationship in the field of new energy". (2023 Annual Report, p.7) "…the Group will endeavor to capture opportunities arising from the electrification of public transportation in Shenzhen and accelerate the replication and promotion of the Shenzhen model into other cities so as to expand the city cluster base of public transportation electrification". (2013 Annual Report, P.9) Partnerships with state-owned enterprises—Shendianneng Technology Group Co., Ltd. in the area of Electric power engineering design, installation, operation of electric vehicle charging infrastructure, and sale of electricity. China Railway Engineering Consulting Group in the area of Engineering survey, design, consultancy, supervision and inspection, EPC contracting, and specialized contracting (2021 Annual Report, p. 222)* d. Leading government-supported initiatives to electrify buses, taxis, and municipal fleets *Evidence: " the Group continued to promote the development strategy of electrification of public transport. Pure electric buses and taxis maintained a strong development in both domestic and overseas markets. According to the statistics released by the Ministry of Industry and Information Technology, the rank of pure electric buses of the Group in the industry rose from the fifth in 2015 to the second in 2016" (2016 Annual Report, p. 12) "The Group's pure electric buses continued to be put into operation in many cities across China … In terms of overseas markets, the Group continued to play a pioneering role in the 'Electrification in Buses'". (2019 Annual Report, p. 12) "In the context of green development and carbon neutrality, China's new energy automobile industry has constantly developed in the direction of network connectivity. … to achieve the goal of carbon neutrality across the value chain and reach carbon neutrality in vehicle application, we focus on the frequent service scenarios of passenger vehicles and commercial vehicles…" (2023 Sustainability Development Report, p. 41)*	g. Innovating safer, more durable battery technology aligned with state safety standards *Evidence: "In the field of battery electric vehicles, in April, the full series of the Group's new energy battery electric passenger vehicles were equipped with "blade batteries", which features the technology innovations such as super safety…" (Annual Report 2021, p. 9) "…successively launched disruptive technologies such as 'Blade Batteries', 'CTB Cell-to-Body' … to achieve leapfrog business development and promote technology reform in the new energy vehicle industry". (Annual Report 2022, p. 19.) "In its rechargeable battery and new energy business, the Group, as a global leading company in the developing and promoting the applications of batteries, continued to improve the energy density of lithium ferrous phosphate ("LFP") batteries while lowering the cost. At the same time, it strove to develop new types of batteries with a higher energy density, in attempt to increase the mileage and overall competitive advantage of its new energy vehicles". (2015 Annual Report, p.6) "In the field of battery electric vehicles, the Group launched the "CTB Cell-to_x0002_Body Integration" technology in May that allows a higher integration level of the "blade battery" and the vehicle body… and contributes to upgrading the safety standard for the whole vehicle further". (2022 Annual Report, p. 19)* h. Committing to low-emission production processes in response to national sustainability targets *Evidence: "Policy support … will create a good environment … making contributions to energy conservation and emissions reduction worldwide as well as the 'carbon neutrality' vision of major economies". — BYD Annual Report 2022, p. 27. "Responded positively to "Dual-Carbon" by giving full play to its unique advantages in the field of new energy, the Group launched comprehensive green solutions including new energy vehicle, photovoltaics, energy storage, SkyRail and SkyShuttle, continuously explored its own potentials of energy saving and emission reduction, therefore, strived to become the benchmark enterprise in green manufacturing". (2021 Annual Report, p. 11)*	j. Prioritizing large-scale production for China's mass market rather than luxury segments *Evidence: "BYD's 6 millionth new energy vehicle rolled off the assembly line at its Zhengzhou factory. It only took BYD more than 3 months to go from the "5 millionth vehicle" to the "6 millionth vehicle", setting a new production and sales record. This is not only another milestone for BYD, but also a microcosm of the development of new energy vehicles in China…" (2023 Annual Report, p. 7) "the Group will further optimize the workflow in order to reduce unit production cost through economies of scale and further enhance the overall competitive edge of BYD's new energy automobiles". (2015 Annual Report, p. 18)*

5 Findings

We begin this section by highlighting the relevant climate change policies in the USA and China, followed by the key findings from our analysis of the reports published by the two focal firms.

5.1 Climate Change Policies in the USA

The U.S. approach to climate change policy is led by multiple federal agencies, with the Environmental Protection Agency (EPA) serving as the primary regulatory authority. The EPA works alongside the Department of Energy (DOE), Department of Transportation (DOT), and the National Oceanic and Atmospheric Administration (NOAA) to implement climate initiatives. Under the Biden administration, the U.S. set ambitious targets to reduce greenhouse gas emissions by 50–52% below the 2005 levels by 2030, aiming to achieve net-zero emissions by 2050 (EPA, 2024). The cornerstone of recent U.S. climate policy is the Inflation Reduction Act of 2022, which represents the most significant climate investment in U.S. history, allocating approximately $369 billion toward climate and clean energy programs (USDOE, 2024). This legislation introduced significant tax credits and incentives for renewable energy development, energy-efficient home improvements, and the adoption of clean vehicles. The law works with the Infrastructure Investment and Jobs Act, which provides additional funding for electric vehicle charging infrastructure, grid modernization, and clean energy research.

These policies are implemented through various mechanisms. The EPA establishes and enforces emissions standards across industries, while the DOE manages clean energy research and development programs. The Federal Energy Regulatory Commission (FERC) oversees energy infrastructure and market regulations (FERC, 2024). States play a crucial role in implementation, as many adopt their own climate targets and policies that often exceed federal requirements.

Companies must adhere to emissions reporting requirements and sector-specific regulations. Large corporations are increasingly expected to disclose climate-related financial risks and develop strategies to reduce emissions. In March 2024, the Securities and Exchange Commission (SEC) adopted rules that require public companies to disclose climate-related risks and greenhouse gas emissions (SEC, 2024). Numerous tax incentives and grants are available for clean energy investments and efficiency improvements.

The automobile sector faces specific requirements and transformative expectations. The EPA has proposed ambitious vehicle emission standards that require up to two-thirds of new passenger vehicles to be electric by 2032. These standards aim to reduce greenhouse gas emissions from light-duty vehicles by 56% and from heavy-duty trucks by 44% by 2032, compared to 2026 levels (EPA, 2024). The DOT has also established fuel efficiency standards that align with these emission reduction goals. To support this transition, the government offers tax credits of up to $7,500 for new electric vehicles and $4,000 for used ones, subject to specific conditions,

including requirements for domestic manufacturing and sourcing of critical minerals. The Infrastructure Investment and Jobs Act provides $7.5 billion to build a nationwide network of 500,000 electric vehicle charging stations by 2030 (IEA, 2024; U.S. Congress, 2021).

Automakers have responded by announcing substantial investments in electric vehicle production. Major manufacturers have committed billions of dollars to developing new electric models and establishing battery production facilities. These investments are reshaping the automotive supply chain with new domestic content and assembly requirements to qualify for federal incentives. The industry is also influenced by California's impactful zero-emission vehicle regulations, which several other states have adopted, creating additional pressure for manufacturers to speed up their transition to electric vehicles (California Air Resource Board, 2024). Figure 1 highlights the key climate change policy events in the USA over time.

5.2 Climate Change Policies in China

China's policy for addressing climate change is based on a national strategy that integrates ecological, economic, and social development. The government has established a "1 + N" policy framework, where "1" represents overarching policy guidance and "N" comprises sector-specific implementation measures across industries such as energy, transportation, and construction (MEE, 2022). The strategy prioritizes reducing pollution alongside carbon emissions, promoting energy conservation, and enhancing ecosystem carbon sinks. China has also developed mid- to long-term plans to control greenhouse gas emissions and accelerate the development of a national carbon market. The National Strategy for Climate Change Adaptation 2035 outlines measures to improve climate resilience in vulnerable regions and key economic sectors (NCSC, 2022). The government highlights its engagement in global climate governance, working through multilateral and bilateral agreements to align with international climate goals.

China has set ambitious targets, aiming to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060 (Qin et al., 2024). The government seeks to lower carbon dioxide emissions per unit of GDP by more than 65% from 2005 levels, increase the share of non-fossil fuels in primary energy consumption to around 25% by 2030, and expand wind and solar power capacity to more than 1.2 billion kilowatts. China is promoting renewable energy projects, improving energy efficiency, and strictly controlling emissions from energy-intensive industries to meet these targets (MEE, 2022). Domestic and international businesses are expected to align with China's green development agenda by adopting low-carbon technologies and adhering to stricter environmental standards. The Ministry of Ecology and Environment leads climate change efforts, supported by other governmental bodies overseeing carbon trading, green finance, and industrial regulations to ensure compliance and progress toward sustainability goals (MEE, 2022).

The document reflects China's commitment to making the automotive sector a major driver of its low-carbon transition by significantly increasing the adoption of new energy vehicles (NEVs), improving fuel efficiency, and reducing

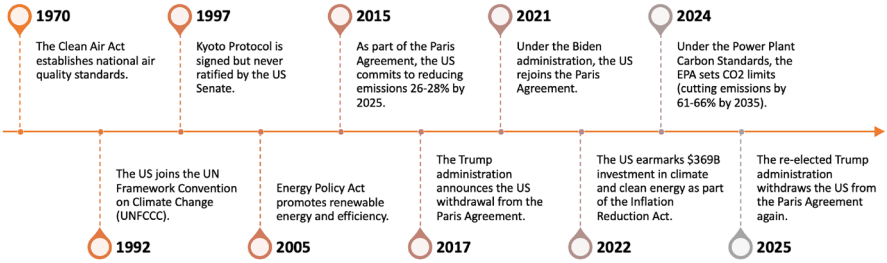

Fig. 1 Timeline of the USA's climate change policies

transport-related emissions. In 2021, more than 3.5 million NEVs were sold, increasing the market share from 5.4% in 2020 to 13.4% in 2021. By June 2022, China had over 10.01 million NEVs, accounting for 3.23% of total vehicles, with 80.93% being pure electric vehicles (EVs) (MEE, 2022). This transformation has occurred due to government policies focused on the automotive sector. This includes exemptions for NEVs from vehicle purchase and vehicle-and-ship taxes, the development of green finance to support NEV production and adoption, stricter vehicle energy efficiency standards, and incentives for green supply chains. The government has also placed strict controls on the production and expansion of energy-intensive, high-emission vehicle manufacturing and strengthened scrappage policies for old, high-emission vehicles (MEE, 2022). Figure 2 provides a timeline of China's climate change policies.

5.3 Tesla and BYD Climate Actions

Both Tesla and BYD demonstrate a strong commitment to climate action, particularly in their downstream activities, reflecting a shared focus on reducing emissions and enhancing sustainability within their value chains. A notable area of commonality is their significant emphasis on internal operational efficiencies, technology-driven innovation, and vertically integrated supply chains that afford them greater control over environmental impacts (BYD, 2024; Tesla, 2022).

In manufacturing, both firms prioritize reducing their operations' carbon footprint. Tesla's gigafactories exemplify this commitment, with facilities powered by renewable energy sources and designed for optimal energy efficiency. These

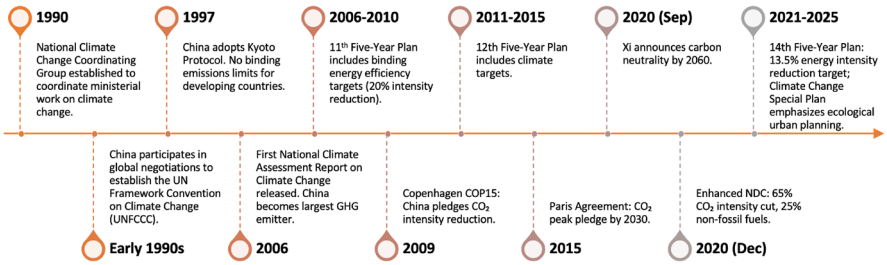

Fig. 2 Timeline of China's climate change policies

factories not only reduce reliance on traditional energy sources but also integrate recycling processes to recover and reuse key materials such as lithium, cobalt, and nickel from spent batteries. Similarly, BYD has installed renewable energy systems, such as solar power and energy storage, at its factories. These initiatives align with BYD's broader strategy of achieving energy self-sufficiency while reducing operational emissions.

Tesla and BYD also emphasize supplier engagement and audits as part of their climate action strategies. Both companies implement rigorous supplier standards to ensure compliance with environmental, social, and governance (ESG) criteria. Tesla's Supplier Code of Conduct and audit processes are designed not only to address emissions reduction but also to promote ethical practices across its supply chain (Tesla, 2021). Similarly, BYD conducts regular supplier evaluations to minimize emissions and promote sustainable practices (BYD, 2024). These efforts underscore the companies' recognition of the critical role that upstream partners play in achieving their climate goals.

Vertically integrated supply chains emerge as another shared strategy, enabling both companies to maintain strict control over production processes, reduce logistical emissions, and innovate sustainably. Tesla's decision to manufacture key components, such as batteries and electric drivetrains, in-house reduces dependence on external suppliers while ensuring that quality and sustainability benchmarks are met (Tesla, 2023). BYD mirrors this approach through its integrated production of batteries, semiconductors, and electric vehicle components, thereby streamlining operations and reducing environmental impacts.

Furthermore, both companies are attempting to enhance energy efficiency across their operations. Tesla leverages its expertise in energy management systems and uses its renewable energy products, such as Powerwall and Powerpack, to optimize energy use in its facilities (Tesla, 2019, 2023). Similarly, BYD's energy efficiency programs focus on incorporating advanced technologies into its factories, such as its innovative blade battery design, which not only enhances safety but also reduces material wastage and energy consumption during production (BYD, 2024; BYD Commercial Vehicle Division, 2023).

The alignment of these strategies suggests that both Tesla and BYD recognize the importance of a comprehensive, end-to-end approach to climate action. By targeting emissions reduction, supply chain sustainability, and operational efficiencies, these companies exemplify how MNEs can effectively leverage their resources and technologies to address climate-related risks. This convergence of strategies underscores the growing institutional pressures and stakeholder expectations for firms to adopt holistic, integrated sustainability approaches.

6 Discussion

While Tesla and BYD share a broad commitment to addressing climate change, their strategies differ significantly, shaped by distinct stakeholder influences, market conditions, and regulatory environments. These variations, rooted in their respective operating contexts and stakeholder pressures, offer valuable insights

into the role of MNEs in addressing climate-related issues within their extended value chains.

Stakeholder theory highlights the significant impact of government policies and regulations on shaping corporate actions. Our findings exemplify this influence in the contexts of Tesla and BYD. Tesla operates within a policy environment characterized by substantial governmental incentives and infrastructure investments, particularly in the USA and Europe. In the USA, federal and state governments heavily subsidize renewable energy and EV adoption, providing tax credits and investing in EV infrastructure such as charging networks. Tesla has leveraged these incentives effectively, both to scale its EV production and to accelerate the adoption of clean energy solutions through its SolarCity and battery storage initiatives. Additionally, Tesla benefits from emissions-related credits, which not only offset its carbon footprint but also generate significant revenue through sales to other automakers (Shepardson, 2024). This dual benefit underscores Tesla's alignment with institutional pressures in markets that prioritize emissions reductions and alternative energy development.

In contrast, BYD's actions are more closely aligned with the regulatory landscape and policy priorities of the Chinese government. As part of China's broader commitment to carbon neutrality by 2060 (MEE, 2022), the government has introduced strict mandates on emissions reductions and aggressive targets for EV adoption. Subsidies, tax breaks, and preferential policies for domestic manufacturers have incentivized BYD to expand its EV portfolio and innovate in areas such as battery technology. Additionally, China's emphasis on technological self-reliance has encouraged BYD to develop its vertically integrated supply chain, producing critical components such as batteries and semiconductors in-house. This integration not only ensures compliance with government priorities but also strengthens BYD's ability to maintain control over the sustainability of its value chain.

Tesla and BYD also differ in their responses to customer expectations, reflecting variations in market pressures across their primary regions of operation. Tesla's customer base in Europe and North America demonstrates a strong preference for sustainability and innovation, which has driven the company to position itself as a leader in cutting-edge technology and environmental responsibility. Tesla's focus on designing energy-efficient gigafactories, enhancing vehicle performance through over-the-air software updates, and providing a seamless customer experience reflects its strategy to address customer demands for high-quality, sustainable products.

BYD, on the other hand, operates predominantly in China, where consumer expectations are shaped by affordability, practicality, and sustainability. This has led BYD to adopt a different approach, emphasizing cost-effective EV models and expanding its presence in public transportation, such as electric buses and taxis. BYD's focus on the mass market aligns with government priorities to reduce urban air pollution and promote EV adoption across broader demographic segments (Zhao et al., 2024). The differences in customer expectations underscore the need for MNEs to adapt their strategies to address market-specific challenges while maintaining a commitment to climate action.

6.1 Comparing the Institutional Settings

To answer our question about the role of institutions and whether the Friedman doctrine can explain the climate change-related activities of MNEs in the automotive industry, we need to take a more holistic view of the environment in which these firms operate. The USA has struggled to find bipartisan support for climate action. During the presidencies of Bill Clinton and George W. Bush, the USA began discussing climate-related issues and working with the global community (Pataki et al., 2008). This continued during President Obama's term when the USA started setting carbon emissions targets. However, much of this work was reversed during Donald Trump's first term as President when he withdrew the USA from the Paris Agreement (Benes, 2017). Although policies on clean energy and carbon emissions were enacted during President Biden's term, the agenda for President Trump's 2nd term began with the U.S. withdrawing from the Paris Agreement (Daly & Borenstein, 2025). With uncertainty over policies and climate action, U.S.-based firms like Tesla are accused of creating the impression of proactive climate change action through effective communication strategies. Tesla's Impact Reports highlight that the company's supply chain emissions in 2022 were approximately 30.7 million tons of carbon (Calma, 2023). This is in stark contrast to Tesla's reputation for low-carbon emissions from its factories, but it ignores the challenges posed by its supply chains and the lifecycle of its products.

The situation in China with BYD is different. China's centralized government, led by the Chinese Communist Party, can plan long-term strategies without fear of changes in government that would disrupt policy or cause other disruptions. This provides a stable institutional environment for firms to operate under. Companies like BYD benefit from the Chinese government's investments in these organizations through subsidies for lithium batteries and other infrastructure (Masiero et al., 2016). In 2009, China began providing subsidies to EV companies, and by 2022, this support had totaled $29 billion. From 500 EVs sold in 2009, the number grew rapidly to 6 million in 2022, accounting for nearly half of the world's EV sales (Yang, 2023). With such incentives, companies like BYD follow the government's set targets for climate-related issues. The government also provides buyer rebates, and amid fears that non-electric cars may be banned and no longer saleable in the future, Chinese consumers are quickly moving to purchase EVs (Kennedy, 2024; Qian et al., 2023). Hence, we see institutional policies not only influencing MNE decisions but also influencing consumer decisions.

In the context of the automotive sector's response to climate change, the behavior of MNEs substantiates Friedman's theoretical position. These firms' environmental initiatives predominantly materialize in response to institutional pressures rather than emerging from purely voluntary corporate citizenship. The industry's historical resistance to environmental regulation, exemplified by decades of lobbying against stricter emissions standards and the persistent focus on profitable but environmentally problematic vehicle categories, suggests that profit maximization remains the primary driver of strategic decision making. When automotive MNEs do implement significant environmental initiatives, these actions typically align with formal institutional requirements such as the European Union's increasingly stringent CO_2

emissions standards, China's New Energy Vehicle mandate, or California's Zero Emission Vehicle program.

The transformation of automotive MNEs' product portfolios and manufacturing processes appears to follow a pattern that Friedman would recognize; firms adapt their operations to comply with institutional requirements while seeking to maximize profitability within these constraints. The significant investments in electric vehicle technology by traditional automakers largely correlate with the timing and stringency of government regulations and incentives across their key markets. This pattern is particularly evident in the differentiated approaches, these firms take across markets with varying levels of environmental regulation, maintaining higher-emission vehicle portfolios in markets with lenient environmental standards while accelerating electrification in regions with stricter requirements. This strategic heterogeneity across markets undermines the notion of voluntary corporate environmentalism. Instead, it suggests a calculated response to varying institutional pressures, aligned with Friedman's view that firms should only pursue social objectives when mandated by the rules of the game or when they coincide with profit maximization.

Our analysis reveals that institutional pressures drive substantive MNE climate action under specific boundary conditions. The pattern observed in these cases holds most strongly when three conditions are simultaneously present: (1) well-developed and stable regulatory frameworks with clear enforcement mechanisms, (2) capital-intensive industries with long investment horizons that make regulatory compliance economically rational, and (3) established market structures where institutional requirements shape consumer demand.

Conversely, the Friedman doctrine's explanatory power weakens when regulatory frameworks remain fragmented or unstable (such as the US policy reversals), when switching costs are minimal, or in institutional voids where government guidance is absent.

Furthermore, the nature of institutional pressure matters. For example, direct mandates, such as China's NEV requirements, produced faster behavioral change than indirect incentives or voluntary commitments. The heterogeneity in MNEs' responses across geographic markets suggests that institutional requirements, rather than global corporate values, are the primary boundary conditions shaping the extent of climate action.

6.2 Conceptual Model

Figure 3 illustrates a conceptual model explaining how multinational enterprises (MNEs) respond to climate change pressures, positioning shareholder interest as the central driver of corporate behavior. In this model, the **Regulatory Framework** serves as an independent variable, comprising *Legal Requirements* and *Enforcement Mechanisms* that exert **Mandatory Action**, which represent the coercive institutional pressures that compel MNEs to take climate action. This mandatory action serves as a mediator**,** channeling regulatory influence into corporate responses. **Key Stakeholders** (General Public, Environmental NGOs, Buyers, Suppliers, Employees, and Media) act as a second independent variable**,** generating **Pressure for**

Climate Action and serving as a mediator linking stakeholder expectations to firm behavior. The model suggests two primary pathways through which MNEs respond: **Compliance & Implementation** (a mediator representing substantive operational changes and genuine adherence to regulations) and **Creative Communication** or impression management (another **mediator** reflecting symbolic responses focused on reputation management). These mediating mechanisms can lead to either genuine climate action or the **Appearance of Action without Substantial Change**, which represents a moderating condition or outcome that determines whether MNEs engage in authentic sustainability practices versus greenwashing. Ultimately, all pathways converge on **Shareholder Interest**, which is positioned as the main outcome, suggesting that MNEs' climate responses are fundamentally driven by the imperative to maximize shareholder value rather than by intrinsic environmental commitments.

From Tables 1 and 2, we see how specific policies (the US tax credits and Chinese NEV mandates) translate into corporate actions. This is demonstrated in Fig. 3, which shows the influence of the regulatory framework through mandatory action. Similarly, the pressure for climate action in the USA comes from customers and investors, which is reflected in Tesla's response. In contrast, in China, it is the government and state enterprises that set the agenda for climate action, as seen in BYD's response. The points of divergence between the two firms are also visible in how they communicate their activities. Tesla demonstrates more "creative communication", emphasizing an innovation narrative and producing impact reports. BYD's focus is on "compliance and implementation", and its communication is directly aligned with state targets. Both organizations ultimately serve shareholder interests through different mechanisms: Tesla through market positioning and credits, and BYD through state support and subsidies.

While often seen as environmental trailblazers, these companies' success largely stems from their ability to leverage institutional frameworks that encourage vehicle electrification, including significant government subsidies, regulatory credits, and favorable market access policies. Their business models effectively turn the regulatory pressures faced by traditional automakers into profit opportunities, transforming institutional environmental demands into financial gains, and operate precisely within the profit-maximizing framework Friedman supported, though now under rules that include environmental considerations. Based on our analysis, we develop the following propositions for future research:

P1: MNEs engage in substantive climate action when institutional requirements mandate such action through enforceable legal mechanisms.

P2: Stakeholder pressure influences MNE climate action only when it translates into either (a) regulatory requirements or (b) direct market advantages (revenue/cost implications).

P3: When enforcement mechanisms are strong, MNEs prioritize substantive compliance over impression management. When enforcement is weak, impression management substitutes for substantive action.

P4: MNEs' climate strategies can be explained by shareholder value implications (market access, cost avoidance, competitive positioning) rather than environmental impact metrics.

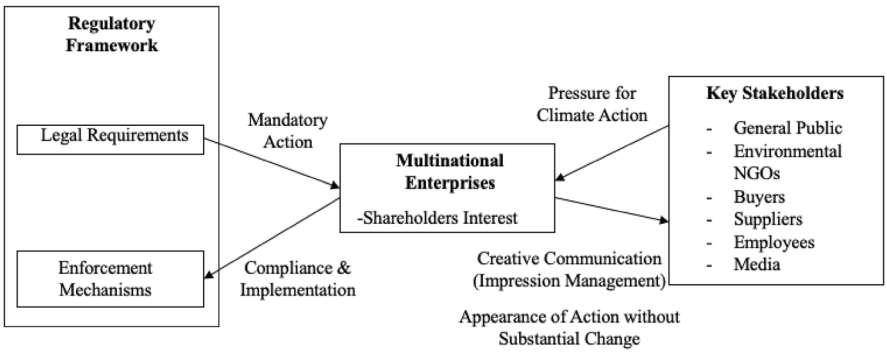

Fig. 3 MNEs' response to institutional pressures and stakeholders

7 Limitations and Future Research

In this study, we explore the drivers for climate action by automotive MNEs. Using Tesla and BYD as examples, we find that Institutional pressures and policies drive these firms' actions rather than stakeholder engagement. The differences we observe are in the institutional environment in which these enterprises operate. Extant literature suggests that the relationship between stakeholder pressure and MNE climate action is moderated by institutional context, being stronger in market economies with dispersed governance and weaker in state-led economies. However, our findings do not support this assertion. The U.S. climate change commitments and targets remain unpredictable, with the start of President Trump's second term commencing with the USA withdrawing from the Paris Agreement. In contrast, China has a stable institutional environment, which is marked by heavy government support for local Chinese EV manufacturers, incentivizing innovation and international competition. The key insight is that both companies ultimately serve shareholder interests, but through distinctly different pathways shaped by their institutional contexts, illustrating the Friedman doctrine's continued relevance in different regulatory environments despite persistent criticism of it being a straw man.

The study makes several contributions to theory and practice. Our use of institutional, stockholder, and stakeholder theories provided insights into how MNEs operate. It highlighted the continued relevance of the central tenets of the Friedman doctrine in contemporary management practices. For policymakers, this suggests that meeting their sustainability targets requires legislation and formal rules that firms must comply with.

Like all studies, our research also has limitations, which we highlight as avenues for future research. The study uses published reports and legislation to analyze the institutional environment and MNEs' actions. Future studies could include insights from key policymakers and senior managers to understand why and how climate change policies are developed, how enterprises respond to them, and how their effectiveness is assessed. We also limit our study to two automotive firms that produce EVs. Future studies could include traditional car manufacturers to understand

the challenges they face as they attempt to move toward electric and other energy-efficient cars. Finally, the reporting of sustainability practices and the role of sustainability audits in highlighting climate change actions can be studied.

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