

The Globalization Origins of Autocratic Rise: Engaged Reformers, Autocratic Advantages, and the Post-Cold War Reversal

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Abstract Autocracies have resurged economically, defying the popular view that more inclusive institutions (e.g., Acemoglu et al. 2001) would favor growth. Why can this happen? I document autocratic rise – contra pre-1990, autocracy is correlated with better economic performance, especially in trade, a critical driver of fiscal and developmental success.¹ Rather than arguing autocracy matters exogenously raising skepticism about democracy, I examine two major trade-related structural transformations that met the *scope condition* for “autocratic advantages” in successfully competing for *external demand* despite weak domestic consumption: (1) trade integration, particularly the WTO expansion, and (2) domestic reform. Accordingly, I demonstrate that more autocratic states disproportionately benefited on trade from both transformations, which, however, is contingent on crossing institutional thresholds and trade engagement, respectively. Put differently, only “engaged reformers” – representing over 90% of autocracies’ GDP and extending beyond China or oil states – outperform; autocratic success is unlikely without globalization. Lastly, mechanisms by sectoral patterns, mediating analysis, and qualitative cases corroborate my theories.

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¹ Although the puzzle here is about autocracy defined as a specific range of states (e.g., Polity ≤ 0 in Acemoglu et al. 2019), my theory and empirical evidence apply to regime type being continuum, dichotomy, or trichotomy.

1 Introduction

Economic globalization markedly accelerated its pace after the Cold War ended (Baldwin 2016; Rodrik 2012). Among many transformations, the most salient are global trade and financial integration, accompanied by the worldwide liberal economic reforms (Milner and Mukherjee 2009) and the optimism that this would lead to political freedoms globally (Fukuyama 1989; Ikenberry 2001).

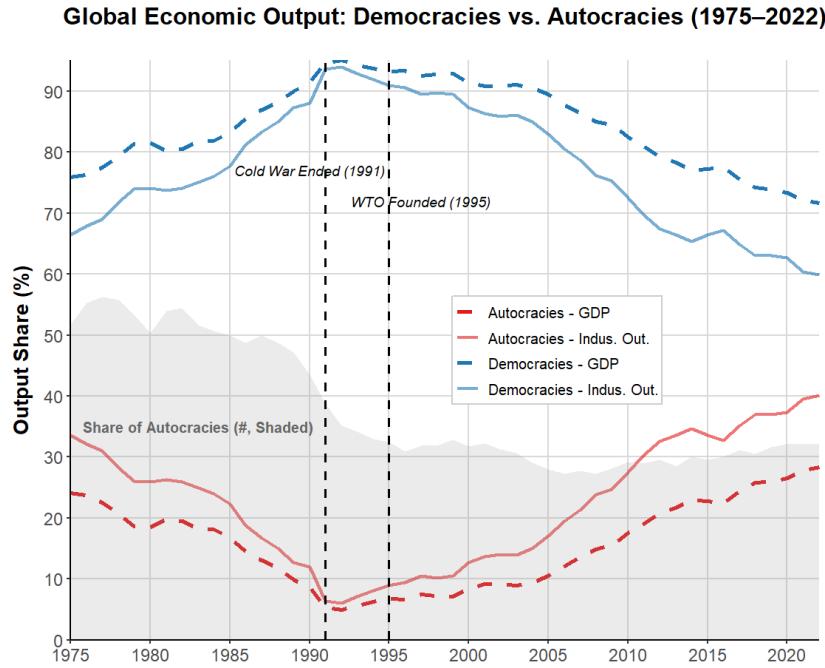


Figure 1: The Distribution of Power Change Between Democracies and Autocracies (World Bank).
Note: I use a conservative measure for Autocracy (Freedom House (FH) Index ≥ 10). Similar patterns for using Polity V or excluding China are plotted in Appendix A.5. In 2020, China accounts for 62% of autocracies' GDP. Shadow area indicates the proportion of autocracies in number.

Meanwhile, the once promising third-wave democratization has stalled (see the shaded area in Figure 1), and scholars are puzzled about the emergent instability and backslicing of both emerging and advanced democracies, as well as stable, competitive autocracies (Diamond 2015; Ekiert and Dasanaike 2024; Haggard and Kaufman 2016). Backsliding in democracies is found partly connected to globalization (Autor et al. 2020; Inglehart and Norris 2017; Rodrik 2017), while many autocracies thrive, with their share of global output reversing the declining trend and steadily rising (Figure 1).²

The post-1990 economic globalization has accompanied both democratic backslicing and auto-

²Notably, many are competitive on the export market. In 2022, the largest trade surplus countries were: China, Russia, and Saudi Arabia. See more in Figure A.5 and Section 2. Autocracies' share may be higher, since many run external surpluses implying currency devaluation (Figure A.5), although some doubts their growth rates (Martinez 2021). Yet, trade data is more accurate as recorded by trading partners.

cratic rise worldwide. But is it coincidental? Despite globalization's varied merits, it nonetheless has raised concerns recently. Existing literature on regime type and economic performance provides mixed arguments and, importantly, primarily focuses on internal mechanisms without much about external factors (Acemoglu et al. 2005; Barro 1996; Chandra and Rudra 2015; Olson 1993; Przeworski et al. 2000; Steinberg and Malhotra 2014) or do no comparison (Acemoglu et al. 2019).

This paper contributes to the literature by incorporating external factors in understanding autocratic rise. I argue that more authoritarian regimes, when the scope conditions are met, possess “autocratic advantages” defined as greater institutional and non-institutional abilities to compete for *external* demand through global trade, despite their political limitations in fostering *internal* consumption. In other words, regime type has a causal effect.

The concept of “autocratic advantage” is not new (Becker 2010; Easterly 2011), yet lacks systematic theorization (e.g., mechanisms and scope conditions). Autocratic resurgence requires taking it seriously. Among many post-Cold War globalization changes – spanning trade, finance, migration, governance, security, technology, environment, and culture,³ I examine two most export-driving structural transformations in both democracies and autocracies supported by numerous cases and the literature – trade integration and domestic reform, both of which significantly favor more authoritarian regimes. It thus provides strong evidence linking autocratic rise to globalization. However, this is not without *scope condition* – “autocratic advantage” is confined to those who both have done sufficient institutional reforms and are engaged by the WTO in particular – the “*engaged reformers*” – accounting for over 90% of autocracies’ GDP. The theory thus moves beyond strong leaders, state capacity, or China, which particularly fits the theory, and oil states; former socialist (e.g., North Korea or Uzbekistan) or resource-rich countries (e.g., Iran and Venezuela) that meet no scope conditions nonetheless under-compete.

Consider several examples among many others:⁴ post-Mao China and Park’s Korea, Qatar and the UAE, post-Soviet Azerbaijan and Russia, Ben Ali’s Tunisia and dos Santos’s Angola, and even, arguably, Modi’s India. These regimes differ from traditional repression-centric, isolationist authoritarianism such as Mao or Saddam Hussein – “Autocracy 1.0” termed by Yang (2024). Instead,

³See Section 5.6 for more discussions on these factors.

⁴Apart from dozens in East/Southeast Asia, East Europe, and the Gulf region, other notable authoritarian cases include: Pinochet’s Chile (1980/90s); Franco’s Spain (1959–1974); Junta’s Brazil (1968-1973); Salazar’s Portugal (1960s); PRI’s Mexico (1980/90s); Fujimori’s Peru (1993–1999); Trujillo’s Dominican Republic (1950/60s); Colombia (1958-1974); dos Santos’ Angola (2002–2008); Ben Ali’s Tunisia (1990–2010); Kagame’s Rwanda (2000–2019); Botswana (1966–1980); Zenawi’s Ethiopia (2004–2012); Obiang’s Equatorial Guinea (1996–2008); Mubarak’s Egypt (1990s–2005); Mohammad’s Morocco (1999–2008).

“Autocracy 2.0” regimes emulated advanced democracies in economic institutions, granting them significant advantages as discussed further below; they stand out for their economic performance, much relying on exports. Albeit always resource-rich, Qatar and the UAE truly took off only after the 1990s, actively leveraging GATT/WTO membership and undertaking heavy investments in infrastructure and industry. Tunisia, under Ben Ali, prioritized export-led manufacturing and was the first African country to sign Association Agreement with the EU. Contra the Cold War era, a globalized economy greatly enhances autocracies’ capacity to grab external demand, even as their non-inclusive political institutions constrain internal demand (Acemoglu and Robinson 2012).

Examining two most export-driving transformations, the theory offers an explanation on why post-1990 globalization coincides with autocratic rise and, related, democratic backsliding unseen three decades ago. It also contributes to the debate on regime performance, institutions, and globalization (Acemoglu et al. 2001; Fukuyama 1989; Ikenberry 2001; Rodrik 2012). While institution remains critical, sufficient attention should be paid to external factors. Without expanded markets (or conversely with external shocks), domestic institutions can be discounted. Excessively high investments in reformed autocracies is unlikely without sufficient market prospects.⁵

The implications are multifaceted. According to international relations theories,⁶ a world of stronger autocracies is likely less cooperative and more conflictual, with adverse effects on global economy and security.⁷ Economic performance plays a critical role in regime stability – economic weakness not only sow instability domestically and erodes public trust in democracy (Przeworski et al. 2000) as is happening, but also diminish the linkages and leverages that otherwise facilitate democratization (Levitsky and Way 2006). Examples from Russia’s “shock therapy” to current challenges in the U.S. and India highlight how unsatisfactory neoliberal policies can lead to authoritarian tendencies (Bruff 2014). Simultaneously, strengthened autocracies resist democratization, bolster each other, and encourage a global autocratic drift (Ekiert and Dasanaike 2024), strengthening autocratic rules and norms (Wright, Frantz and Geddes 2013). They increasingly use outcomes to prove legitimacy and even “redefine” democracy (Bature and Tolstrup 2024; Oser and Hooghe 2018).

The rest of the paper focuses on trade, the first-order effect of globalization, specifically exports

⁵For example, excessive investments in export-oriented models like in China and Vietnam are largely driven by prospects in overseas markets.

⁶Such as realism, constructivism, and democratic peace theory.

⁷Coincidentally, global conflicts (reported by ACLED, see Figure A.3) have steadily risen for the past two decades.

and external balances.⁸ Exports induce growth in productivity, income, and innovation (Bernard et al. 2018; Helpman and Krugman 1985), echoing the export-oriented model (Dooley et al. 2003). For external balances, while short-run or bilateral fluctuations hardly matter, persistent, aggregate deficits often signal structural issues (see “global imbalances” (Blanchard and Milesi-Ferretti 2009; Obstfeld and Rogoff 2009)). Importantly, external imbalances reflect the redistribution of *external demand* (Chinn and Ito 2021) – thus international spillovers unlike growth, while persistent surpluses often reflect weaker internal demand.⁹ Long-run export growth and external balances (1992-2015) are strongly correlated with GDP growth ($r = 0.74$ and $r = 0.65$, respectively).¹⁰

2 The Puzzle: Performance Divergence

Stylized Patterns

I document the patterns of the economic rise of autocracies in the post-1990 period. First, I illustrate the trends of several economic indicators including two trade measures that are directly linked to globalization. I calculate the means of merchandise exports (% of GDP), trade balance (% of GDP), industrial output (% of GDP), and GDP growth rate of both democracy and autocracy (FH ≥ 10) groups. In Figure 2, all four measures show that since the early 1990s, the average performance of autocracies diverges or surpasses that of democracies. These patterns are similar after removing developed countries, or resources-oriented countries (such as Russia and the OPEC states), or China (see Figure A.4).

⁸External balances include current account balance which includes trade balance, net foreign income, and net transfer payments.

⁹China’s trade surpluses in manufactures – nearly 10% of GDP – suggest sustained external demand that stimulates domestic industries.

¹⁰Author’s calculations based on the WDI data.

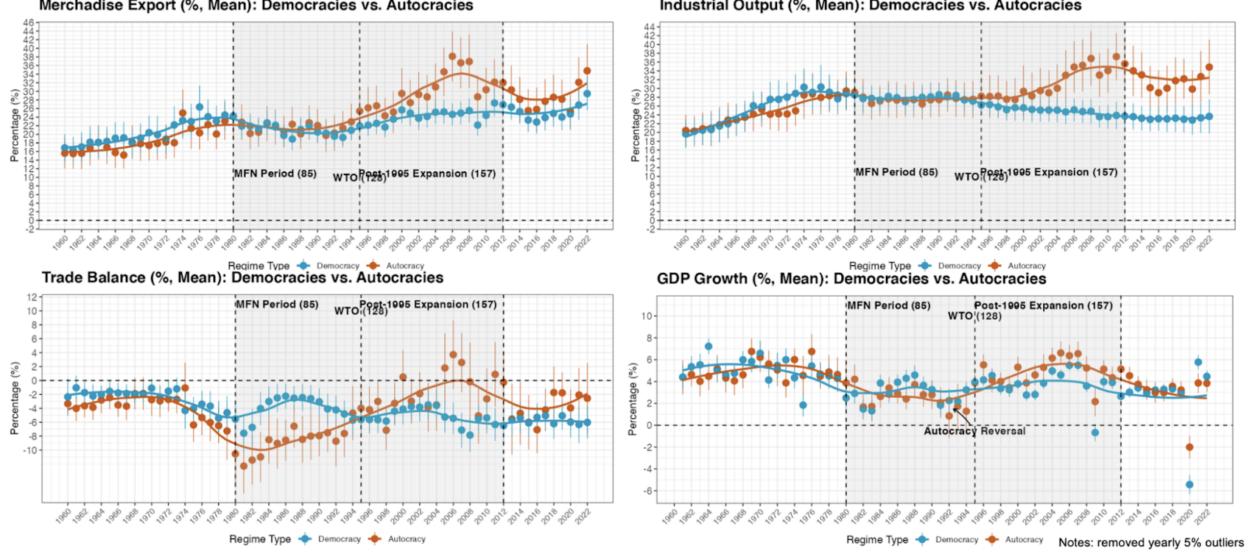


Figure 2: Mean Performance of Economic Indicators (World Bank) between Democracies and Autocracies ($FH \geq 10$). Note: % means as a share of GDP and bars denote standard errors of means. 5% of yearly data is removed from tails. The patterns generally hold after removing developed countries, or China, or Russia, or OPEC countries (see Figure A.4).

In Figure 3, more autocratic regime types are associated with better economic performance for all major development-related indicators, except for consumption and taxation between 1990 and 2020.¹¹ For example, a ten-unit decrease in Polity (from 5 to -5) is associated with nearly one percentage point increase in annual GDP growth, eight percentage points increase in industrial output (% in GDP), and nine percentage points increase in exports (%). At face value, these descriptive annual statistics already indicate that autocracies would rise.

¹¹ Pre-1990 data of these indicators are not shown due to missing data especially for former socialist states. However, available data shows correlations are either reversed or substantially weaker.

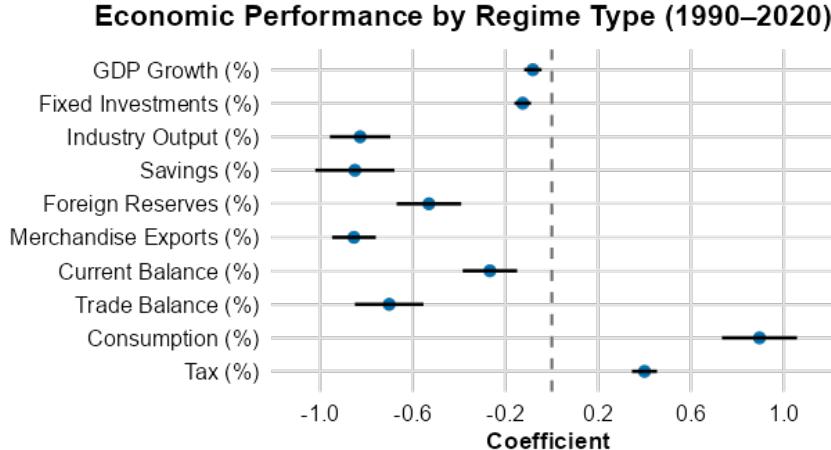


Figure 3: Regime Type and Major Economic Indicators (World Bank). *Note:* Percentage means “share of GDP.” The bar plot means the percentage point change associated with one unit increase in Polity, adjusting for GDP per capita and year fixed-effects for similar-level comparisons. Correlations are robust to excluding China or OPEC states and including continent dummies and natural resource rents (% of GDP).

Connecting the Literature

The diverging performance patterns of autocracies highlight intriguing puzzles and challenge conventional wisdom. The literature finds negligible difference of regime type on economic growth. Democracy theoretically foster growth due to property rights protection (Weingast 1995), political stability (Tavares and Wacziarg 2001), investments in education and healthcare (Baum and Lake 2003), and acceptance of innovation (Sah and Stiglitz 1986). Autocracy may also promote growth by, for example, resisting immediate consumption and over-redistribution (Krueger 1974). Empirical studies have found no clear relationship (Barro 1996; Przeworski et al. 2000) or offers no comparison (Acemoglu et al. 2019). One exception (Narita and Sudo 2021), using multiple instrumental variables, finds that autocracy does cause higher growth only recently (2000-20).¹²

The conclusion on trade performance, however, is clearer. Not only do democracies export more (Yu 2010), they also are less protectionist (Eichengreen and Leblang 2007). These advantages are often linked to institutional factors like contract enforcement, rule of law, and intellectual property protection (Atras 2015; Levchenko 2007; Rigobon and Rodrik 2004), which contribute to higher product quality and global competitiveness (Yu 2010).

Another influential strand of literature focuses on institutions, arguing that institutional differences shape the economic outcomes (North 1990; Acemoglu et al. 2005). Among institutions which

¹²However, it offers limited explanation on why the divergence happens.

shape the incentives of market players, “of primary importance to economic outcomes” are PR protection and rule of law within a functioning market (Acemoglu et al. 2005). Inclusive institutions – those that uphold equal participation – are central to this perspective (Acemoglu et al. 2001), suggesting democracy’s advantage.

The final strand of literature examines the so-called “autocratic advantages.” Scholars have long observed that not all autocracies perform alike – their performance exhibits greater variability, suggesting greater diversity (Przeworski et al. 2000; Rodrik 2000). Some scholars attribute high-performing autocracies to “benevolent” or “visionary” leaders (Becker 2010; Easterly 201), while others distinguish repression-only from those that more rely on economic incentives and bureaucratic structures – Autocracy 2.0 (Yang 2024). Debates also remain regarding the durability and stability of autocratic success.

I contribute to the literature by incorporating factors beyond domestic alone. Overall, a key limitation of much existing literature is the limited attention to the impact from globalization. Much of the focus has been on internal mechanisms, treating states as autonomous black-boxes. The “autocratic advantage” literature often lacks clear theorization (e.g., mechanisms and scope conditions). One puzzle, especially for institutional theories, is that even in the post-1990 period, democracies on average continued to exhibit higher institutional quality (see Table 2), but poorer economic performance.

3 Age of Globalization: Taking “Autocratic Advantage” Seriously

“Growth at such a quick pace … requires strong political leadership.”

– Michael Spence, Nobel Economics Laureate, 2008

“Visionary leaders can accomplish more in autocratic than democratic governments because they need not heed legislative, judicial, or media constraints in promoting their agenda.”

– Gary Becker, Nobel Economics Laureate, 2010

This section builds on a rich body of literature of trade, political economy, and authoritarianism, theorizing how economically reformed autocracies may possess advantages in a *new context* –

the globalized economy, in which I delineate the mechanisms and scope conditions for “autocratic advantages.”

The narratives on the success of South Korea, Taiwan, or Chile implicitly assumes three necessary conditions or determinants: (1) reformed economic institutions, (2) expanded export markets or demand, and (3) deliberate state policy. Put differently, they need *both* reform and trade engagement. Firms, domestic or foreign, serve as the operational units driving investments, production, exports, and innovation.¹³

Indeed, these determinants align well with existing literature. Growth theories emphasize the role of technological progress driven by investment in physical and human capital (Solow 1957; Romer 1986). Institutional theories emphasize institutions that shape economic incentives and behavior (North 1990; Acemoglu et al. 2001). Development theories such as the developmental state (Evans 1995; Haggard 1990; Dooley et al. 2003), further, underscore state role in promoting industrialization, investing in infrastructure, and fostering state-market synergies to address market failures rather than reckless interventions.¹⁴ Major international institutions such as the World Bank has recommended the combination of policy actions and institution building to boost growth.¹⁵

Importantly, demand or market prospects plays a crucial role in driving growth and output, through mechanisms such as increasing returns to scale, learning-by-exporting, and cluster effects (Harrison and Rodriguez-Clare 2010; Krugman 1979; Melitz 2003; Porter 1998). This is especially critical for autocratic regimes, often with weak domestic demand; otherwise they may well create noneconomic oversupply or even become socially unstable (Campante et al. 2023).

3.1 New Context: How Globalized Economy Differs (vs. an Enclosed One)?

The post-1990 era witnessed unprecedented trade liberalization, capital mobility, and the expansion of globalized production, often termed “hyperglobalization” (Rodrik 2011). In particular, trade integration backed by financial flows and globalized production changes the game as opposed to enclosed economies.

¹³Other factors such as history, culture and geography also matter, but arguably less central to this analysis.

¹⁴Notably, while this model challenges laissez-faire neoliberalism and institution-only approaches, it requires institutional preconditions such as PR protection and contract enforcement (Antràs 2015; Haggard 1990).

¹⁵“Global Economic Prospect” Report, 2024.

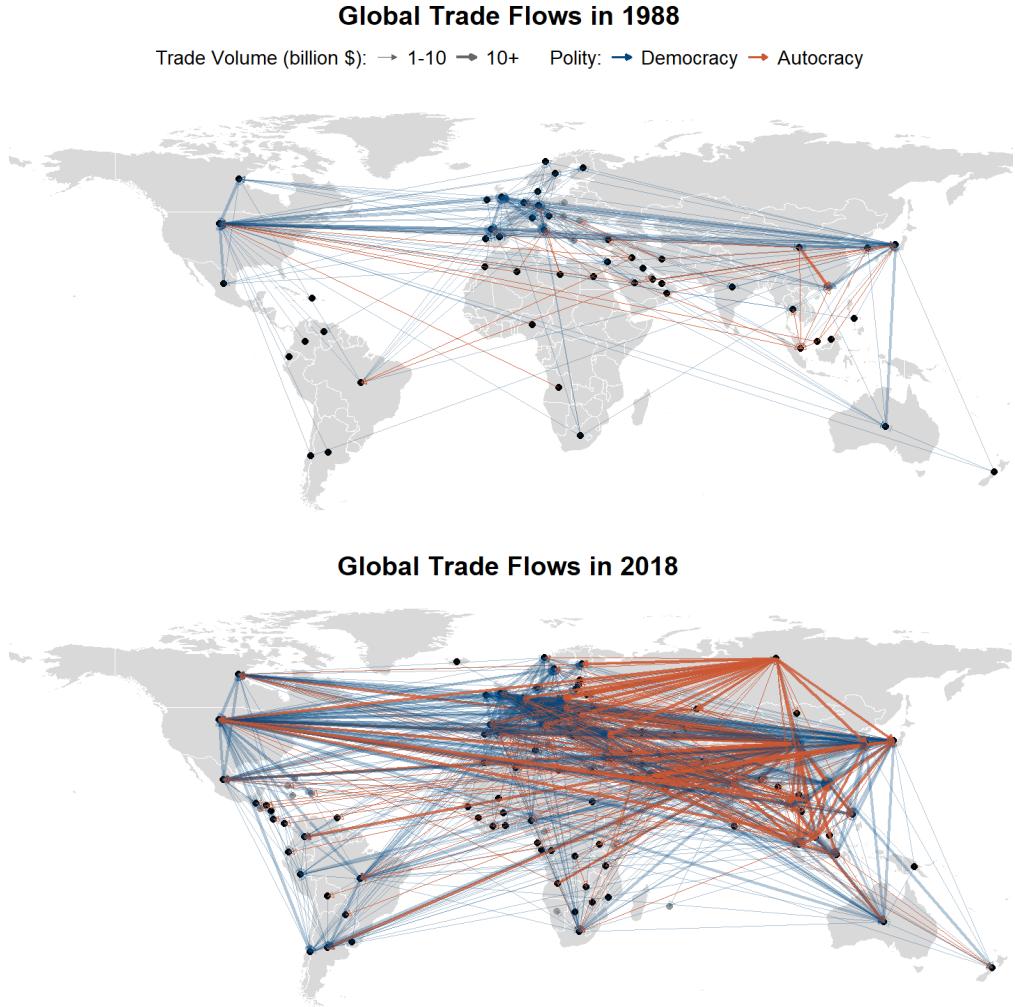


Figure 4: Global Bilateral Trade Flows (1988 vs. 2018). *Note:* For visualization and export-prioritizing purposes, the plot displays only the larger of bi-directional flows between each country pair using exporter's Polity. For example, red lines denote export flows from autocracies ($FH \geq 10$). Before 1990, exports are mostly dominated by democratic allies (North America, Europe, and Japan/Korea) and some oil states.

First, a globalized economy shifts development logic outward. Early trade theories (e.g., the Heckscher-Ohlin model) emphasized national comparative advantages and specialization leading to greater efficiency and output. Newer theories incorporate economies of scale (Krugman 1979), technology diffusion (Grossman and Helpman 1991), and competition through firm-level selection (Melitz 2003). In the post-1990 era when the global value chain (GVC) dominates global trade (Bernard et al. 2009), decisions by multinational corporations (MNCs) who seek low costs worldwide became all the more important. The GVC facilitates the rapid transfer of technological know-how within the chain, enabling poorer countries to export advanced products more quickly,

blurring national comparative advantages that might otherwise take longer to develop (Baldwin 2016).¹⁶ Furthermore, global trade combined with floating exchange rates and free capital flows – as opposed to the Bretton Woods era – has made factor prices globally comparable, materializing a nation’s competitiveness and profitability, unlike in the Cold War era. Furthermore, expanded market prospects encourage firms’ entry and realize scale advantage (Krugman 1979; Melitz 2003), incentivizing further investments and innovation, fueled by export revenue (Atkeson and Burstein 2010; Burstein and Melitz 2013; Grossman and Helpman 1991). Such investments lead to quality improvements (Yu 2010) and future first-mover advantage (Krugman 1979), and are critical for productivity growth (Acemoglu et al. 2017). These are exactly the essence of the “developmental state” success (Haggard 1990).

Second, a globalized economy creates greater room for states to effectively practice interventionism. While free trade is conventionally regarded as mutually beneficial, caveats remain. Factor-based trade models assumed idealized conditions such as perfect competition and few government-imposed frictions, which often don’t hold in practice. Later models admit these imperfections: government intervention and trade barriers can all influence trade (Krugman 1979; Melitz 2003). Furthermore, moving to the liberalized equilibrium from autarky is a one-time gain, while the long-term effects are debatable (Garrett 2000). Governments, post-equilibrium, may adopt mercantilism that significantly affects trade. Classic examples include non-tariff barriers and strategic trade policy (Brander and Spencer 1985). This can be particularly salient when a key assumption – balanced trade (or exogenous imbalances) – rarely occurs,¹⁷ as one’s products can be artificially cheap without currency adjustment.¹⁸ Beyond institutional differences (Antràs 2015), policies like currency devaluation, subsidies, and labor suppression can create “artificial” comparative advantage and incentivize firms’ investments, boosting domestic production through “beggar-thy-neighbor” (Corsetti et al. 2007; Jeanne 2021).¹⁹ Eaton and Kortum (2002) similarly describe a country’s competitiveness as “technology adjusted for wage costs,” echoed by others (Bernard et al. 2003;

¹⁶Indeed, as Osgood (2017) finds, only one-tenth of U.S. industries can be explained by comparative advantage, with the remainder driven by product differentiation and direct competition.

¹⁷E.g., see the discussion of global imbalances in Blanchard and Milesi-Ferretti (2009) and Obstfeld and Rogoff (2009).

¹⁸This can be illustrated by the Eaton-Kortum model (2002) which assumes a country i takes a random productivity draw for goods from a Fréchet distribution: $F_i(\phi) = e^{-T_i \phi^{-\theta}}$, which generates a country’s comparative advantages. With currency devaluation, the devaluing country can end up acquiring comparative/competitive advantages for more goods and running surplus.

¹⁹Arkolakis et al. (2018) show that MNCs choose production location l based on final unit cost: $C_{il} = \frac{\gamma_{il} w_l \tau_l}{z_l}$, where γ_{il} is the foreign production cost, w_l is local wage, τ_l is trade cost, and z_l is firm productivity which can be that of MNCs or related party or be built through within-network technology transfer.

Melitz 2003).²⁰ Epifani and Gancia (2017) further demonstrate that currency undervaluation leads to surpluses and global production agglomeration.²¹ Cost advantage is also influenced by infrastructure, pro-competition regulations, resource costs, and work culture. In the Appendix, through a normal-form game, firm f_1 with lower costs and firm f_2 with higher costs will be locked in a Nash equilibrium of $\langle \text{not produce}, \text{produce} \rangle$.

All that said, a globalized economy, unlike enclosed ones, creates much greater room for states to effectively practice interventionism, while changing development logic outward: rather than relying on domestic demand to spur entrepreneurship and capital accumulation – as conventional wisdom suggests – the focus extends to competing for external demand, investment, and technology.

3.2 “Autocratic Advantages”: Reformers in a Globalized Economy

Then how may reformed autocracies succeed in competing for external demand in a globalized economy? Since the 1980s, many autocratic and democratic states, had embraced economic reforms: privatization, deregulation, austerity, and trade and capital account liberalization. Adopting market-oriented policies requires state capacity. Indeed, since Reagan and Thatcher, governments worldwide had often relied on (semi-)authoritarian measures to push through reforms (Bruff 2014). These measures, partly because they work, were used to manage resistance, enforce compliance, and stabilize systems that prioritize market logic (*Ibid*) – an approach autocracies have natural advantages in. Authoritarian leaders, as rational actors, did reforms because of regime crisis, international pressure, and economic incentives (Geddes 1999; Levitsky and Way 2006; Haggard and Kaufman 2016), which push them to adopt a more mercantilist and self-interested manner.

Existing literature documents autocracies’ institutional and non-institutional advantages from various perspectives already. Note that the advantages need not result from active intervention – autocratic institutions often suppress wages by default. Given economic reforms, some autocratic institutions that may otherwise be disadvantages in a closed economy can actually become advantageous, since the goal is now competing for external demand. In other words, given the

²⁰In the classic Eaton-Kortum model (2002), the proportion of country n ’s total expenditure imported from country i is: $\pi_{ni} = \frac{T_i(w_i d_{ni})^{-\theta}}{\sum T_h(w_h d_{nh})^{-\theta}}$, where T_i represents technology and w_i represents wage or factor cost. Given technology convergence (e.g., due to the diffusion by GVC), wage then determines production location. The Melitz model (2003) similarly specifies that firm’s profit ($\pi(\phi) = [(\frac{\phi}{\phi^*})^{\sigma-1} - 1]wf$), which determines firm’s entry into export market, is determined by wage w . Bernard et al. (2003) show that decreased wage increases competitiveness and the range of exports, and lowers domestic prices.

²¹Costinot et al. (2013) similarly shows that absolute productivity (accounting for costs, quality, and exchange rates) determines the production location within GVCs.

scope conditions, a regime being more authoritarian can do better compared to its more democratic counterfactual.

Centralized power – Autocratic states concentrate power as opposed to democracies, which often feature fragmented and sometimes unstable governance systems, particularly in emerging democracies (Diamond 2015). This grants autocracies greater discretion to implement policies without extensive bargaining or deliberation, so that they are better positioned to push for reforms and deploy concerted, strategic policies conducive to developing industries (Hall and Soskice 2001; Kohli 2004). While deliberation matters in a closed economy (Chandra and Rudra 2015), this efficiency may allow autocracies to respond swiftly to global market. As the state controls more resources, state-owned enterprises and even state media play supportive roles in advancing national interests in trade (Clegg et al. 2018; Kim 2018; Wu 2016). This can also resist external shocks as compared to more “hands-off” approaches (see Belarus in Section 7). Moreover, autocracies’ relative leadership longevity can facilitate consistent and long-term economic planning (Wade 1990), creating a predictable business environment (Haggard 1990). All these are cores of the “development state” logic (Haggard 1990; Rodrik 2004). The notable examples include China, Vietnam, and Singapore, or Korea, Taiwan, Malaysia, and Chile when they were in (semi-)authoritarian eras,²² as well as aggressive development projects in Gulf states like Qatar, the UAE, and Saudi Arabia. Even in democratic India, a more centralized and authoritarian Modi’s regime was able to implement more strategic policies than previous governments to boost exports.

Weak institutional constraints – Autocracies often operate with weaker institutional constraints, which include constitutions, legislatures, and norms that shape decision-making (Levitsky and Way 2010). They also face fewer challenges from opposition parties and lobbying forces common in democracies. Such governments can more readily prioritize state interests and divert limited resources to productive sectors or infrastructure projects that promote trade, enhancing their global competitiveness. Because of larger win-set (Putnam 1995), autocracies may be able to sign “empty” deals with international organizations or favorable deals with MNCs, which dominate global trade (Bernard et al. 2018). For MNCs, autocratic states establish more special economic zones offering incentives such as tax breaks, lower tariffs, and looser regulations (Allen and Ge, working paper). On the flip side, these regimes are less bound by commitments – autocratic governments are less

²²And a more centralized Japan to some extent. Counter-examples include Tunisia, which experienced quick export growth under a centralized, yet reformed Ben Ali dictatorship (tripled in 2001-2011), before entering stagnation under a fragmented democratic government.

constrained to manipulate trade or exchange rate policies (Steinberg and Malhotra 2014) and control financial institutions (Brune et al. 2001), resilient to external shocks. In fact, Lipsky (2018) found that democracies tend to have more financial instability, primarily due to their weaker manipulative abilities. The same tendency can extend to other realms such as intellectual property-rights violation or economic espionage.

Lack of accountability – Autocrats, even if reformed, remain less accountable to the public, allowing them to pursue a broader range of market-favoring policies, including those that are unpopular, risky, or repressive (Quinn and Woolley 2001). They possess greater autonomy from immediate consumption or redistribution demands (Zakaria 1997), satisfying which can undermine market efficiency and investment incentives (Huntington 1968; Sah 1991) – particularly relevant in poorer developing countries. Authoritarian regimes can also easily impose austerity when saving is necessary to finance investments. Moreover, autocracies are less subject to pressure by corporatist, labor, or environmental groups in influencing policy (Krueger 1974; Rodrik 1999), as well as electorate. Weak labor bargaining institutions and the suppression of wages and unions can further enhance policy flexibility (Manger and Sattler 2015; Rodrik 1999). In contrast, many Latin American democracies even have stricter labor regulations than OECD countries (Feierherd 2024). While such non-inclusiveness may impede a healthy domestic economy, it could enhance competitiveness of firms and attracts MNCs to invest, while resisting short-term unpopularity.

Mercantilist mentality – Due to weaker liberal economic norms (Dailami 2000; Quinn 2000), narrower interest groups (Eichengreen and Leblang 2008), or economic performance for legitimacy (Batureo and Tolstrup 2024), autocracies often exhibit mercantilist and protectionist tendencies, apart from discriminatory favoritism (e.g., in public procurement) (Bueno de Mesquita et al. 2005). Democracies, by contrast, tend to be more cosmopolitan and economically liberal (Milner and Kubota 2005). While economists generally criticize mercantilism and protectionism, these policies can foster domestic industries or incentivize multinational corporations to produce locally, as seen in China’s automobile industry (Kim 2018) and India’s electronics sector under Modi. Autocracies also tend to import less, even accounting for trade policies (Aidt and Gassebner 2010). Although all-country correlation supports the protectionism argument, there remains an exception – reformed autocracies. As shown in Section 6, WTO-member autocracies with moderate PR protection are associated with lower tariff rates, aligning with the findings by Hankla and Kuthy (2013) that autocracies can more easily implement trade liberalization (once preferred). This suggests that

perhaps for reformed autocracies, they are less reliant on nominal protectionism.

Resource endowment – Although not an institutional feature, autocracy is correlated with resource abundance, conventionally regarded as “resource curse” that may impede growth in a closed, unreformed economy (Ross 2001). Resource rents are contingent on market access and demand, without which their economic potential remains unrealized. Broad access to international markets boost the export of commodities, whose benefits are further compounded by attracting investments in resource extraction and processing and enable the strategic reinvestment of rents, as exemplified by the active role of investing bureaus in Qatar and the UAE.

The list can continue, such as historically-rooted cultures and norms in autocratic states, particularly in former planned economies, where production as moral imperatives is prioritized over consumption (Fitzpatrick 1999; Nove 1986). Conversely, in a globalized economy where all compete together, the same otherwise benign features of democracies – such as demands for redistribution, lobbying pressures, and the presence of multiple veto players – may become disadvantageous for external demand competition. I show evidence for these mechanisms in Section D.

4 “Engaged Reformers” in the Post-Cold War Globalization

4.1 Two Historical Transformations

What exactly enabled “autocratic advantages?” Discussed in Section 3, trade performance is determined by both demand (e.g., expanded markets) and supply (e.g., firms’ output shaped by institutions and state policies).²³ Although numerous changes occurred during the post-1990 globalization, including the integration of trade, finance, production networks, migration, governance, environment, culture, and norms, I focus on two key transformations – trade integration and domestic reform, because they are most closely linked to trade performance and also tightly match the aforementioned determinants – expanded markets and institutions. If both favor autocracies, it then provides potent evidence linking autocratic rise to globalization. Nonetheless, I discuss other factors in Section 5.6.

First, since the fall of the Berlin Wall, the world trade system (primarily in the form of the GATT/WTO, as well as other forms such as preferential and regional trade agreements (PTA/RTA)) has begun an unprecedented round of expansion to incorporate many autocracies which previously

²³Once again, I neglect factors like geography or culture, as my theory is about the treatment (regime type) on the same country.

participated very little in the global economy confined within the west hemisphere. The expansion includes significant increase in market access, trade and capital flows, and globalized production.²⁴ Second, since the 1980s/1990s, many countries, both autocracies and democracies, have followed the “Washington Consensus” to conduct market-oriented economic reforms and trade and capital account liberalization (Quinn and Toyoda 2007). The former is about domestic institutional reforms, primarily on the economic side, while the latter is on the liberalization of goods and capital flows.

4.2 The Role of Trade Integration

Trade integration after the Cold War, in the form of market integration and globalized production, was embodied in WTO membership expansion and the proliferation of PTAs and RTAs (see Figure 5). Despite the advent of varying types of trade agreements, the WTO plays a significant and major role in facilitating trade liberalization across the globe (Bagwell and Staiger 2002), praised as the “most heralded commercial agreement in history” (Goldstein et al. 2007).²⁵ The WTO, or its predecessor GATT, stipulates that a member state cannot impose discriminatory tariffs on another member, thus facilitating market access with substantially lower tariffs than otherwise would be, especially when trading with the already much liberalized advanced democracies. In spite of not being a formal requirement, reducing trade barriers has become part of the institution’s norms over time.

²⁴What distinguishes post-1990 trade from previously also includes the spread of the global value chain (Baldwin 2016, also discussed in the “New New Trade Theory”).

²⁵Regional trade deals usually build on top of WTO principles of trade liberalization to address specific trade issues: e.g., sector-specific trade and dispute resolution.

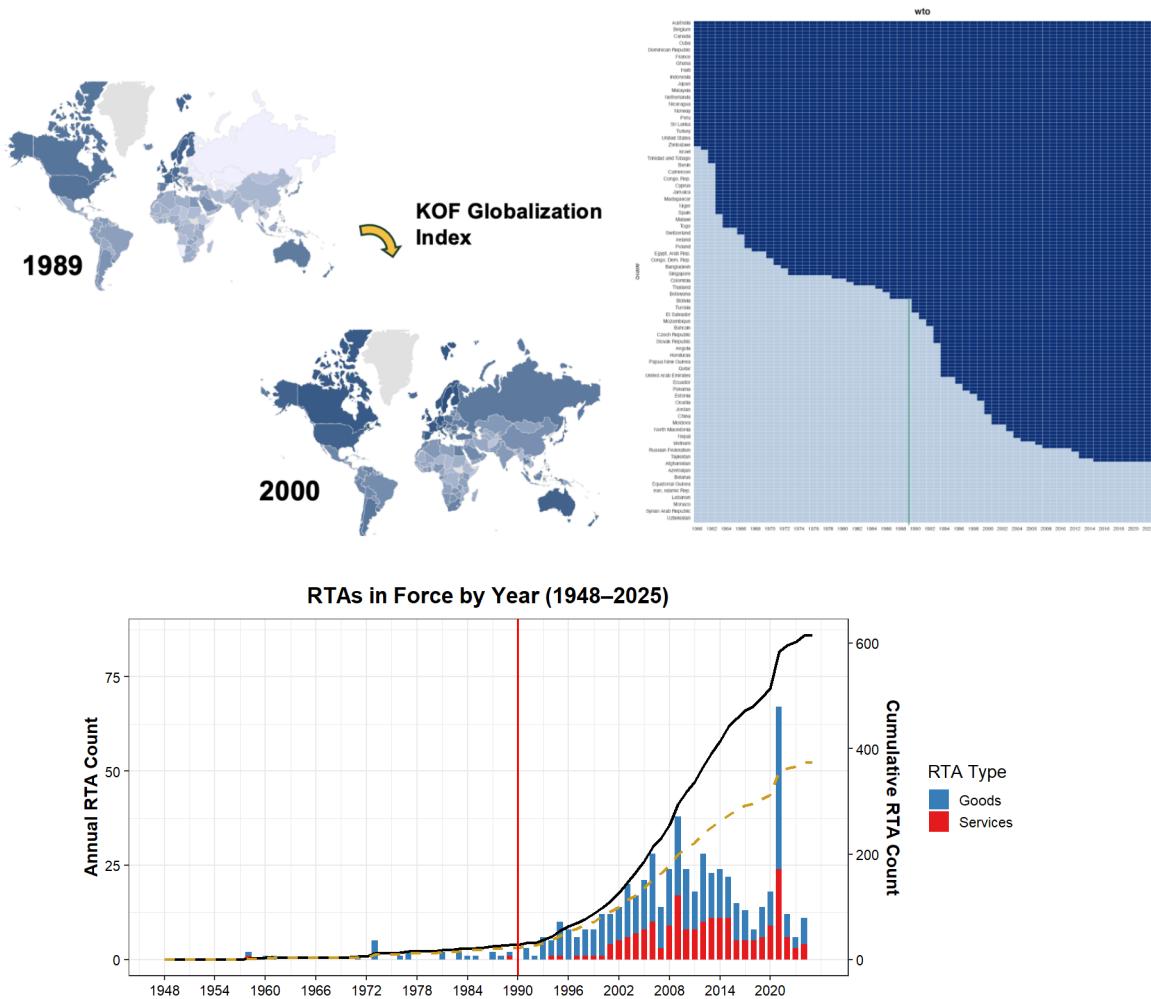


Figure 5: KOF Globalization Index; GATT/WTO Expansion; RTA Proliferation.

When the Cold War ended, the WTO started a drastic expansion which unprecedentedly integrated many autocratic and newly democratized countries, in contrast to a quite conservative pre-1990 accession process.²⁶ The number of members almost doubled, increasing from 88 in 1985 to 164 in 2020. This allowed autocracies to more greatly access global markets, mainly from democracies, and materialized their possible advantages through trade and a globally comparable factor price system unseen during the Cold War. For example, by 2000, most post-communist countries reoriented trade to and depended on Western markets, especially for the most reformist (Åslund 2012). Of note, although some autocracies joined at the late stage or still haven't joined, many enjoyed the MFN status much earlier – a WTO principle – from major western countries,²⁷ other

²⁶The 1950s-joiners were mostly advanced democracies such as Germany, Japan, Italy, Austria and Sweden, while the 1960s-joiners were mostly formerly colonies by “automatic accession” under Article 26:5(c). The 1970/80s saw a much stagnant accession progress.

²⁷See https://1997-2001.state.gov/regions/eap/fs-mfn_treatment_970617.html.

PTAs and RTAs, a globalized commodity market, and the spillover from joiners – all less seen during the Cold War.

Studies have found that the WTO substantially increases trade for member states (Goldstein et al. 2007). Davis and Wilf (2017) simulate that China and Mexico's export booms would have been earlier if they had joined the WTO earlier.²⁸ Apart from market access, the WTO also provides institutional guarantees for trade-related investments. For example, Carnegie (2014) has shown that the WTO solves the “hold-up” problems that hinder investments in politically dissimilar countries, implying autocracies may benefit more from joining a democracy-dominated club. Such international institutions can let states make credible commitments (Hafner-Burton and Schneider 2019). This is particularly important in the era of GVC when investor confidence and MNCs fundamentally shape trade patterns (Bernard et al. 2018).

Combined with the aforementioned autocratic advantages in a globalized economy, trade integration such as WTO expansion may favor autocracies for a few reasons. Imagine two countries with similar domestic institutions such as PR protection. Thanks to “autocratic advantages,” the more autocratic state can possess more discretionary power to disregard labor and environmental protection, manipulate capital account and exchange rate, tilt resources from welfare to production, or sign favorable deals with foreign firms. Yet, the WTO is not equipped to deal with such practices (Wu 2016). Second, studies have found that WTO accession increased trade or income more for those who met stricter accession conditionality (Allee and Scalera 2012; Tang and Wei 2009). The West-dominated institution tends to set stricter examination procedures for autocratic countries, which may have done more substantive reforms to meet the institution’s requirements. Additionally, once autocracies gain advantage in trade, its spill-over effects can negatively impacts trading partners, especially those that are more open and are usually more democratic (e.g., the “China shock”). Meanwhile, China’s post-WTO effect also helped to boost commodity prices, which benefited many resource-rich autocracies. Finally, autocracies may start low – during the Cold War period, many autocracies had centralized planning economies, which may be disadvantageous compared to more market-based democracies.²⁹

²⁸Per data, even resource-oriented countries such as the UAE and Oman experienced an immediate export boost upon WTO accession after years’ weak export performance.

²⁹However, in the empirical part, I control for country-specific covariates such as GDP per capita (see Difference-in-Differences).

4.3 The Role of Domestic Reform

Stable autocrats have long understood how bad excessive exaction is for survival (Olson 1993). Starting from the 1980s, under multifaceted pressure ranging from economic to ideological, many autocracies (as well as democracies) in the developing world began various degrees of market-oriented reforms (Quinn and Toyoda 2007). These reforms include establishing rule of law and privatizing state-owned enterprises, as well as business and competition-friendly policies, for example, PR protection and financial and labor market deregulation. Some states extend liberalization beyond the borders – exemplified by trade and capital accounts opening up (Milner and Mukherjee 2009). Figure 8 shows the historical trends of two major institutions: PR protection and rule of law. The former focuses on the protection of investments from expropriation, while the later emphasizes contract enforcement and dispute settlement (Pandya 2016). These institutions foster growth (North and Weingast 1989) by stimulating domestic firms to step up production in both manufactured goods and commodities, entrepreneurs to start a business, and multinational firms to set up productive chains in a country (Atras 2015). Consequently, it can greatly boost a country's exports, especially when the protagonist of globalized production, multinational firms, is involved.

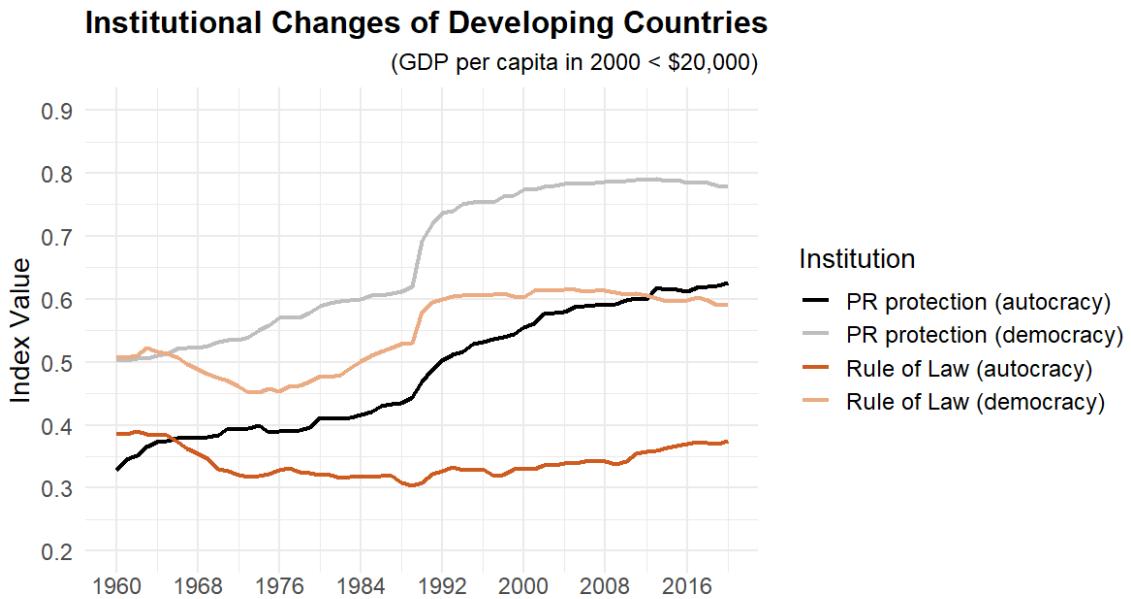


Figure 6: Average Rule of Law and Property Rights Protection. *Note:* Autocracies/democracies are roughly divided by Polity score in 1991 (when the USSR dissolved) to ensure temporal country-level data integrity. Average rule of law of autocracies seems flatter than others, yet with country-level increases/decreases.

Suffice it to say, if autocracies remain unreformed like they were during the Cold War, exposure to

the global trade market wouldn't help much. If North Korea joined the WTO but kept its planned economy, they may not be able to go far. Turkmenistan and Azerbaijan are comparable cases: similarly rich in natural resources;³⁰ they share similarities in Polity score, geographical location, culture, race, population, and per capita income in the 1990s. Yet, Turkmenistan has significantly lower PR protection than Azerbaijan (0.16 vs. 0.66). While both semi-engaged through MFNs and regional trade, neither joins the WTO. Consequently, from 1992 to the mid 2010s, their export volumes grew 11 and 24 times, respectively.

However, unlike democracies which usually embraced a wholesale neoliberal reforms relied on market (Harvey 2005), autocracies usually did it selectively and conservatively. They were also cautious in conducting political reforms. China, for instance, implemented rule of law selectively just for attracting foreign investments and enhancing regime durability (Wang 2015). While allowing trade flows, many autocracies were more strictly controlling exchange rate and capital account policies, shielding them from external shocks (Kuzio 2020; Steinberg and Malhotra 2014). Despite many autocracies running persistent external surpluses, many peg or crawl-peg their currencies to ensure financial stability and facilitate mercantilist policies. Additionally, many ensure that strategic and politically sensitive sectors are within the control of governments, while actively support industrial development (e.g., Belarus, China below). It thus may seem that they are practicing a version of "embedded liberalism," that fuse market with political and economic goals.

4.4 Combining Domestic Reform and Trade Integration

In sum, two major factors that significantly affect trade performance are: 1) market-oriented reforms, and 2) trade integration. Both factors are necessary. Non-reformed WTO members are not conducive to substantial trade growth (Allee and Scalera 2012; Tang and Wei 2009), nor are autarkic reformed ones. This raises the question to the literature that primarily focuses on autocratic institutional reforms (e.g., China's adaptive institutions, Ang 2016) without much consideration for external factors. Trade integration is primarily through the expansion of the WTO, although pre-WTO semi-engagement such as MFNs, PTAs, and RTAs also matter, albeit to a lesser degree. The conditionality of reforms required by WTO accession also speaks to domestic reform.³¹

³⁰Turkmenistan is slightly better: 3.8% of world's natural gas reserve and 0.04% in oil, while Azerbaijan has 0.5% of world's reserve in natural gas but higher (0.42%) in oil (source: U.S. EIA).

³¹Reform requirements are demanded by other global institutions such as the IMF and World Bank for aid and loan conditionality.

	In WTO	Not In WTO
Non-Poor Institution	<p>“Engaged Reformers”</p> <p>Angola (15.2), Bahrain (5.4◊), Cambodia (21.2), Cameroon (2.6), Chad (22.6▲), China (22.9), Congo Rep. (8.6), Djibouti (10.2), Egypt (8.1), Jordan (6.2), Kazakhstan (21.5), Kuwait (9.7◊), Lao (12.7), Mauritania (5.1), Morocco (6.1), Oman (8.5), Qatar (33.6◊), Russia (8.8), Rwanda (12.2), Saudi Arabia (6.8◊), Singapore (5.1◊), Tanzania (10.1▲), Thailand (5.8), Togo (5.2), United Arab Emirates (13.3◊), Uganda (9.5▲), Vietnam (46.2▲)</p> <p>Former: Brazil, Chile, Indonesia, Malaysia, Mexico, South Korea, Spain, Tunisia, Hong Kong ...</p>	<p>“Unengaged Reformers”</p> <p>Afghanistan (2.9▲), Algeria (5.2), Azerbaijan (23.8▲), Belarus (12.5), Equatorial Guinea (201.2▲), Ethiopia (12.4▲), Iran (4.5), Iraq (8)</p>
Poor Institution	<p>“Engaged Non-reformers”</p> <p>Congo Dem. Rep. (6.3▲), Myanmar (17.8▲), Swaziland (2.7), Tajikistan (3.2), Venezuela (4.5)</p>	<p>“Unengaged Non-reformers”</p> <p>Cuba (3.4), Eritrea (6.9), Libya (2.8◊), North Korea (4), South Sudan (NA), Sudan (9.8), Syria (0.4), Turkmenistan (10.9), Uzbekistan (4.1), Yemen (4.6)</p>

▲: Average GDP per capita under \$200 in 1991-1993, ◊: above \$5,000; Numbers in parentheses represent export increase from the early 1990s to mid 2010s.

Table 1: Typology of Autocracies. Note: autocracies are roughly defined as those with average Polity ≤ 0 in 2000-20. Poor institution refers to institutional levels that are below the thresholds for VDem PR protection and rule of law (see Appendix B.3). Together, “engaged reformers” accounted for over 97% of autocracies’ GDP in 2015.

Table 1 classifies all post-1990 autocracies into a 2x2 table by institutional levels and WTO membership. Many mainstream autocracies fall into the category of “engaged reformers,” meaning they have achieved certain levels of institutions and have been engaged in the global trade regime.³² As a face validation, many countries in this category seem to perform well in a globalized economy, especially compared to comparable ones with similar geography, labor intensity, and resource endowment. Some countries, such as Cameroon, Mauritania and Togo, do not stand out for complicated historical reasons. As Allee and Scalera (2012) point out, they were newly independent colonized countries and automatically joined the GATT; many have ostensibly similar economic institutions “copied” from former colonizers, but with few substantive reforms compared to later WTO joiners.³³

In essence, “engaged reformers” adopted liberal economic institutions and were incorporated

³²Based on institutional levels at the bottom 20 percentile among developing countries in 2010 with minor adjustment. See Appendix for more details.

³³In total, 43 countries joined in “automatic accession” under Article 26:5(c) during the Cold War (Ibid).

into the most significant liberal trade regime, while “embedding” authoritarian institutions into economic liberalization. In contrast, many countries that are classified into other three categories underperformed. Even for the same resource-rich autocracies, engaged reformers such as Qatar, Saudi Arabia, Kuwait, or Morocco performed much better than Algeria, Iran, Iraq, or Venezuela (with the latter three being top-five oil reserve countries). The set of “engaged reformers” also suggests it’s not just an “oil states” or China story. In comparison, many democratic “engaged reformers” underperformed, including major developing ones like Argentina, Brazil, Chile, Colombia, India, Indonesia, Kenya, Mexico, Nigeria, Pakistan, Peru, Philippines, South Africa, and Ukraine. 13 out of 20, or 25 out of 40 fastest growing countries (1992-2015) are autocracies, which make up only 25% of total countries.

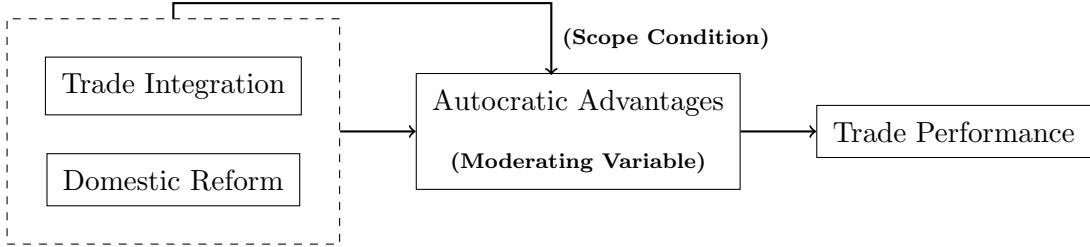


Figure 7: The Logic of “Engaged Reformers”: An Illustration. *Note:* The effects of both domestic reform and trade integration on trade are moderated by autocratic advantages, whose effectiveness, however, depends on surpassing specific thresholds of the two factors as the scope condition.

As Figure 7 illustrates, trade performance are affected by both domestic reform and trade integration, whose effects are contingent on regime type as a *moderating variable*. Autocratic advantages may magnify the effects of both factors. Meanwhile, autocratic advantages need to be enabled by certain levels of domestic institutions and trade integration. In other words, the two factors also serve as the *scope condition*. This is especially true for export-oriented states that heavily relies on external demand and that many autocracies rely on (be it manufactured goods or commodities). Metaphorically, being engaged in the global trade system is like opening a gateway that realizes a regime’s export potential, while domestic reform resembles enhancing one’s own output capabilities.

Although domestic reform and trade integration theoretically increase trade for any regime to varying extent and autocratic advantages can magnify the effects, autocracies may particularly benefit from trade integration for accessing external demand. This is because they often are weak at

fostering internal demand and inclusive growth due to political institutions, implying the limitation of the independent effect of economic reforms. On the other hand, trade integration like WTO accession also exerts external pressure for continued reforms and strengthens the confidence of producers and investors.

	Rule of Law	Property Rights Protection	Tariff Rate
Democracy	0.904*** (0.004)	0.513*** (0.008)	-2.391** (1.039)
Year FE	✓	✓	✓
Num. Obs.	3489	3489	2718

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table 2: Democracies and Major Indicators of Domestic Reform. *Note:* Indicators are regressed on regime type conditional on GDP per capita (2000-2020) and year fixed-effects.

Table 2 shows the correlations of two indicators (PR protection and rule of law drawn from V-Dem datasets) and liberal democracy index, conditional on GDP per capita with year fixed-effects between 2000 and 2020. Autocracy predicts lower rule of law and PR protection, as well as a higher tariff rates. In enclosed economies, this should predict lower performance for autocracies, just as they did before 1990. However, autocracies achieve better post-1990 trade performance (at the absolute levels). This implies that trade integration likely play a significant role to facilitate autocratic advantages. In other words, autocratic rise is largely contingent on post-1990 trade integration.

In summary, primarily due to autocratic advantages, we expect trade integration, particularly the WTO expansion in the post-1990 period, significantly increased trade more for autocracies on average. This brings the first hypothesis:

H1.1: Autocracy should predict larger effect of WTO accession on exports in the post-1990 globalized period than democracy on average.

As explained, autocratic advantages have to be enabled by surpassing certain institutional thresholds. On the other hand, if an autocracy's institutional level is too high (e.g., close to advanced democracies), the very institution may tie autocrats' discretionary hands, diminishing autocratic advantages. For instance, more institutionalized apparatus may exist to constrain leaders' exercise of power and centralized control. An autocratic Kyrgyz Republic (PR protection 0.8) may

not be much more advantageous than a democratic Mauritius. We thus expect a U-shape effect for joining the WTO. An accompanying hypothesis is:

H1.2: The WTO effect difference moderated by regime type in *H1.1* should diminish when domestic institutional level is either too low or too high.

Just like WTO accession, autocratic advantages may lead to greater rewards for autocracies for a similar level of institutional improvement.³⁴ Non-WTO members in the post-1990 period can also benefit from institutional reforms, since subject to tariffs doesn't mean entirely trade embargo unlike during the Cold War. Many also benefit from semi-engagement such as MFNs and PTAs, RTAs, or joiners' spill-over. However, being a WTO member brings more benefits, with non-members subject to higher tariffs, limited markets, and lack of institutional guarantee for investors. Therefore, the autocracy-favoring reform effect should diminish, perhaps largely, for countries that are excluded from trade integration, particularly during the pre-1990 period when the Cold War was not over. – that is, autocratic advantages may not magnify reforms' effect as much. Therefore, we come up with two more hypotheses:

H2.1: Autocracy should predict larger effect of domestic reform on exports in the post-1990 globalized period than democracy on average.

H2.2: The reform effect difference moderated by regime type in *H2.1* should diminish when countries are excluded from global trade integration.

The four hypotheses above that examine the temporal incremental effects within a country do not reveal the whole story. The two most significant explanatory variables for trade performance both favor autocracies, which explains why they rise. However, autocracies also thrive on the absolute levels of performance (see Section 2). Similar to H1.2 and H2.2, I expect the autocracy-favoring effect also needs to meet the scope condition. Thus, we have two more hypotheses:

H3.1: Within the WTO, autocracy should predict more exports, but this effect should be strongest when institutional level is moderate and diminish when domestic institutional level is too

³⁴Note that autocracies didn't start much lower, with average PR protection 0.45 vs. 0.6 of democracies (see Figure 8).

low or too high.

H3.2: For all countries with moderate institutional levels, autocracy should predict more exports, but this effect should be stronger when states are in the WTO.

Lastly, external balance differs from exports in that it doesn't necessarily require expanded markets or institutional improvements as boosters, as it's determined by a special set of financial- and trade-related reasons (Barattieri 2014). One may have low export levels, with even lower imports due to currency devaluation, import barriers, or suppressed consumption – largely favored by autocratic advantages. Yet, a globalized economy with an exchangeable, floating currency system and (even) partial engagement nonetheless provide necessary conditions than an enclosed one. Thus, I derive the following hypothesis:

H4: Autocracy should predict higher external balances (current account and trade) than democracy in a globalized economy.

4.5 Formal Illustration: an Extended Trade Model

In Appendix B.1, I present an extended trade model based on the classic Eaton-Kortum (E-K) model (2002) to illustrate the predictions of above hypotheses. The E-K model captures the determinants of bilateral trade flows such as technology, production cost, trade cost, and comparative advantage, making it particularly suitable for my case. The model is enhanced with three additional variables: institution I_i , trade engagement W_i , and autocratic advantages A_i , with proper functional forms $t(A_i, I_i)$, $c(A_i)$, and $\tau(W_i)$. Bilateral trade flow is then expressed as:

$$X_{ij} = \frac{t(A_i, I_i)\{c(A_i)\tau(W_i)\}^{-\theta}}{\sum_k t(A_k, I_k)\{c(A_k)\tau(W_k)\}^{-\theta}} Y_j$$

5 Empirics: Testing “Engaged Reformers”

Choosing “1990”

Why choose 1990 as the cutoff year? As explained, the year 1990 can be regarded as a watershed from multiple perspectives. First, from the data trends shown in Section 1 and 2, we clearly see a inflection point around the early 1990s. Second, the year witnessed dramatic global political shift – the end of Cold War. Third, a global economic shift started around the same time: trade

integration including an unprecedented proliferation of trade agreements, particularly the WTO, flows of goods and capital, and the rapid spread of the global value chain (Pandya 2016) – termed as “hyper-globalization.” Fourth, there had been a flurry of domestic reforms in play and rapid democratization around the same period. Lastly, my choice of 1990 was a matter of empirical convenience – I could have chosen 1993 or 1988, and the result is similar. As such, I empirically focus on two periods: pre-1990 and post-1990. Note also some countries like China already was semi-engaged through, e.g., MFN, before 1990, but substantial engagement expanded to cover socialist countries happened after 1990.

5.1 The WTO Effect

New WTO joiners

There were in total 64 countries (with over half a million dyads) which joined the WTO/GATT between 1990 and 2020, and almost all were developing countries in 1990 (except Liechtenstein). Of them, 25 (Freedom House Index ≥ 8) or 18 (Polity ≤ 0) were autocratic states in 1992.³⁵ These countries do not account for the majority of existing autocracies across the world, but include major autocracies such as China, Russia, Saudi Arabia, Vietnam, United Arab Emirates, Qatar, Oman, Kazakhstan, Tajikistan, Kyrgyz, Bahrain, Tunisia, Angola, Lao, Cambodia, Venezuela, and Jordan. They also account for over 90% of autocracies’ total GDP and population. Meanwhile, only China is equal to 14 Vietnams or 10 Russias or tens of smaller countries in population (four times of the U.S.). The spill-over effect is considerable: they significantly trade with non-WTO autocracies both economically and strategically (Applebaum 2024). For example, Russia, China, or Saudi Arabia can more freely trade with Iran, Iraq, Cuba, and North Korea, while China’s post-WTO rapid growth greatly contributed to the commodity boom during the 2000/10s, which benefited non-WTO autocracies (Hamilton 2009; Kilian and Hicks 2012). On the flip side, autocracies’ excessive exports can be detrimental to democracies (many of which run persistent trade deficits) in the form of trade shocks. As explained, trade can indeed become more zero-sum under mercantilism or persistent imbalance.

Almost all the countries left were granted the WTO observer status (see the Appendix).³⁶ Additionally, some autocracies that are not in the WTO have been granted the MFN status by

³⁵Russia’s Polity = 3 in 1995.

³⁶Observers must start negotiations within five years of being observers, implying trying to meet conditionalities, and enjoy multiple benefits from the WTO such as speaking rights and learning opportunities, as well as the possibly strengthening investors’ confidence.

countries such as the United States or the EU: e.g., Azerbaijan, Belarus, Serbia, Turkmenistan. Others enjoy varied regional trade deals. Importantly, the mixture of democracies and autocracies in the joiners, as well as the mixture of WTO and non-WTO autocracies in the data provides us sufficient observations (dyad-based) to test the differential effects by regime type and WTO membership.

Gravity Model

Although my test focus is on “engaged reformers,” I first test whether the WTO accession effect favors autocracy on average or not. I start by the widely used gravity model for trade while absorbing more recent methodological improvements, as the model is based on strong theoretical foundations and empirical robustness compared to ad-hoc specifications (Anderson and van Wincoop 2003; Carnegie 2014; Eaton and Kortum 2012; Goldstein et al. 2007; Rose 2004; Yu 2010). I exploit the model to estimate how regime type moderates the WTO effect on bilateral exports – the interaction effect of $WTO \times Polity$.³⁷ WTO accession ultimately effects through bilateral trade flows. Theoretical and empirical evidence suggests that membership of exporter and/or importer should increase bilateral exports in similar directions albeit heterogeneity, which sum up to aggregate patterns.³⁸ Contrarily, *ad-hoc* country-year panel specifications may suffer from omitted variable bias, e.g., bilateral/regional agreements.³⁹ Nonetheless, shortly I employ a difference-in-differences approach using the aggregate country-year data. I specify various gravity models, including 1) conventionally used WTO dummies *Both_WTO* and *One_WTO* in relation to reference *Neither_WTO* (e.g., Goldstein et al. 2007; Rose 2004), 2) *Both_WTO* and *One_WTO* (exporter), 3) exporter WTO dummy, and 4) sequential WTO lagged dummies (by one/three/five years). I control for a standard set of dyad-level covariates (see Table C.3), and an augmented set of exporter, importer-year, directed-dyad, and year fixed-effects, accounting for “multilateral resistance” effects (Anderson and van Wincoop 2003). The dependent variable is $\log(\text{exports} + 1)$ (Carnegie 2014). Covariates and trade data are drawn from CEPII’s Gravity dataset which aggregates data sources such as IMF DOTS and UN Comtrade. The model assumes *conditional exogeneity* after controlling for covariates and fixed-effects; then we can identify WTO’s causal effect. Given the data and treatment

³⁷Since post-1990 regime types vary significantly less for most countries (see Appendix), I use Polity in 2000. Other measures such as Polity average (2000-20) and real-time Polity nonetheless show consistent results. For pre-1990, only real-time Polity is used.

³⁸E.g., by influencing contract enforcement, institutional reliability, technology and management knowhow transfer, and trade costs, as well as importer’s trade barriers and trust in importing from exporter.

³⁹For example, RTAs can have significant effects (Carnegie 2014; Rose 2004).

structure, I conservatively cluster robust standard errors by exporter-year and dyad to account for intra-country and intra-dyad error-term correlations.⁴⁰

	Exports (FE)		Exports (FE)		Exports (FE)		Exports (FE)		Exports (CRE)	
	Pre-1990	Post-1990	Pre-1990	Post-1990	Pre-1990	Post-1990	Pre-1990	Post-1990	Pre-1990	Post-1990
<i>One WTO</i>	0.304*** (0.052)	-0.131** (0.061)							0.309*** (0.015)	0.209*** (0.012)
<i>One WTO × Polity_i</i>	-0.003 (0.005)	-0.025*** (0.008)							0.012** (0.001)	-0.038*** (0.002)
<i>Both WTO</i>	0.615*** (0.084)	0.143 (0.092)	0.314*** (0.046)	0.273*** (0.047)						
<i>Both WTO × Polity_i</i>	0.007 (0.006)	-0.041*** (0.010)	0.011*** (0.004)	-0.033*** (0.006)						
<i>WTO_i Only</i>			0.306*** (0.052)	-0.037 (0.065)					0.304*** (0.017)	0.099*** (0.017)
<i>WTO_i Only × Polity_i</i>			0.005 (0.005)	-0.037*** (0.007)					0.004** (0.001)	-0.038*** (0.002)
<i>WTO_{-i}</i>					0.307*** (0.042)	0.210*** (0.045)	0.240*** (0.049)	-0.022 (0.059)		
<i>WTO_{-i} × Polity_i</i>					0.009** (0.004)	-0.033*** (0.006)	-0.001 (0.006)	-0.003 (0.008)		
<i>WTO_i (3y lag)</i>							0.105** (0.042)	0.365*** (0.051)		
<i>WTO_i (3y lag) × Polity_i</i>							0.012** (0.005)	-0.032*** (0.007)		
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Exporter Means									✓	✓
Dyad Means									✓	✓
Exporter FE	✓	✓	✓	✓	✓	✓	✓	✓	RE	RE
Importer-Year FE	✓	✓	✓	✓	✓	✓	✓	✓		
Dyad FE	✓	✓	✓	✓	✓	✓	✓	✓	RE	RE
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Num.Obs.	210 809	538 470	210 809	538 470	210 809	538 470	208 242	502 944	210 049	521 997
R2 Adj.	0.858	0.886	0.868	0.886	0.868	0.886	0.869	0.892	0.874	0.882
BIC	805 515.9	2 258 339.3	833 195.6	2 258 125.3	833 258.2	2 258 320.9	824 099.5	2 103 706.2	691 636.8	1 901 073.2

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

Table 3: The Effects of Joining the WTO. Note: Full specifications in Table C.3. Robust standard errors are clustered by exporter-year and dyad for FE models. Institutions such as PR protection is not included to avoid possible post-treatment bias of the WTO. Nonetheless, results hold with inclusion.

The results are shown in Table 3. In Column 1 and 2, conditional on other dyad characteristics, joining WTO predicts increased exports before 1990, echoing the existing literature, yet the effect disappears in the post-1990 period.⁴¹ By looking at the *WTO × Polity* interaction term, the effect of the WTO on exports is larger for democracies pre-1990, but larger for autocracies post-1990.⁴² In contrast, the WTO effect on imports is larger for democracies post-1990. This suggests that in the post-1990 period, joining the WTO leads to more export increase while less import increase for autocracies compared to democracies, which may explain why autocracy predicts higher trade surpluses. When estimated separately, for average autocracy (Polity = -5), WTO membership on average inflates exports by 13.9% than counterfactual, while decreasing exports by 16.4% for

⁴⁰I avoid over-clustering by country as error patterns for the same country in the 1990s may be much different from the 2010s (Yu 2010).

⁴¹The large sample size ensures statistical power.

⁴²The autocracy's effect is moderately smaller but consistent if removing China-, or Russia-, or thirteen OPEC-origin dyads, but becomes close to zero if all are removed, which is nonetheless better than the pre-1990 negative effect. Note also that removing all that account for the majority of autocracies' GDP (over 90% in 2015) significantly biases sample representation. More importantly, removing all doesn't affect subsequent tests, especially the "reformer" stratum.

average democracy ($\text{Polity} = 5$). One explanation for the negative effect for democracies may be that trade integration is subject more external shocks if one doesn't have advantages. Column 5&6 show the consistent effect of membership on exporter's exports when two countries are both in the WTO. The results are also robust to importers being prior(post)-1990 joiners only, importers being autocracy(democracy), and full gravity model without country/dyad fixed-effects.

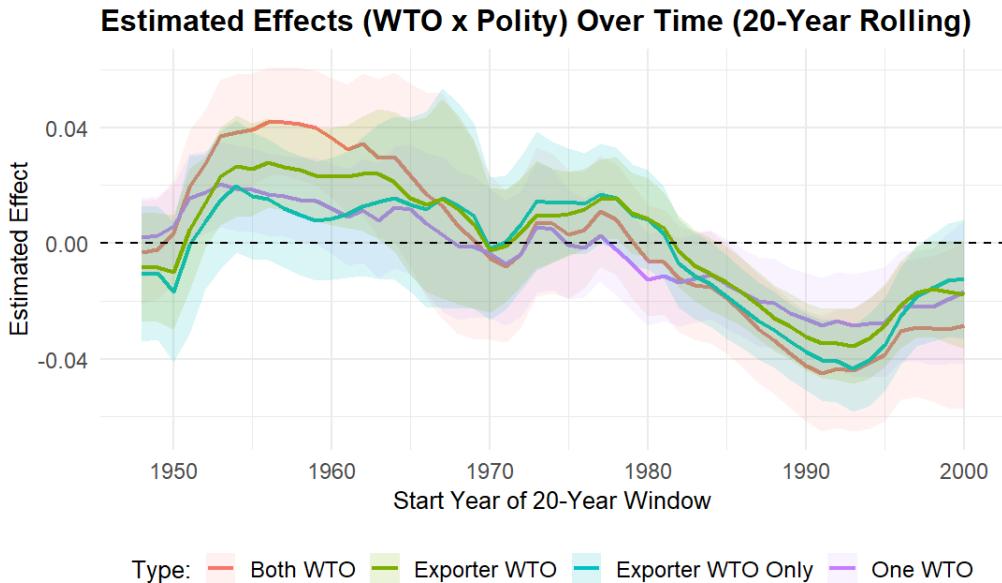


Figure 8: Rolling Estimated of Various Types of WTO Effects Moderated by Polity. *Note:* The effects are estimated by gravity models above within 20-year rolling windows from 1948 to 2020. For example, 1980 denotes the window 1980-2000.

Sensitivity Test

In order to mitigate the omitted variable bias in the gravity model, I conduct sensitivity tests following Cinelli and Hazlett (2020) whose goal is to gauge how strong an omitted confounder needs to be to explain away completely the effect of, i.e., $\text{WTO} \times \text{Polity}$. For the moderating effect, perhaps autocracies have different characteristics like population and economic size. As such, I choose covariates that may theoretically confound the WTO effect across regime type: population (log), GDP (log), and Polity. Figure C.9 plots the sensitivity contours which represent the estimates of $\text{WTO} \times \text{Polity}$ given the hypothetical partial R^2 of the omitted confounder with treatment ($R^2_{D \sim Z | \mathbf{X}}$) and outcome ($R^2_{Y \sim Z | D, \mathbf{X}}$). In a nutshell, any omitted confounder that nullifies the main estimates would need to be over 250 times and 1000 times as strong as GDP and population with

both treatment and outcome, respectively.⁴³ A confounder needs to be over 12 times stronger than Polity itself to eliminate Polity's moderating effect. Hence, we should more confidently rule out the omitted variable bias.

Alternative Strategies

Due to the hierarchical data structure, I estimate a hierarchical correlated random effect (CRE) model with exporter and dyad random effects with covariates, as well as the means of covariates. Although controlling for a full list of standard gravity dyad covariates including the time-invariant ones, the CRE allows arbitrary correlations between the exporter-specific and dyad-specific intercepts and predictors to mitigate the assumption concerns. As shown in Column 5&6 of Table 3, the result is similar to fixed-effects model. WTO membership inflates exports by 10.8% for average autocracy, while deflating 23.4% for average democracy.

In addition to model-based approaches, I use difference-in-differences with matching (panel matching) as a nonparametric identification strategy to estimate the effect of WTO membership. Although panel matching cannot completely rule out unobservable confounders entirely (which can be reassured by sensitivity tests below), it offers significant advantages over traditional parametric methods, e.g., fixed-effects for panel data (Imai et al. 2022). Unlike fixed-effects, which relies on the model assumptions, panel matching explicitly constructs counterfactuals by matching on pre-treatment covariates for more credible parallel pre-treatment trends. This approach ensures comparable comparison and reduce outlier influence, providing more robust causal estimates. It also provides insight into long-term effects as WTO effect tends to grow gradually over time. Panel matching is appropriate for the temporal WTO membership in this case. The ATT estimator is expressed as below:

$$\frac{1}{\sum_{i=1}^N \sum_{t=L+1}^{T-F} D_{it}} \sum_{i=1}^N \sum_{t=L+1}^{T-F} D_{it} \left\{ (Y_{i,t+F} - Y_{i,t-1}) - \sum_{i' \in \mathcal{M}_{it}} w_{it}^{i'} (Y_{i',t+F} - Y_{i',t-1}) \right\}$$

Where D_{it} is treatment indicator (1 if treated). $Y_{i,t+F}$ is outcome for treated unit i at time $t+F$. $Y_{i,t-1}$ is the outcome for treated unit i at pre-treatment time $t-1$. \mathcal{M}_{it} is the set of matched control units for treated unit i at time t . $w_{it}^{i'}$ is the weight for control unit i' matched to treated

⁴³As noted by Cinelli and Hazlett, these results are conservative for the case of multiple (possibly non-linear) omitted confounders.

unit i .

Specifically, Covariate Balancing Propensity Score (CBPS) weighting is used to balance covariates.⁴⁴ CBPS estimates propensity score such that covariates are balanced (Imai and Ratkovic 2015). Weighting methods are particularly effective in non-large datasets because they retain all available control units. As PanelMatch is inconvenient to handle interaction effect, units are roughly stratified into democracies ($\text{Polity} \geq 0$) and autocracies ($\text{Polity} \leq 0$) to test the effect of each subgroup.⁴⁵ For all tests, I use export volumes as DV, similar to gravity models.

I first utilize the country-year panel dataset. The parameters use $L = 4$ to match pre-treatment histories, and $F = 5$ for possible forward effects, since joining the WTO may not immediately boost trade.⁴⁶ I focus on pre-treatment covariates that theoretically affect both WTO accession and future exports to get similar treatment/control baselines, including GDP (log), GDP per capita (log), Polity, population (log), race (white), geopolitics (NATO membership), natural resource intensity (%), industrial output intensity (%), rule of law, and lagged outcome. I avoid controlling for direct post-treatment covariates such as tariff rate, which is lowered upon or after WTO accession.⁴⁷

Since the country-year panel data contains relatively few observations, which may limits the size of matched set \mathcal{M}_{it} , I also exploit the dyad-year panel data whose overwhelmingly large sample size allows me to observe longer delay effects.⁴⁸ I extend leads to seven years. Similar covariates to the country-year case above are matched on based on whether they may affect WTO accession and future exports. Additionally matched on are dyad FTA, customs union, distance (log), colonial relationship, and common official language, since they might also affect both treatment and outcome.⁴⁹

⁴⁴I choose among mahalanobis matching, propensity score matching/weighting, and CBPS matching/weighting for the best performance on balancing covariates. The standardized mean difference (SMD) of most covariates are within the threshold of the rule-of-thumb 0.2.

⁴⁵As shown in the Appendix, countries' regime types stay relatively stable before the mid-1980s and after the mid-1990s. I therefore capture the regime types in 1970 and 2000, respectively, for the purpose of maintaining data integrity for a single country throughout the period.

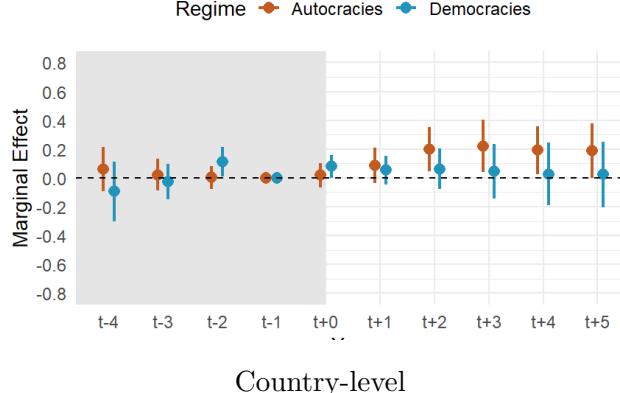
⁴⁶Longer leads and lags are refrained since it can eliminate more units that don't match. In each period, I keep four more years prior to the start year of each period to allow for sufficient pre-treatment histories.

⁴⁷I match institution because WTO conditionality is more about trade-related liberalization and intellectual PR protection rather than usual PR protection and rule of law (Allee and Scalera 2012). Nonetheless, results hold for no matching.

⁴⁸I limit destination countries to pre-1990 WTO members as they more relate to WTO effects.

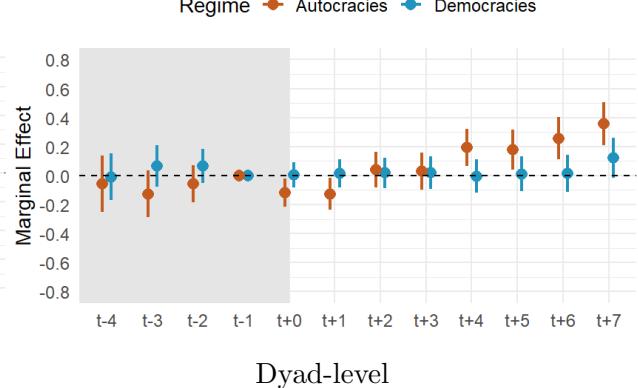
⁴⁹In another version, I match a standard list of gravity model's dyad-level covariates of both origin and destination states.

The Effects of Joining the WTO (1990-2020)



Country-level

The Effects of Joining the WTO (1990-2020)



Dyad-level

Figure 9: Effects of Joining the WTO on Exports (Post-1990). *Note:* Autocracy = Polity ≤ 0 . The WTO effect of autocracy is statistically significantly non-zero while that of democracy is not. Placebo tests show that parallel trends assumption hold (the shaded area, with t-1 as reference time). The model estimates standard errors with bootstrap.

Figure 9 plot the WTO effects for democracy and autocracy, respectively. After matching, the covariate balance has significantly improved (see Figure C.10). The two results of country-level and dyad-level resemble each other, showing the effect of autocracy gradually grows over time. From t+3 to t+5, autocracy's WTO effect is 0.2ish based on two datasets, while democracy's is insignificant. This is consistent with gravity models (Table 3), which report that the effect difference between average autocracy (Polity = -5) and average democracy (Polity = 5) is 0.3ish for the post-1990 period.

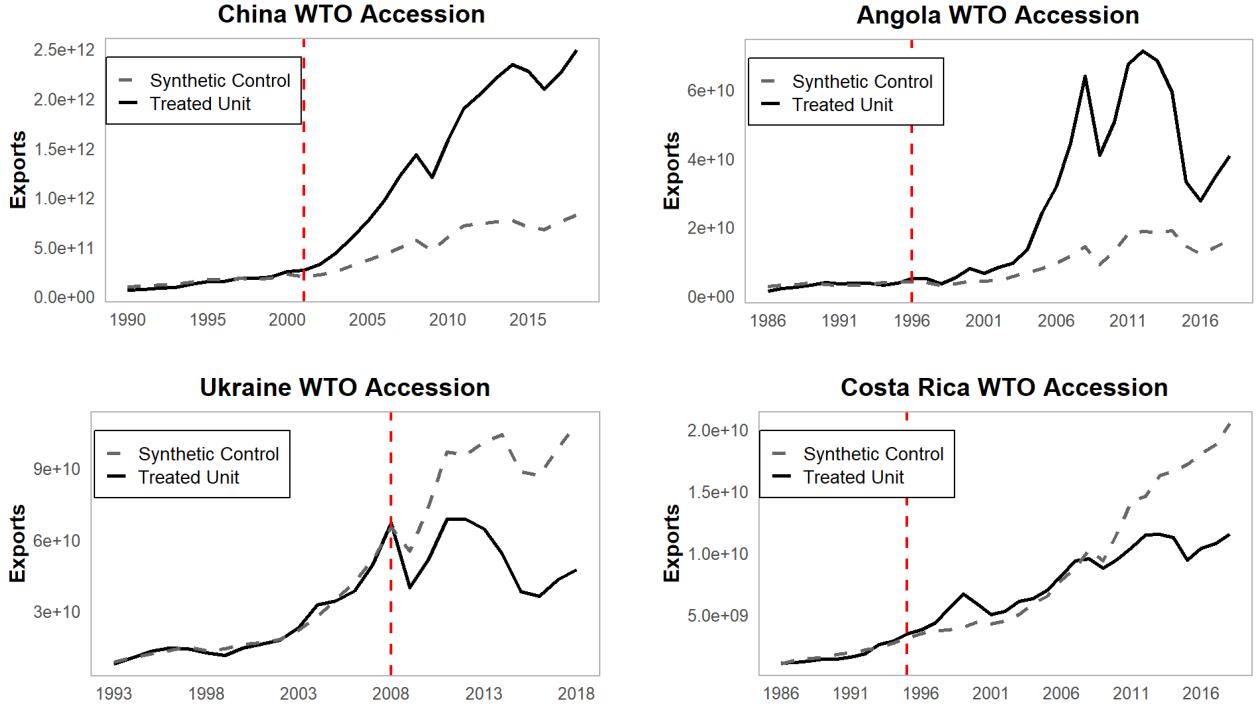


Figure 10: Examples by Synthetic Control Method. *Note:* Red dashed lines denote WTO-joining year. Covariates to predict the control unit include: GDP, GDP per capita, GDP growth, population, trade openness, Polity, PR protection, resource intensity, industrial intensity, and lagged exports.

In Figure 10, I pick the largest autocracy – China, and a resource-rich African autocracy – Angola, as well as Ukraine (a post-Soviet democracy) and Costa Rica (a development success in Latin America), as examples using synthetic control method (SCM). Read from the plot, China, compared to the control unit, had 189% and 242% more exports 10 years and 15 years respectively after WTO accession – remarkable considering China’s size.

Domestic Reform as the Scope Condition

The work-horse model – gravity model – is demonstrated sufficiently robust, and I will use it for the following tests. As argued in Section 4, the moderated effect of WTO membership by regime type is conditional on different levels of domestic institutions. When institutional levels are too low, joining hardly makes autocracies stand out. Yet, when institutional levels are sufficiently high, institutional constraints may in turn constrain autocratic leaders’ hands. I estimate the moderated effects stratified by institutional levels by PR protection and rule of law, respectively. Institutional levels are divided into three ranges: low, mid, and high.⁵⁰ For both temporal data integrity of

⁵⁰I calculate thresholds combining lowest/highest 20 percentiles of institutions among developing countries in 2000 with minor adjustment based on real cases (see Appendix for details). By examining histograms in Appendix, each range contains a few autocracies and tens of thousands of dyads. The final ranges are {0, 0.35, 0.85, 1} for PR

the same origin country and testing how WTO membership conditions the effect of institutions, I measure institutional levels using “10-year average institutional levels” after accession, and assign dyads into the corresponding ranges. The idea is to test how WTO effect moderated by regime type varies across institutions.⁵¹ I fit a model including a three-way interaction among post-1990 joiners:

$$Export_{ijt} = \beta WTO_{it} \times Polity_i \times Institution10year_i + \delta \mathbf{X}_{ijt} + \gamma_{ij} + \eta_t + \epsilon_{ijt}$$

where $Institution10year_i$ is categorical variable of post-WTO 10-year averages of institutional levels (low, mid, high) of country i , and \mathbf{X}_{ijt} denotes dyad-level covariates. γ_{ij} and η_t are dyad and year fixed-effects.

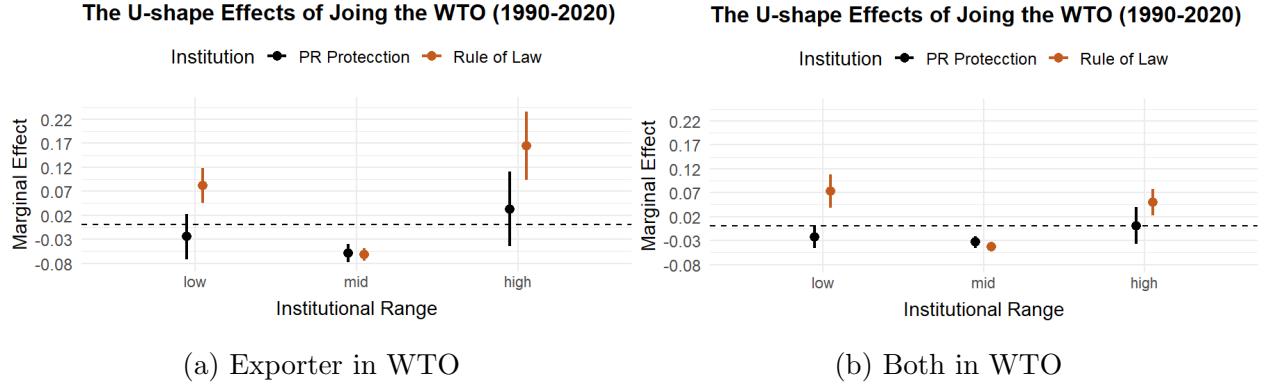


Figure 11: The Effects of Joining the WTO Conditional on Institutional Levels. Note: The y-axis means the marginal effect of the WTO conditional on Polity. A positive value means the effect favors democracy.

Figure 11 shows, as expected, across different ranges of institutions, autocracies outperform democracies regarding WTO effects, but not when institutions are too low or too high. It is only when institutional levels are somewhere moderate that autocratic advantages manifest. For the mid-level, for example, $WTO \times Polity$ is -0.028 and -0.042 for PR protection and rule of law, much higher than the average -0.017 above (Column 4, Table 3). Robustness tests include nudges on thresholds up/down by ten percentage points, changing post-WTO institution average to 5 or 15 years, and using dichotomous Polity (see Appendix). Note this country-level WTO treatment case may have small sample issue (albeit thousands of dyads) about standard errors, although not necessarily biased. I also run (1) models with both-WTO variable (treatment at dyad-level), (2)

protection and $\{0, 0.2, 0.7, 1\}$ for rule of law.

⁵¹I do not control for institution in the model for possible post-treatment bias: institutional change may be partly affected by WTO membership. Yet, this may neglect pre-WTO institution's effect. In the Appendix, I show that controlling for institution for the whole period doesn't affect results.

correlated random-effect model, and (3) Bayesian model, all of which get similar results (full table see Table C.4).

Why No Pre-1990 Autocratic Advantages?

Why didn't joining the WTO help in the pre-1990 period? Several answers are in order. First, during the Cold War, autocracies that joined were smaller and weaker, so that democracies were not significantly impacted. In 1975, roughly 90% of WTO members' GDP belongs to democracies. More importantly, there hadn't been substantive market-oriented reforms worldwide (or only on paper of newly decolonized states) or the spread of global value chain, mitigating membership effect. In other words, the scope condition had not been sufficiently met.

5.2 The Domestic Reform Effect

As in H2.1 and H2.2, I now test whether domestic reform favors autocracies or not. The test is also based on the main gravity model. VDem's PR protection and rule of law are used to measure institutional change. I exploit within-dyad variation with dyad and year fixed-effects which controls for possible time- and dyad-invariant confounders. As reform is mostly for developing countries, I only focus on those with GDP per capita below \$20,000 in 2000, which results in 165 countries, as compared to 64 in WTO tests. For the case of post-1990 trade expansion, I also test the case of outsiders to align with my theory on post-1990 globalization: new-joiners (who joined the WTO after 1990) and never-joiners (94 total, 30 autocracies). For country-level temporal integrity, I assign countries into four ranges based on Polity score in 2000, also because Polity is quite stable for post-1990 period. Institutions are lagged by one year.

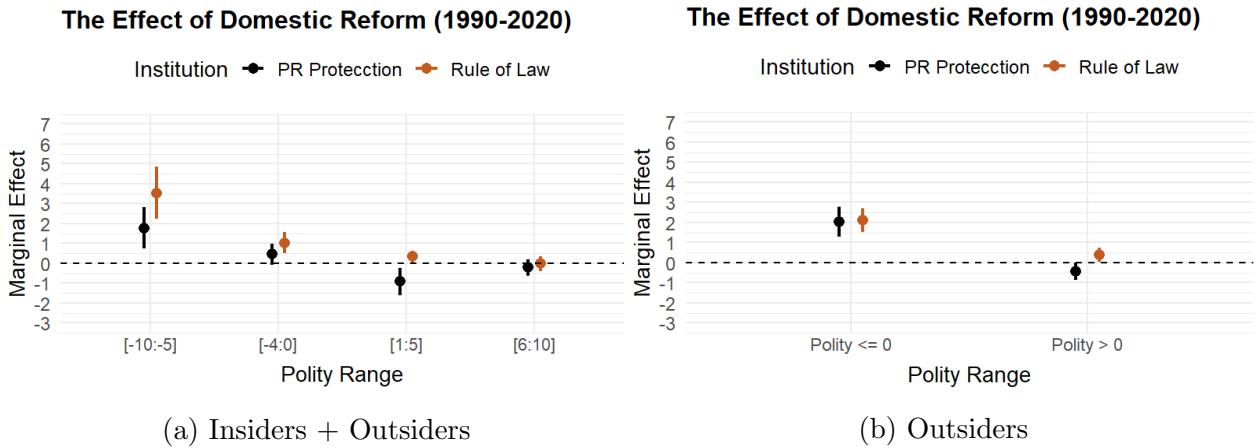


Figure 12: The Effects of Domestic Reform by Polity. Note: (a) plots the effects of within-dyad changes of institutions across differential ranges of Polity, for all developing countries (GDP per capita below \$20,000 in 2000) to focus on institutional reform. (b) plots the same graph, but only for outsiders (new-joiners and never-joiners). Results are consistent for including both institutional measures.

As shown in Figure 12a, the effects of domestic reform among developing countries during the period of 1990-2020 are generally higher for more autocratic states.⁵² This pattern is more apparent in Figure 12b, where I remove those who already joined the WTO before 1990. The likely interpretation is that the influx of many well-performing autocracies into the global trade system may exert significant stress to more hands-off, open-market democracies (a typical case is the China shock). The result is consistent with the hypothesis that autocratic advantages may amplify the effect of domestic reform. Autocracies may also have increased marginal returns due to lower starting institutional levels. However, developing democracies' institutions were not significantly higher: 0.6 vs. 0.45 (autocracy) for PR protection in 1990 (see Figure 8), which cannot explain why democracy's reform effect is almost zero.

Trade Integration as the Scope Condition

As the effect of domestic reform is only substantially positive for autocratic outsiders (Figure 12b), I focus only on the dyad-years in which exporter is an autocracy in 2000.⁵³ Assuming the main gravity model that controls for trade's determinants is still valid, I fit a model including an interaction term to estimate effects for two strata: joiners (post-1990 pre-WTO period) and joiners (post-WTO period), for both autocratic and democratic stratum, respectively:

⁵²I don't control for WTO membership to avoid the post-treatment bias. Similar effects remain with WTO membership.

⁵³I include three years earlier (i.e., 1987-89) to allow for pre-wto years for those joined in the early 1990s, though no inclusion doesn't affect results.

$$Export_{ijt} = \beta Institution_{i,t-1} \times WTO_{it} \times Polity_i + \delta \mathbf{X}_{ijt} + \gamma_{ij} + \eta_t + \epsilon_{ijt}$$

where \mathbf{X}_{ijt} denotes dyad-level covariates. $Institution_{i,t-1} \times WTO_{it} \times Polity_i$ captures the effect of institution (lagged) moderated by WTO period classified by Polity in 2000. \mathbf{X}_{ijt} denotes dyad-level covariates. I include dyad and year fixed-effects. Additionally, I estimate the non-interaction version of the model for joiners' pre-1990 reform period (1975-1989) before they were substantively engaged, and never-joiners.

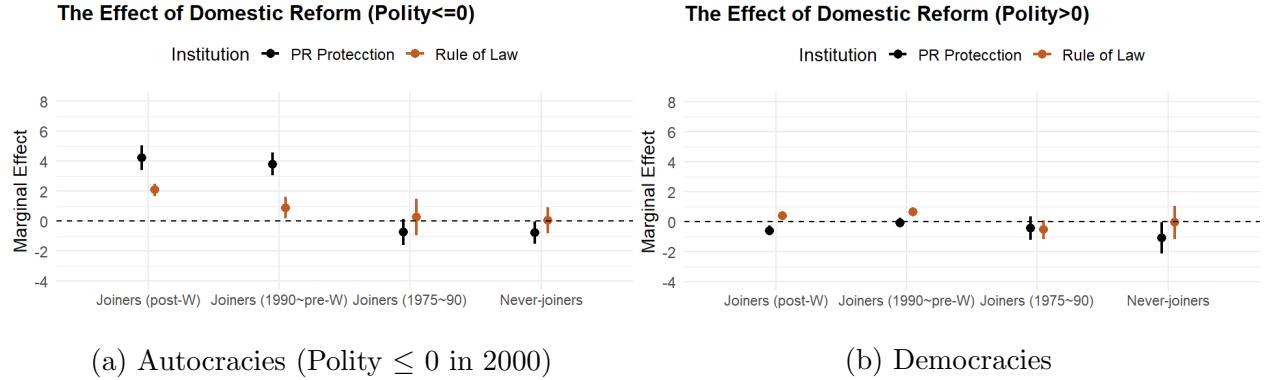


Figure 13: The Effects of Domestic Reform by Period. *Note:* Joiners are those joining the WTO after 1990. “W” denotes the WTO.

Figure 13a displays the effects of institutional improvement for four groups. For PR protection, every 0.1 increase leads to 65.3% and 54.3% change in exports for joiners' pre- and post-WTO periods, and almost null change for joiners' pre-1990 period (1975-1989) and never-joiners. For rule of law, the effects are 22.2%, 13.6%, null, and null, respectively. By comparison, democracies see almost null effects for all categories (Figure 13b). Note that for joiners in the pre-WTO period (still post-1990), many already enjoyed globalization benefits through semi-engagement, such as MFN status and PTAs, RTAs, spill-over from joiners, and future WTO prospect, so that the observed effect may be inflated compared to the non-engagement counterfactual.⁵⁴ Meanwhile, joiners' post-WTO period tend to have higher institutional level than pre-WTO period, which may have diminishing returns, making the observed effect lower than the real one. In other words, joining the WTO may lead to more institution's effect than observed. Additionally, Finally, for never-joiners, their effects are always null, although they may have other systemic differences.

⁵⁴I don't use lead WTO dummies as two periods differ substantively.

Overall, the results support my theory – autocratic advantages significantly diminish when states were not engaged by the globalized economy.

5.3 Regime Type on Absolute Levels of Exports

Although within-country temporal effects can explain why autocratic states can rise relatively, the performance of absolute levels only strengthens the theory of “autocratic advantages.” As shown in Section 2, autocracy predicts better absolute-level post-1990 performance. This prediction should be also moderated by institutional levels. Unlike testing within-dyad effects, I now pool all dyads together with full time-invariant covariates such as distance, religion, and language, and only with year fixed-effects. As in WTO tests, I divide dyads into the same institutional ranges for PR protection and rule of law (lagged).⁵⁵ Then, I run the full gravity model for each range, with weighted least squares by inversed density since data can be skewed distributed across Polity. I focus on dyads with exporter being in the WTO.

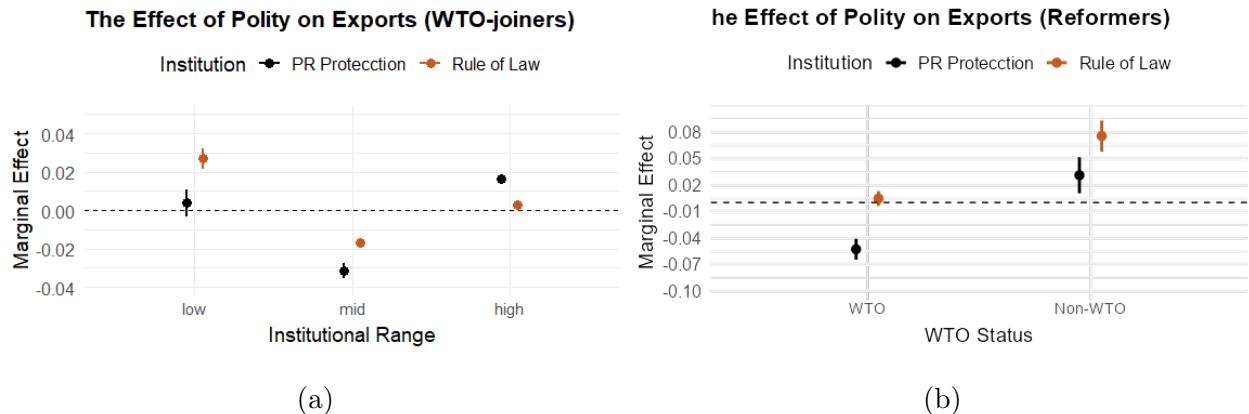


Figure 14: The Effect of Polity on Exports. Note: (a) examines all post-1990 dyads in the WTO; (b) examines all dyads with moderate institutional levels.

Figure 14a shows that for all dyads with exporter being a WTO member with moderate institutional levels, regime type significantly favor autocracies, but not the case for either low or high levels. Figure 14b shows that for dyads with moderate institutional levels (in which autocracies should outperform), autocracy predicts less exports for non-WTO dyads.

⁵⁵I use the same 20% lowest/highest quantiles adjusted by within-range data distribution (See Appendix).

5.4 External Balances

Lastly, I test how regime type predicts external balances. The dependent variables are trade balances and current account balances, both as the share of GDP. By observing Figure 2, I focus the most stabilized decades (2000-2020). To account for confounders, I add the controls from Chinn and Ito (2021) to account for theoretical explanations of both trade and financial for external balances (Barattieri 2014). I employ a mixed-effect model based on Manger and Sattler (2020), as Polity has significantly less within-country variations since the late 1990s. This mixed-effect or hierarchical model captures within-country variations of covariates and cross-country variation of Polity. It regresses the country intercepts from the first stage on Polity, assuming a random draw of countries from the population (random effects). Below is the formal expression:

$$y_{jt} = a_{1j} + a_{2j}X_{jt} + d_t + \epsilon_{jt}$$

$$a_{ij} = \gamma_0 + \gamma_1 Polity_j + \eta_j$$

DV: Current Account Balance (%)							
	FE	FE	RE	RE/No OPEC	RE/Developing	RE/WTO Post-90	1980-95
<i>Polity</i>	-0.212*** (0.039)	-0.123*** (0.043)	-0.146*** (0.049)	-0.135*** (0.049)	-0.139*** (0.053)	-0.225* (0.119)	0.095* (0.052)
Controls	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Country RE		✓	✓	✓	✓	✓	✓
Num.Obs.	2704	1499	1499	1698	1469	540	290
R2 Cond.		0.759	0.757	0.691	0.755	0.605	
DV: Trade Balance (%)							
	FE	FE	RE	RE/No OPEC	RE/Developing	RE/WTO Post-90	1980-95
<i>Polity</i>	-0.410*** (0.050)	-0.480*** (0.069)	-0.241*** (0.056)	-0.179*** (0.055)	-0.227*** (0.064)	-0.268** (0.124)	0.140** (0.057)
Controls	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Country RE		✓	✓	✓	✓	✓	✓
Num.Obs.	2829	1560	1560	1463	1243	551	294
R2 Cond.		0.882	0.880	0.848	0.938	0.900	

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

Table 4: Regime Type's Effect on External Balance (2000-20). Note: full table see Table C.5.

The results are listed below. As shown in Table 4, all models with the post-2000 data show that autocracy is positively associated with current account balance, even after removing OPEC

countries/Russia, developed countries, and those which joined the GATT prior to 1970. The early period (1980-2000) does not display similar patterns. In Table 3, similar models are run for trade balances, and the results are similar but with larger magnitudes.

5.5 Additional Robustness Tests

Although I have used multiple methods to confirm the robustness, additional tests are conducted in Appendix:

First, I conduct more robustness checks for all gravity model. This includes the “multilateral resistance” terms, or country-specific barriers to international trade (Anderson and van Wincoop 2003). For all gravity models, I apply sensitivity analysis. Second, I use different democracy measure based on Polity other than continuous: binary and trinary. Third, I use alternative institutional measure other than VDem’s, such as World Bank’s rule of law index. Fourth, for systematic detection for outliers, I conduct a bootstrap approach by “leave-one-out.” Fifth, I test longer years of lagged effects of WTO and domestic reform. Sixth, I use multiple Imputation to impute missing data.

Selection Bias – for the WTO accession effect, the concern is that membership is not random and is influenced by factors that may also affect exports. I fit the extensively used gravity model in the literature by controlling for a full list of covariates and fixed-effects, as well various models and sensitivity tests for robustness. Then I identify test how regime type moderates the WTO effect. For reform effect among developing countries, similar gravity model with dyad-fixed effects is used. Then regime type moderates the reform effect. Autocracies may have increased marginal returns due to lower starting institutional levels (but higher GDP per capita levels). However, democracies’ institutions were not significantly higher (0.6 vs. 0.45 for PR protection in 1990), which cannot explain why democracy’s reform effect is null, not to mention negative WTO effects.

5.6 Discussions on Potential Questions

Although there are other globalization changes such as migration and capital flows, trade integration and institutional reforms two are arguably the most two important determinants identified in the growth and development literature. Nonetheless, below I discuss several other factors.

Is it simply a story of China, Vietnam, Russia, and oil states? None of the descriptive data in

Section 2 shows they are outliers. Moreover, the theory, typology of autocracies, and causal analysis (with robustness tests) suggest that regime type plays an important role, if not at all, though probabilistic in nature. Disproportionately more autocracies are winners. Oil prices boomed in the 1970/80s, yet, no autocratic advantages were observed (see below “commodity boom” discussion). Essentially, theory applies to post-1990 “engaged reformers.” Even if one insists that the theory fits better the above countries, which are major autocracies accounting for over 90 percent of autocracies’ GDP, it already has significant implications and answers the question – what explains the autocratic rise.

What determines “engaged reformers?” As briefly discussed, there were historical, economic, and ideological reasons. There are different types of autocracies. For example, Geddes (1999) finds that only single-party regimes can achieve sustained economic development, and Hankla and Kuthy (2013) also find single-party autocracy adopts more trade liberal policies. This is left for future research.

How to reconcile the argument of state capacity? State capacity plays a pivotal role in economic development, encompassing the state’s ability to enforce laws and implement intended policies effectively (Acemoglu et al. 2015; Dincecco 2017). However, conditional probability $P(\text{capacity} \mid \text{performance})$ is not $P(\text{performance} \mid \text{capacity})$ – North Korea also has high state capacity. My analysis focuses specifically on rule of law and property rights protection, which are critical components of state capacity that directly affect economic performance. Rule of law ensures contract enforcement, while property rights protection secures investments. Autocratic advantages in my story reflect some state capacity. In the Appendix, I test the robustness of our results by including broader measures of state capacity, and rule of law and property rights remain significant predictors.

What about democracy-autocracy trade before 1990? During the Cold War period, the U.S., for example, also traded with some autocracies in Latin America and Asia. In spite of this, these trade relationships are not comparable to a globalized market administered by the WTO in scale and depth. The WTO not only provides equal market access, but also institutional guarantee for firms and investors, as well as pressure for reforms. Many autocratic states had not done meaningful market-oriented reforms. The global value chain had not taken off – for example, South Korea largely relied on developing indigenous supply chains (Baldwin 2016). Furthermore, it remained in a small scale (Korea or Taiwan did take off) – autocracies’ economies were not large enough to shock democracies significantly.

Would the global value chain that produces back-and-forth trade distort the use of exports as a measure? In general, democracies tend to be more economically integrated, and generate more repeatedly counted cross-border trade. Examples include the NAFTA, Eurozone, and ASEAN. Autocratic states that more produce final manufactured goods or commodities tend to be less so. Moreover, not only is export a conventional measure for international economic performance, but also we consider external balance which calculates the net value of exports minus imports, therefore effectively reducing the concerns of over-counting.

What about the spillover effect and the commodity boom? I first directly delete boom years (2004-2014) or OPEC countries for both WTO and institution tests, and the results hold. Although my theory is more about regime type's effect, not all autocracies have met the scope condition. Some autocracies are not a WTO member or joined late, while others have done little reform. Thus, the spillover of joiners (e.g., China and others) and the buildup of a global commodity market matter. However, this second-order effect does not negate my argument that globalization facilitates autocratic rise. The 2000/10s commodity boom was at least partially driven by WTO beneficiaries (e.g., China), while we don't observe autocratic advantages in the previous oil boom (1970/80s). Those resource-rich countries without WTO membership or reforms nonetheless underperformed (e.g., Venezuela, Iran, and Iraq). Moreover, for over 20 non-WTO member autocracies, the membership effect is zero. For others, both democracies and autocracies are affected by either import shocks or commodity booms to some extent, which should mitigate the concerns.

What about the Most Favored Nation (MFN) status? China was granted the MFN status by major western countries in the 1980s, while Vietnam and Russia were granted by the U.S. in 2001 and 2012, respectively. Some MFNs are granted as part of PTAs, for example, U.S.-Vietnam or U.S.-Lao Bilateral Trade Agreements, and are controlled for in the models. Moreover, MFN is inherently a WTO concept and a part of trade integration. Yet, as described above, WTO membership provides much more benefits than just a single, revocable MFN status by several trading partners. Lastly, if the estimated WTO effect absorbed the MFN effect which happened years before the WTO accession, the former's sole effect is likely underestimated.

What about the role of foreign direct investments (FDI)? Export-oriented FDI, rather than services, directly boosts exports and has larger productivity-enhancing effects (Helpman 1984; Pandya 2016). As export-oriented FDI usually follows globalized production decisions (Helpman 1984; Markusen 1984), it is more of a post-treatment variable: without joining the WTO, investors would

feel discouraged to invest in a country (Carnegie 2014). Additionally, I show a mixed correlation between FDI and regime type, with some years favoring autocracy and others not.

Can a country improve trade performance right away if it switches to autocracy? First, they have to meet the scope condition. Second, some mechanisms of autocratic advantages take time, e.g., to tilt resources to build infrastructure or attract MNCs. My theory suggests that, due to autocratic advantages and given the scope condition met, an autocratic government may compete better for external demand than a democratic counterfactual.

5.7 Alternative Explanations

The “Catching-up” Story

Is it a catching-up story in which, thanks to globalization and converging technologies, less developed countries (LDCs) quickly catch up and grow faster, while many autocracies happen to be among them? The answer is no. The post-1990 WTO-joiners were mostly LDCs, in which autocracies account for only one third. Neither did autocracies start low. While the unit fixed-effects model cannot exploit variation across units, the correlation between GDP per capita (a year before WTO accession and in 1992) and Polity for joiners is negative ($r = -0.25$ and -0.43 , statistically significant), showing autocracies actually with higher starting levels. My models control for many country-specific covariates such as GDP per capita, GDP, and population, to ensure similar level comparisons. Furthermore, not only for relative growth, but also absolute levels of outcomes, regime’s effect still favors autocracies.

6 Mechanisms

6.1 Sectoral-level Evidence

As discussed in Section 4, autocratic advantages such as mercantilism, wage suppression, and resource endowment favor exports of manufactured and commodity goods, as well as intermediate goods which reflect GVC participation, than primary goods such as agriculture. For example, countries like China after WTO accession shifted millions of labors from agricultural sectors to manufacturing (Erten and Leight 2019). Thus, by unveiling sector-level patterns, we can better understand the underlying dynamics consistent with my theory.

The UNCTAD classifies sectors based on manufacturing factors (labor, resource, and technol-

ogy).⁵⁶ The World Bank's WITS, based on GVC participation, classifies Harmonized System (HS) sectors into raw materials, intermediate goods, consumer goods, and capital goods, according to which, I merge six-digit HS code into the four broad categories. As seen in the x-axis, Figure 15a classifies sectors on manufacture types, while Figure 15b emphasizes the GVC participation. I then ran sector-level gravity model with the interaction term ($WTO \times Polity \times category$) using CEPII's BACI data at the HS 2-digit level.

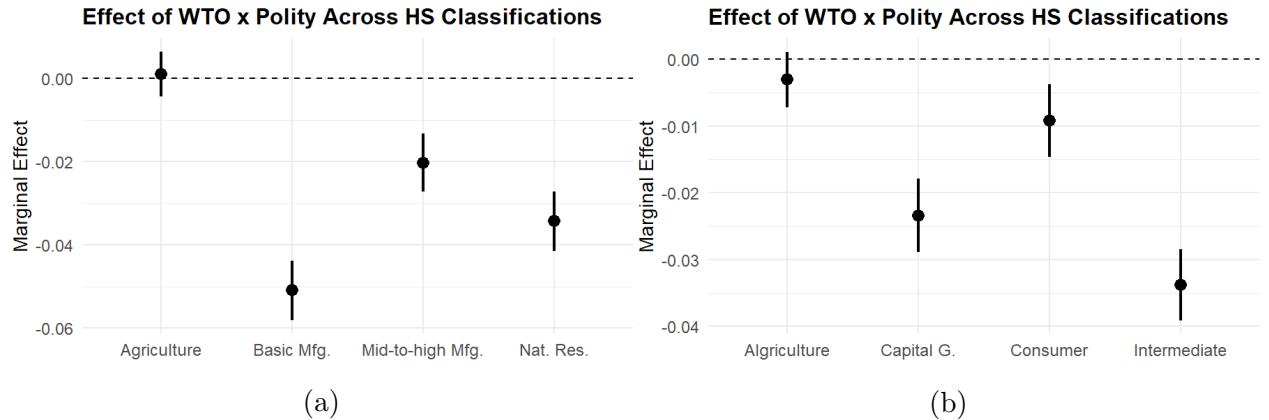


Figure 15: Interaction Effect ($WTO \times Polity$) across HS Categories. Note: negative value means the WTO effect favors autocracy.

As shown in Figure 15, after WTO accession, autocracies' advantages in exports manifest the most in basic manufacturing (Figure 15a) or intermediate goods (Figure 15b), then natural resource or capital goods. This sectoral divergence underscores more detailed patterns of autocracies in leveraging WTO membership for export growth. Their advantages, as expected, boost industrial products and commodities, particularly through participating into the GVC (e.g., intermediate goods).

6.2 Mediating Analysis

As stated above, when autocracies were incorporated into the global trade regime, they may have a slew of advantages, which may simultaneously influence trade performance. Section 6.1 further reveals that autocracies benefit more from exporting manufactures and commodities than agriculture, and through the GVC integration. To understand the channels that may work to achieve this, I conduct mediating analysis.

⁵⁶See https://unctadstat.unctad.org/EN/Classifications/DimSitzRev3Products_Tdr_Hierarchy.pdf.

6.2.1 Exports

There are numerous channels through which exports can be affected by regime type, including but not limited to: institutions that protect property rights, mercantilist policies that tilt disproportionate resources to industrial sector (and related, encouraging savings), centralized power that responds to global market swiftly, controlling abilities resilient to external shocks, foreign direct investments (and related, capital account openness), trade and non-trade barriers, infrastructure investments, currency manipulation, and natural resource endowment. The combination of mechanisms may differ from country to country.

Mechanisms	Implications
mercantilism/developmentalism	industrial share (-1.32, t=-24.21) fixed investments (-0.31, t=-8.41) saving rate (-1.76, t=-27.17) fdi share (0.01, t=0.24)
institutionalism	property rights protection (0.01, t=45.14)
neoliberalism	tariff rate (0.20, t=1.92) capital market openness (-0.006, t=4.45)
resource	natural resource rent share (-0.86, t=-10.38)

Table 5: Mechanisms and Implications (for Exports). *Note:* numbers in brackets are coefficients of regressing channels on Polity with year fixed effects (2000-2020), and t values.

As the aforementioned tests demonstrate autocracy predicts better only under certain conditions, I focus on the “engaged reformers” with the PR protection between 0.1 and 0.7 and being inside the WTO since 2000 (a more stable starting year after the transition). Table 5 presents the coefficients when I regress various channels on Polity with year fixed effects. These channels have mixed correlations (positive or negative) with regime type except for the FDI share, and they all likely play some roles as mediating variables. Interestingly, as mentioned in Section 3.2, among these engaged reformers, autocracies have lower average tariff rates.

Mediating tests are done in the Appendix, and none of the channels dramatically reduces the effect of Polity, suggesting each channel may only work partially or for certain countries. Yet, further tests shed more light.

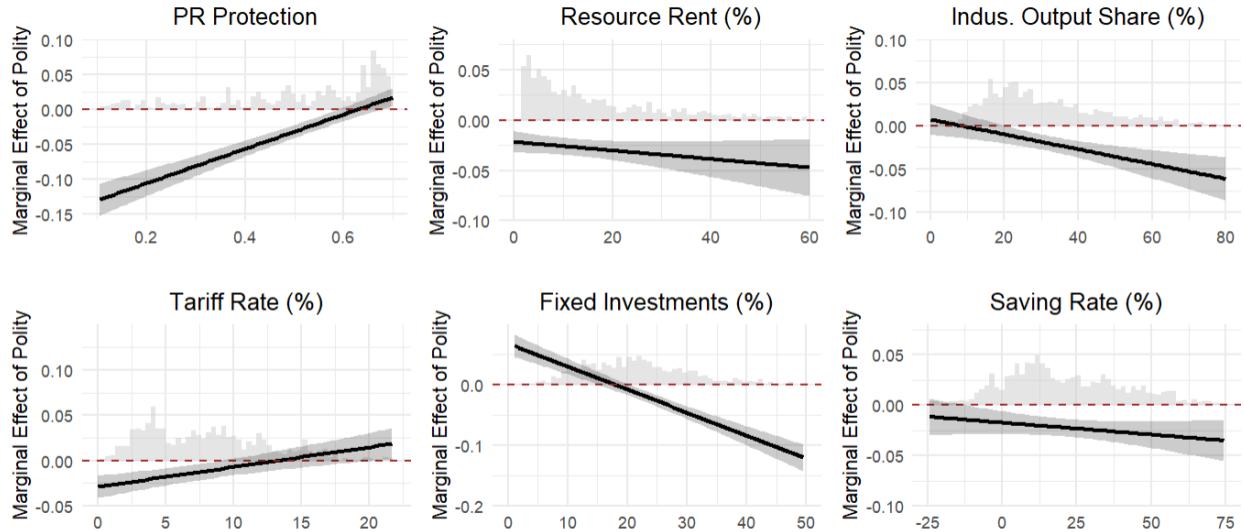


Figure 16: Channels and Exports. *Note:* the y-axis is the Polity's effect on exports.

As plotted in Figure 16 where varied channels are interacted with regime type, across different levels of channel variables, Polity's effect varies. For example, for industrial output, fixed investments, and saving rate, Polity's effect on exports significantly favors autocracy when these variables are at higher values. This suggests that, at higher values, autocratic advantages may be amplified together with other channels. For example, in highly industrialized autocracies, centralized power can better support firms' requirements by streamlining processes and suppressing labor unions. A high level of fixed investments in infrastructure may enhance the abilities to attract FDI and more effectively support the export sector. A high saving rate imposed by autocratic leaders may benefit infrastructure building and support firms on competitive financing.

6.2.2 External Balances

External balances are systematically different from exports regarding the causes, which are fewer, generally divided into trade and financial explanations (Barattieri 2014). Overall, autocracies are more likely to conduct mercantilist and protectionist policies (in contrast to engaged reformers). Meanwhile, autocracies are correlated with more natural resource endowment. The level of capital market development can also be a factor.

The implication that follows is that industrial output (% of GDP), tariff rate, capital market development and natural resource output (% of GDP) may be potential mediating variables.

Mechanisms	Implications
mercantilism	industrial share ($r = -0.47$)
protectionism	tariff rate ($r = -0.52$)
	capital market openness ($r = 0.49$)
capital market level	private credit supply share ($r = 0.36$)
resource	natural resource rent share ($r = -0.56$)

Table 6: Mechanisms and Implications (for External Balances). *Note:* in brackets are cross-country correlations in year 2010.

DV: Current Account Balance (%)						
	Baseline	Mercantilism	Protectionism	CapMkt Dev.	Resource	All
Polity2	-0.158*** (0.052)	-0.107** (0.053)	-0.162*** (0.056)	-0.157*** (0.051)	-0.113** (0.053)	-0.099* (0.054)
Industrial Output(%)		0.268*** (0.030)				0.248*** (0.036)
Tariff Rate			0.180*** (0.045)			0.210*** (0.043)
Δ Private Credit (%)				-0.099*** (0.014)		-0.113*** (0.013)
NatRes Rent (%)					0.220*** (0.031)	0.098*** (0.035)
Controls	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Num.Obs.	1308	1293	1189	1294	1308	1162
R ² Conditional	0.770	0.791	0.798	0.773	0.795	0.829

DV: Trade Balance (%)						
	Baseline	Mercantilism	Protectionism	CapMkt Dev.	Resource	All
Polity2	-0.202*** (0.068)	-0.068 (0.066)	-0.142** (0.072)	-0.211*** (0.066)	-0.119* (0.064)	-0.013 (0.065)
Industrial Output(%)		0.640*** (0.038)				0.476*** (0.043)
Tariff Rate			0.120** (0.053)			0.186*** (0.048)
Δ Private Credit (%)				-0.147*** (0.016)		-0.159*** (0.015)
NatRes Rent (%)					0.614*** (0.036)	0.371*** (0.040)
Controls	✓	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Num.Obs.	1308	1293	1189	1294	1308	1162
R ² Conditional	0.876	0.890	0.888	0.883	0.903	0.920

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

Figure 17: Mediating Variables and External Balances.

Table 17 displays the results of mediating tests based on the mixed-effect model above (Sattler and Manger 2019). Current account balances are significantly mediated by mercantilism and resource channels, whereas trade balances are significantly mediated by mercantilism, protectionism, and resource channels. All these channels reflect the autocratic advantages discussed in Section 3.2.

7 Case Illustration

In this section, I put together similar countries for comparisons which, although not strictly counterfactual to each other, nonetheless provide insights and corroboration to my theory. I use export share of GDP as the key metric which suggests trade performance, external demand dependency, or global trade participation.

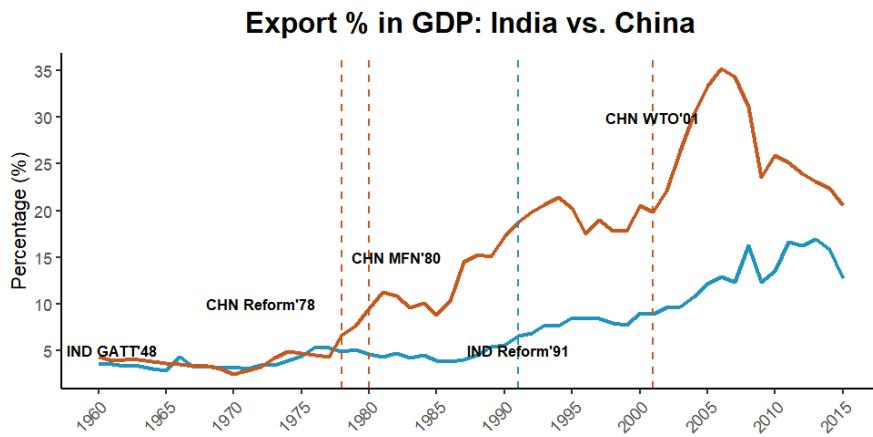


Figure 18: Exports (%): China vs. India. *Note:* source: WDI; China increasingly relied on domestic economy after 2008.

China vs. India - China and India share many similarities in the late 1970s and early 1980s: demographics, trade-related geography, resource endowment, and centrally planned economies. Both countries had similar export shares for decades (Figure 18). China started market-oriented reforms in 1978, and in 1980, it was granted the MFN status from the United States (i.e., semi-engaged) and borrowed huge from the World Bank. Although China's exports immediately took off, it recorded persistent trade deficit (1980-1995). China's accession into the WTO in 2001 gave its exports a second boost and China started to run persistent trade surplus since. China's political regime allows a gradualist approach which blended state control with market, and long-term planning employing mercantilism (e.g., economic zones and industrial policies)(Lin et al. 2003), as well as the suppression of labor rights. In contrast, India is the GATT signatory country, which didn't seem to help

substantially. India started market reforms a bit late in 1991. Although India's nominal institutional level was higher (0.77 vs. 0.35 in PR protection in 2000), India's democratic system, though more inclusive, must navigate coalition politics, public dissent, and legal constraints, resulting in slow decision-making and low mercantilist policies (Groth 2006). Consequently, from 1991 to present, its export share is significantly lower than China's and ran persistent trade deficits. Interestingly, with Modi's more centralized and authoritarian turn, India quickly changed trade policy towards more mercantilism, notably in electronics.⁵⁷ In only five years (2018-2023), India's exports of electronic products increased five fold to \$22 billion.

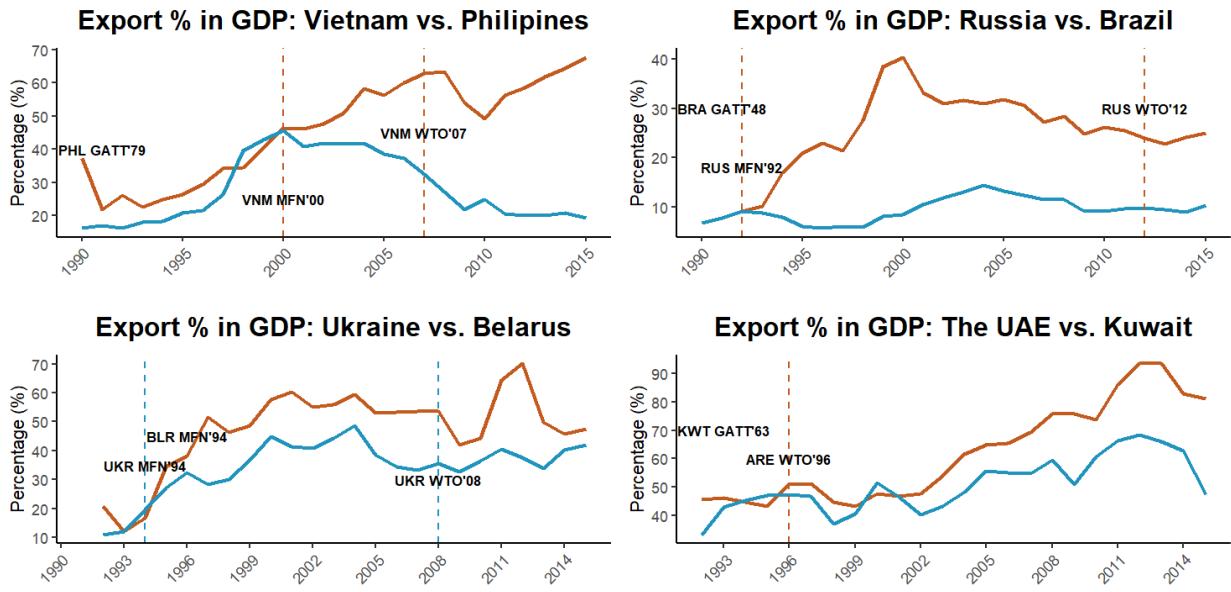


Figure 19: Exports (%): Similar Country Comparison (Post-1990). Note: source: WB. Red denotes the first country.

Vietnam vs. Philippines - Vietnam and Philippines are another comparable cases: similar income levels in the 1980s, as well as economic structure, population, geography, race, and resource endowment. In 1986, Vietnam started economic reforms, and by 2001 it was granted the MFN status from most western countries. In 1990-2011, Vietnam recorded persistent trade deficit, while starting a state-led mercantilist model similar to China's. Vietnam's swift and consistent policy-making, long-term planning, and managed economic liberalization were attributed to its centralized political system (Kirkpatrick et al. 2001). Vietnam joined the WTO in 2007 and five years later, it then runs persistent trade surplus. In contrast, more democratic Philippines witnessed elites dominate the democratic process, capture rents, and divert resources away from investment in

⁵⁷ “10 Years of Make in India,” Government of India, 2024.

human development and infrastructure (Baulch [2016](#)).

Belarus vs. Ukraine - Both countries shared many similarities in the early 1990s: GDP per capita, political history, geography, resource endowment, culture, and race. Both then did market-oriented reforms with similar institutional levels (0.75 vs. 0.9 in PR protection, and 0.26 vs. 0.2 in rule of law in 2000). Although Belarus is not a WTO member, it semi-participated globally through other channels such as MFNs (signed with the U.S. and the EU in the 1990s), Russia's spill-over (as well as China-Belarus industrial park), and RTAs such as the EAEU (Eder [2021](#)); Ukraine joined the WTO in 2008. Politically, Belarus is autocratic and Ukraine is a democracy – what differs Belarus from Ukraine is the former's centralized, state-led gradual reforms that favored industrial development (*Ibid*), compared to the latter's fragmented, unpredictable political system, subject to interest groups such as oligarchs, “hands-off” liberalization vulnerable to external shocks, and relatively underinvestment in infrastructure and industries (Kuzio [2020](#)). From the early 1990s to mid-2010s, Belarus increased exports by thirteen times – although not outstanding compared to engaged reformers, but significantly better than Ukraine of around five times with half the per capita income as Belarus.

The UAE vs. Kuwait – Although the UAE and Kuwait share similar resource endowments (with oil reserve shares of 5.9% and 6.1%, respectively), GDP per capita in the 1990s, geography, population, religion, and race, significant institutional differences help explain why Kuwait lags behind the UAE in performance. Although neither is a democracy, the UAE's federal monarchy, with its highly centralized authority across seven emirates, has creating features such as: government-led development, fast decision making, and a flexible labor force, enabling swift, coordinated economic policies and substantial investments in infrastructure and extensive transport networks – which have fostered a diversified export base (Hvidt [2013](#)). In contrast, Kuwait's constitutional emirate with a parliamentary system tends to exhibit more fragmented decision-making and slower policy reactions, suffered from “the lack of political consensus and long-overdue reforms” (*Ibid*), despite its accession into the WTO (1963) much earlier than the UAE (1994).

Russia vs. Brazil - Russia and Brazil also shared some similarities: similar average income levels in the early 1990s, regional resource-oriented great powers with similarly vast land and population. Russia and Brazil both had severe economic problems and started market reforms in the late 1980s. Either pushing for the hands-off “shock therapy” or the subsequent stabilization and reforms (including re-nationalization of key industries though), Russia's centralized state and au-

thoritarian legacy played an important role (Åslund 2012). Russia (and many post-Soviet states) strategically devalued currency to boost exports, while keeping low taxes and social transfers and depressed wages, making Russia grow faster than most of Central Europe that adopted the EU model, reinforcing the “old idea of authoritarian advantage” (*Ibid*). Consequently, Russia’s exports surged in the 1990s and remained at a high level afterwards (Figure 19), while keeping current account surpluses for decades. In contrast to Russia’s late WTO accession (2012), Brazil was one GATT signatory. While Brazil’s energy sector is more diverse than Russia’s, it also heavily relies on resource exports (World Bank). As a democracy, Brazil witnessed policy instability due to political shifts and excessive public spending due to pressure to fund social programs, creating an unpredictable business environment and hampering structural reforms (Franko 2018). Brazil’s more protectionist trade policies to shield domestic interest groups and stricter labor regulations limited competitiveness and innovation (*Ibid*; Feierherd 2024). As a result, despite a transient export growth thanks to the 2000s commodity boom, Brazil’s export share remains remarkably lower than Russia’s (Figure 19). Since 1990, Brazil recorded persistent current account deficits.

Figure B.2 in the Appendix depicts “exports as a share of world total exports” for 20 major autocracies with time marks for MFN/WTO/WTO observer. World export shares increased for most of them after 1990.

8 Conclusion and Discussion

The debate over whether democratic or autocratic institutions better promote economic development remains heated. Ultimately, it hinges on the mechanisms that drive economic performance. In this article, I engage with this debate by addressing a key puzzle: why has autocracy’s impact on trade performance reversed compared to the pre-1990 period? To explain this shift, I conceptualize “autocratic advantages” in a globalized economy. I argue that attributing autocratic economic success solely to market-oriented reforms and self-driven development is, at best, incomplete. While institutional theories of growth remain valid, external forces can counteract them. Economic globalization, which integrates autocracies into the global market, is a necessary condition for the rise of autocratic advantages, allowing them to compete for external demand—often at the cost of others. Autocratic regimes often lack commitments to inclusive growth, resulting in weak domestic demand (Acemoglu and Robinson 2012). Consequently, they should find it harder to grow absent strong

external demand.

In the era of economic integration, particularly through global value chains and economic policy convergence, firms in autocracies gain competitive advantages that enable them to out-compete others. This has implications for innovation as well, as in the case of China. Resource-rich autocracies, in particular, benefit from unprecedented export opportunities, reinforcing their regimes. My theory helps explain China’s rise and its persistent trade surpluses with most partners—its scale and economic size further enhancing these advantages. This also answers why, after 1990, democracies have struggled to maintain competitiveness and appeal.

Conventional liberal proponents argue that open societies, characterized by free trade, open borders, and democratic governance, foster global peace and economic prosperity. This perspective suggests that such openness leads to interdependence among nations, reducing the likelihood of conflict. In this paper, we demonstrate that, at least on free trade, this is contrary to empirical evidence.

Economic globalization, particularly WTO expansion, has disproportionately favored autocracies, challenging the sequence accession theory proposed by Downs et al. (2000). While the theory suggests that sequential accession allows for gradual integration and compliance with trade rules, in practice, even this staggered process has been insufficient in ensuring that later-joining autocracies adhere to WTO principles. Sequential accession alone does not compel autocracies to fully liberalize their economies or political systems. As the authoritarian members thrived, the WTO’s ability to function as a rule-based trade club has eroded, leading to institutional gridlock and undermining the liberal economic order.

Where should the global trade system be headed? The global market force behind the trend posts a sober future for the current liberal order and democracies, explaining autocratic rise and democratic backsliding. Some argue that democracies should establish their own trade bloc (Friedberg 2025). Whether framed as a contest between democracy and autocracy or as U.S.-China rivalry, my findings indicate that global market forces – shaped by the existing trade system – tend to favor autocracies. Given this dynamic, the continued deinstitutionalization of advanced democracies may not be surprising. The fact that economic globalization has produced this continued outcome is both unexpected and undesirable. Ultimately, the assessment of globalization hinges on its consequences; as Keohane (1984) states, the means are justified by the ends. Future research should further explore the institutional advantages of reformed autocracies, particularly in relation

to their inherent disadvantages, and whether democracies truly cannot compete on an equal footing.

Should countries embrace autocracy? The answer is no. In the current geoeconomic environment, the space for mercantilist strategies, especially for autocracies, is shrinking as the awareness from others grows. If resistance surges (e.g., tariffs), the scope conditions that once enabled their advantages may disappear, and the unintended consequences of autocratization could be unpredictable, potentially even backfiring on those in power. Moreover, shifting toward autocracy risks undermining domestic demand and innovation-driven growth, while also jeopardizing broader societal values such as equity and individual rights.

To be clear, this is not to say autocracy is inherently superior for development, nor is it necessary or normatively recommended; autocratization may well fail (see the typology in Table 1). The same autocratic characteristics can hinder internal consumption and innovation. Rather, the point is that, in a globalized environment, they may provide certain advantages in competing for external demand. As suggested, autocratic advantages may require *scope condition* to function, which will be elaborated in the following section.

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A Data Description

This section details the data that underpin the analysis. Summary statistics, plots, and data distributions are presented to provide a more rich understanding of the story and its suitability for research questions.

A.1 Distributional Change

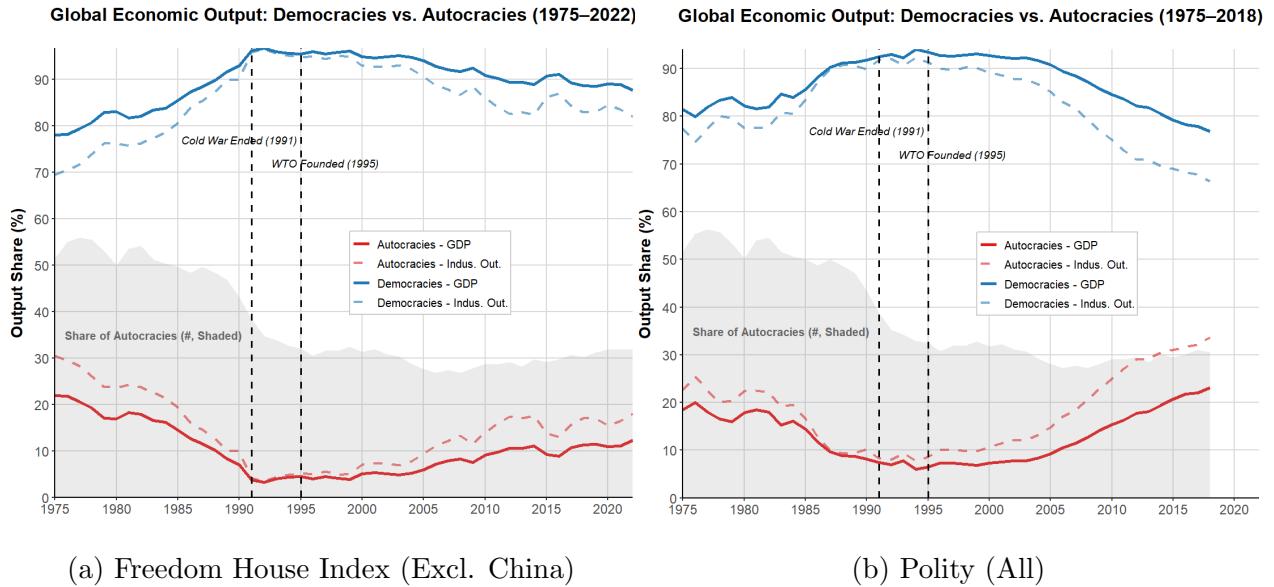


Figure A.1: The Distribution of Power Change Between Democracies and Autocracies. *Note:* Data: World Bank. In (a), autocracy is measured by $FH \geq 10$. In (b), autocracy is measured by $Polity \leq 0$. Polity data is available until 2018.

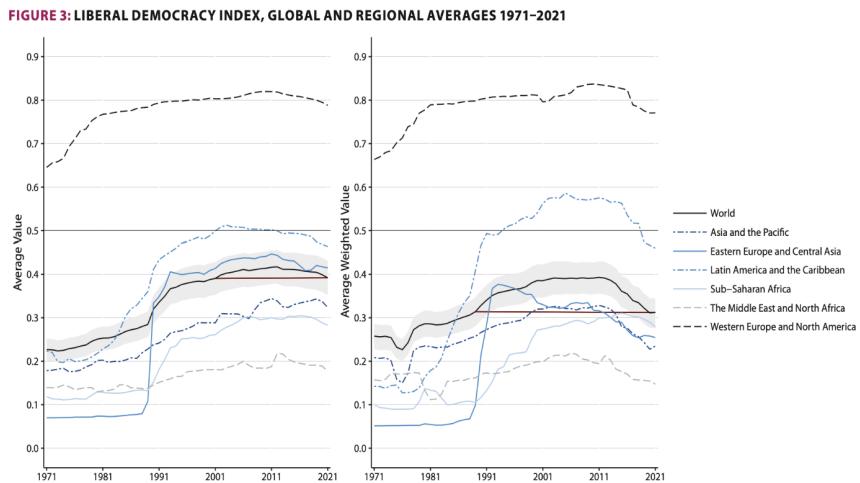


Figure A.2: VDem Global Liberal Democracy Index (Source: the Vdem Report 2021)

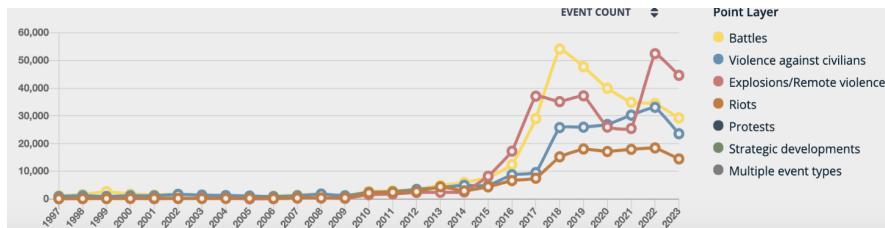


Figure A.3: The Trend of Global Conflicts (Source: ACLED).

A.2 Descriptive Performance

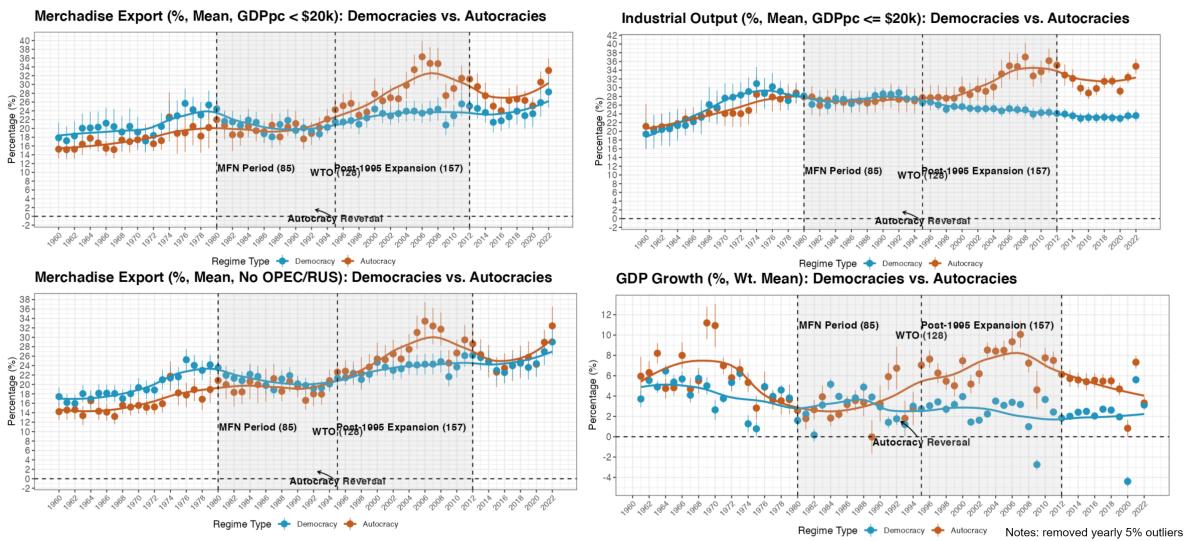


Figure A.4: Average Performance of Economic Indicators between Democracies and Autocracies ($FH \geq 11$).

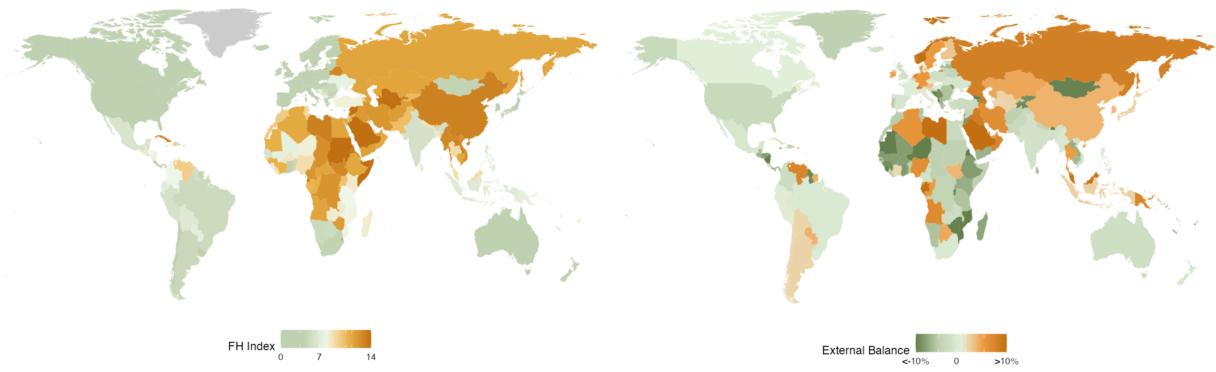


Figure A.5: Correlation between Regime Type and External Balance. Note: average external balance calculate the mean of current account balance and trade balance to include the information of both balances, since the two oftentimes do not overlap.

A.3 Panel Data of Regime Type Change

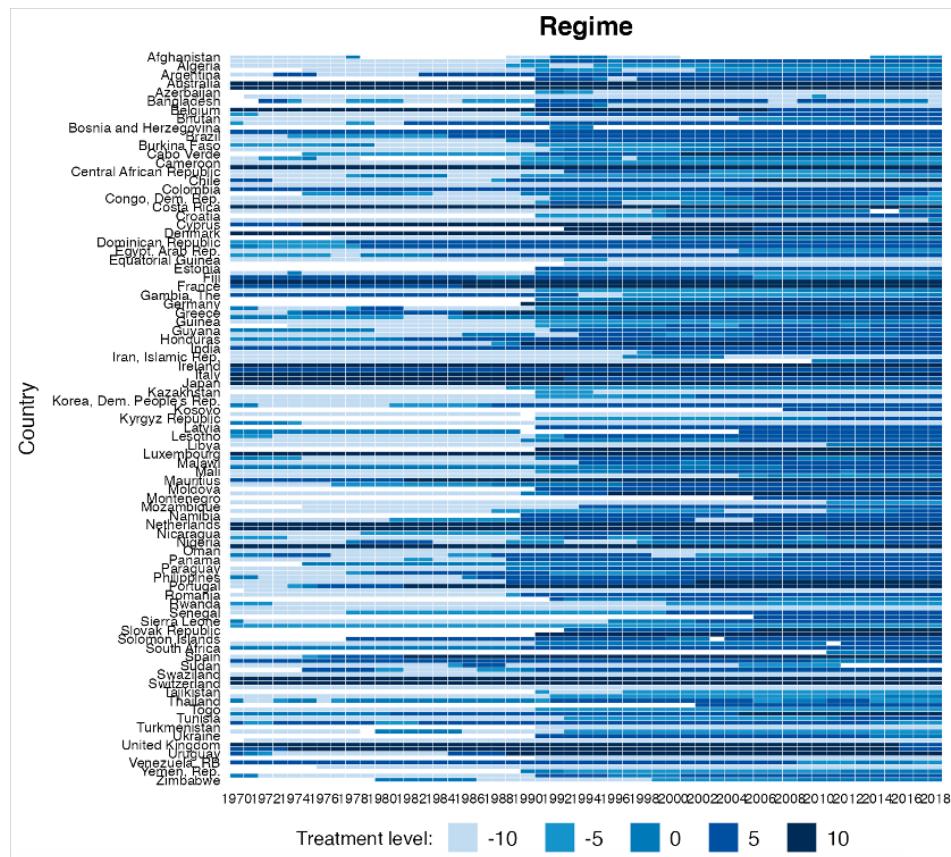


Figure A.6: Democratization (Polity Index)

A.4 KOF Globalization Index (Economic) Change

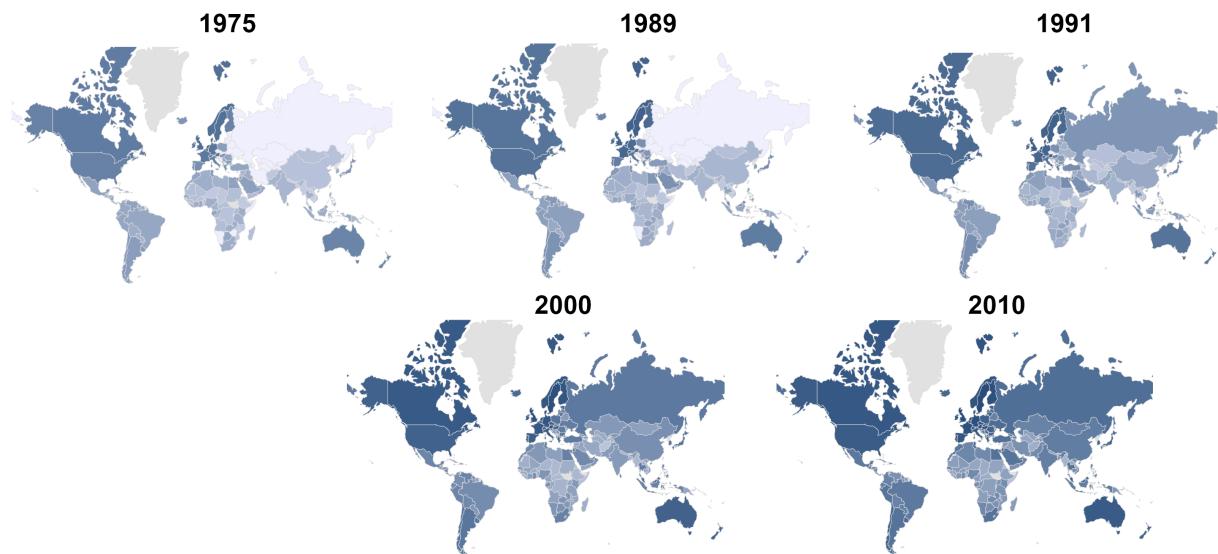


Figure A.7: KOF Globalization Index (Economic) Change. *Note:* The KOF economic index measures flows of trade, FDI and transfers, and trade and capital accounts restrictions.

A.5 WTO Membership



Figure A.8: The Map of WTO Members and Observers (source: WTO website)

B Theory Section

B.1 An Extended Eaton-Kortum Model

This section extends the classic Eaton-Kortum (E-K) model (Eaton and Kortum 2002) to illustrate the logic and hypotheses of this paper, since this model focuses on the determinants of bilateral trade flows. As in the paper, the trade flow from country i to j in E-K model is formally expressed as below:

$$X_{ij} = \frac{T_i(c_i\tau_{ij})^{-\theta}}{\sum_k T_k(c_k\tau_{kj})^{-\theta}} Y_j \quad (1)$$

where T_i is country i 's state of technology (or absolute advantage). c_i is cost of production, and τ_{ij} is trade barrier between two countries i and j . θ denotes the heterogeneity of a country's efficiency in producing a continuum of goods drawn from a Fréchet distribution ($F_i(z) = e^{-T_i z^{-\theta}}$) – that is, the comparative advantage. X_{ij} measures the trade flow from i to j , while Y_j is the aggregate consumption of country j . Together, (1) implies that a country's exports are determined by its technology, production cost, and trade cost.

In (2) - (4), three new variables related to my paper are introduced: institution (I_i), autocratic advantage (A_i , proxied by regime type), and WTO membership (W_i). In a globalized economy, trade-related productive technology (T_i) of country i is largely affected by investments, assuming more significantly from involving the GVC. Therefore, T_i depends on institutional improvement (I_i) and autocratic advantage (A_i) to attract the GVC, conditional on crossing an institutional threshold (I^*) and possessing WTO membership ($W_i = 1$, to proxy trade engagement). Both I^* and $W_i = 1$ are needed for substantively attracting firms, domestic or multinational, to invest and innovate. In other words, if institution is too low or excluded from the global trade system, institutional improvement or autocratic advantage won't matter much. Autocratic advantages A_i , embodied in state-market synergy, magnify the effect of I_i . Technology function $t(A_i, I_i)$ can be thus formally written as:

$$t(A_i, I_i) = \begin{cases} \bar{T}_i \cdot \exp\left(\frac{\beta A_i}{1+\lambda A_i} + \gamma \frac{I_i A_i}{1+\lambda I_i^2}\right), & \text{if } I_i \geq I^* \text{ and } W_i = 1, \\ \bar{T}_i, & \text{otherwise.} \end{cases} \quad (2)$$

where \bar{T}_i is the baseline technology. $\frac{\beta A_i}{1+\lambda A_i}$ models diminishing returns to A_i , while $\lambda > 0$ controls how quickly diminishing returns to A_i sets in. When A_i is small: $\frac{\beta A_i}{1+\lambda A_i} \approx \beta A_i$, so the contribution of A_i grows almost linearly. When A_i is large: $\frac{\beta A_i}{1+\lambda A_i} \rightarrow \frac{\beta}{\lambda}$, so the marginal effect of A_i diminishes significantly and possibly goes negative when A_i is too high. Similarly, $\frac{I_i A_i}{1+\lambda_I I_i^2}$ models diminishing returns to I_i . The economic rationale behind is that excessive centralization (high A_i) may create inefficiencies or governance rigidities, while saturated institutions (high I_i) may over-complicate decision-making, reducing efficiency. A moderately autocratic regime (e.g., with some centralized control) may gain substantial benefits, but extreme autocracy may lead to inefficiencies (e.g., power abuse).

Although I_i and A_i exhibit diminishing returns, they may still interact to amplify technology – i.e., the interaction term $\gamma \frac{I_i A_i}{1+\lambda_I I_i^2}$. γ captures the interaction coefficient between I_i and A_i on (T_i). Moderate levels of I_i and A_i together create the largest gains in technology because they complement each other. For example, moderate autocratic regimes (e.g., single-party regimes) may gain disproportionately when combined with moderate to high institutions. $\frac{I_i A_i}{1+\lambda_I I_i^2}$ also captures that when I_i is high, the effect of A_i diminishes (the denominator is dominated by I_i^2), because even autocratic regimes are now more hands-tied, if not completely disabled.

As argued, production cost c_i decreases with autocratic advantage A_i , due to reasons such as labor rights suppression and disproportionate state support for industries and infrastructure. c_i is formally expressed as:

$$c(A_i) = \begin{cases} \bar{c}_i \cdot \exp(-\delta_A A_i), & \text{if } I_i \geq I^* \text{ and } W_i = 1, \\ \bar{c}_i, & \text{otherwise.} \end{cases} \quad (3)$$

where \bar{c}_i is the baseline production cost and δ_A captures the cost-reducing effect of autocratic advantage. The term $\exp(-\delta_A A_i)$ represents an exponential decay. As A_i increases, $\exp(-\delta_A A_i)$ becomes smaller, but the rate of decrease slows down because the exponential decay flattens over A_i . The intuition is that there's a limit to how much A_i can reduce costs, as well as marginal diminishing returns. The effective productive cost reduction is also assumed to be conditioned by crossing certain I^* and $W_i = 1$, otherwise, A_i may have limited effect.

Trade cost τ_{ij} decreases with WTO membership W_i , formally as:

$$\tau(W_i) = \bar{\tau}_{ij} \cdot (1 - \varphi W_i) \quad (4)$$

where τ_{ij} is baseline trade cost, and $\lambda_W > 0$ indicates reduction in trade costs due to WTO membership (or trade engagement). Therefore, (1) takes on the form of:

$$X_{ij} = \frac{t(A_i, I_i) \{c(A_i)\tau(W_i)\}^{-\theta}}{\sum_k t(A_k, I_k) \{c(A_k)\tau(W_k)\}^{-\theta}} Y_j \quad (5)$$

Plug (2)-(4) into (5), the full trade flow formula becomes:

$$X_{ij} = \frac{\left[\bar{T}_i \cdot \exp\left(\frac{\beta A_i}{1+\lambda A_i} + \gamma \frac{I_i A_i}{1+\lambda I_i^2}\right) \right] \cdot \{[\bar{c}_i \cdot \exp(-\delta A_i)] \cdot [\bar{\tau}_{ij} \cdot (1 - \varphi W_i)]\}^{-\theta}}{\sum_k T_k \cdot (c_k \tau_{kj})^{-\theta}} \cdot Y_j, \quad \text{if } I_i \geq I^* \text{ and } W_i = 1. \quad (6)$$

From (5), it shows that if $W_i = 0$, meaning a country i is not engaged in the global trade system, trade flow from i to j is simplified to the original baseline form (6), which means neither institutional improvement nor increased autocratic advantages (proxied by more autocratic regime type) will significantly improve trade flows.

$$X_{ij} = \frac{\bar{T}_i (\bar{c}_i \bar{\tau}_{ij})^{-\theta}}{\sum_k T_k \cdot (c_k \tau_{kj})^{-\theta}} \cdot Y_j \quad (7)$$

When W_i changes from 0 to 1, trade cost decreases, so that trade flow from X_{ij} increases. An increase in autocratic advantages A_i leads to an increase in productive technology:

$$\bar{T}_i \cdot \exp\left(\frac{\beta A_i}{1+\lambda A_i} + \gamma \frac{I_i A_i}{1+\lambda I_i^2 + \varepsilon A_i}\right)$$

and a decrease in productive cost $\bar{c}_i \cdot \exp(-\delta A_i)$. Therefore, exports X_{ij} increases. This is consistent with *H1.1*.

Note that in order for productive technology to increase and productive cost to decrease, I_i has to cross certain thresholds (i.e., $I_i > I^*$), and it cannot be too high. This comes from conditions in (2) and (3) and is consistent with *H1.2*. To combine all, when W_i changes from 0 to 1 and $I_i > I^*$,

(5) minus (6) becomes:

$$\Delta X_{ij} = \frac{\left[\bar{T}_i \cdot \exp\left(\frac{\beta A_i}{1+\lambda A_i} + \gamma \frac{I_i A_i}{1+\lambda I_i^2}\right) \right] \cdot \{[\bar{c}_i \cdot \exp(-\delta A_i)] \cdot [\bar{\tau}_{ij} \cdot (1-\varphi)]\}^{-\theta} - \bar{T}_i (\bar{c}_i \bar{\tau}_{ij})^{-\theta}}{\sum_k T_k \cdot (c_k \tau_{kj})^{-\theta}} \cdot Y_j \quad (8)$$

(7) formally denotes that after passing institutional thresholds I^* , an increase in A_i leads to more export increase for the same WTO accession. Put differently, autocratic WTO-joiners are expected to experience more export increase than their democratic counterparts.

Similarly, when $W_i = 0$, an increase in institution will not increase \bar{T}_i or decrease \bar{c}_i , thus not increasing X_{ij} , as specified by (2) and (3). However, when $W_i = 1$, for a ΔI increase in institutional level while $\bar{c}_i \cdot \exp(-\delta A_i)$ and $\bar{\tau}_{ij} \cdot (1-\varphi W_i)$ keep unchanged, change in X_{ij} is expressed and simplified as:

$$\Delta X_{ij} = \frac{\left[\bar{T}_i \cdot \exp\left(\frac{\beta A_i}{1+\lambda A_i}\right) \exp\left(\frac{I_i + \Delta I}{1+\lambda(I_i + \Delta I)^2} - \frac{I_i}{1+\lambda I_i^2}\right) \right] \cdot \{[\bar{c}_i \cdot \exp(-\delta A_i)] \cdot [\bar{\tau}_{ij} \cdot (1-\varphi)]\}^{-\theta}}{\sum_k T_k \cdot (c_k \tau_{kj})^{-\theta}} \cdot Y_j \quad (9)$$

(8) also implies an increase in A_i leads to more export increase for the same institutional improvement, given crossing institutional thresholds and trade engagement which is consistent with *H2.1* and *H2.2*. In other words, more autocratic states engaged by the global trade regime should expect more gains from institutional improvement in a globalized economy. Again, when A_i may be subject to possible decreasing marginal returns.

Last, since X_{ij} denotes the absolute level of trade flow from i to j , (5) also implies that more autocratic states (larger A_i) are expected to “inflate” trade flows more conditional on other factors such as trade engagement and institutional levels. However, this is also subject to the conditions in (2) and (3). For example, for states that all have $W_i = 1$, A_i ’s effect may diminish when I_i doesn’t cross thresholds I^* or is too high (*H3.1*). For states that all have similarly moderate institutional levels I_i , A_i ’s effect may diminish when $W_i = 0$ (*H3.2*).

B.2 Predictive Patterns

Prediction on Exports

$$X_{ijk} = \frac{s_{ik} Y_i Y_j}{(p_{ik})^\sigma \bar{y}_{ik}} \left[T_{ijk}(z_i, z_j) / P_j^k \right]^{1-\sigma} [\theta_{ik} \exp(z_i)]^{\sigma-1}$$

Example of Gravity Model Incorporating Product Quality, Yu(2010)

First, similar to Yu (2010), by employing gravity model commonly used in economics and political science (Anderson and van Wincoop 2003) controlling for a standard list of dyad-level covariates, I find that prior to 1990, being more democratic is associated with higher exports (see Table B.1). Post-1990, however, being more autocratic is associated with a positive or zero effect compared to being more democratic is.⁵⁸ The models include cross-sectional, within-exporter, interaction with exporter's logged GDP (whether the coefficient differs for larger countries), and weighted least squares (when larger countries are assigned larger weights). Using the interaction model, for example, by plugging in Iran's GDP in 2005 (the logged form = 20), the effect of Polity is negative.

⁵⁸For post-1990, I look at all dyads with exporter being within the WTO, since many autocracies joined the WTO after 1990 and being inside the WTO is what I am interested in. In contrast, the pre-1990 model checks both inside and outside of the WTO since most autocracies were excluded. However, the result barely changes if WTO only.

	Pre-1990		Post-1990 (within WTO)		
	OLS	OLS	OLS (Within)	OLS (Interaction)	WLS (by GDP)
<i>Polity_i</i>	0.022*** (0.001)	0.003 (0.003)	-0.016*** (0.004)	0.065*** (0.014)	-0.041*** (0.001)
<i>Polity_i</i> x <i>GDP_i</i>				-0.004*** (0.001)	
<i>Polity_j</i>	0.003* (0.001)	0.003** (0.001)	0.005*** (0.001)	0.003** (0.001)	0.003*** (0.001)
<i>GDP_i</i>	1.583*** (0.048)	-1.746*** (0.139)	0.298*** (0.054)	-1.698*** (0.141)	-1.137*** (0.107)
<i>GDP_j</i>	2.058*** (0.143)	0.650*** (0.080)	0.521*** (0.090)	0.644*** (0.079)	0.065 (0.182)
<i>GDPPC_i</i>	-0.536*** (0.043)	3.051*** (0.129)	0.070 (0.063)	3.023*** (0.129)	2.154*** (0.116)
<i>GDPPC_j</i>	-1.011*** (0.137)	0.387*** (0.083)	0.526*** (0.092)	0.392*** (0.082)	0.967*** (0.185)
RTA	0.204*** (0.051)	0.282*** (0.041)	0.286*** (0.039)	0.278*** (0.041)	0.202*** (0.031)
Custom Union	0.819*** (0.111)	0.590*** (0.031)	0.662*** (0.032)	0.591*** (0.030)	-0.335*** (0.030)
Common Colonizer post-45	0.775*** (0.027)	0.998*** (0.022)	0.875*** (0.017)	0.996*** (0.022)	0.533*** (0.047)
Colonial Dep. post-45	1.724*** (0.044)	1.034*** (0.061)	1.260*** (0.048)	1.048*** (0.060)	0.982*** (0.050)
<i>Population_i</i>	-0.757*** (0.041)	2.984*** (0.124)	-0.112 (0.093)	2.955*** (0.124)	2.190*** (0.109)
<i>Population_j</i>	-1.195*** (0.139)	0.445*** (0.072)	0.596*** (0.082)	0.450*** (0.071)	0.938*** (0.180)
Distance	-0.785*** (0.025)	-1.106*** (0.011)	-1.244*** (0.015)	-1.109*** (0.011)	-0.960*** (0.013)
Common Language	0.294*** (0.023)	0.607*** (0.026)	0.685*** (0.030)	0.612*** (0.026)	0.331*** (0.020)
Common Religion	-0.059* (0.030)	-0.008 (0.032)	0.266*** (0.033)	-0.010 (0.032)	-0.025 (0.028)
Border	0.462*** (0.017)	0.806*** (0.023)	0.529*** (0.023)	0.802*** (0.022)	0.073 (0.044)
Num.Obs.	194 716	313 566	313 566	313 566	313 580
R2 Adj.	0.629	0.709	0.759	0.709	0.801
FE	year	year	year/exporter	year	year

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

Table B.1: Regime Type and Exports

B.3 Selection of Institutional Thresholds

In 2000, the bottom 20 percentile threshold is 0.45 for PR protection and 0.2 for rule of law, respectively. I combine the institutional levels at the bottom 20 percentile among developing countries in 2000 and real cases (e.g., China's PR protection is around 0.35), so the thresholds are roughly 0.2

for rule of law and 0.35 for PR protection. Both values have to be reached. However, special cases remain. First, I slightly prioritize PR protection especially for resource-rich countries, for it is more attractive to the GVC than rule of law – as long as global investor's property rights are protected, global firms may more rely on within-GVC contract enforcement. For example, Cameroon and Chad, two resource-rich African countries have high PR protection (0.8 and 0.78) but low rule of law (below 0.1), for which I classify them as reformed. Azerbaijan (0.61, .03) and Equatorial Guinea (0.45, 0.06) are two other cases. Second, I factor in expectation. Venezuela's values for two indicators were 0.58 and 0.05 in 2010. Yet, Venezuela has experienced rapid institutional deterioration since 1997 before Hugo Chávez was elected completely reversing course when the two indicators were as high as 0.9 and 0.55, generating greatly adverse expectations for investors. Thus, Venezuela is listed as non-reformer. Yemen is another example: from the Arab Spring in 2011 to Houthi's takeover in 2015, its institutions experienced rapid deterioration.

B.4 Share of World Exports for Major Autocracies

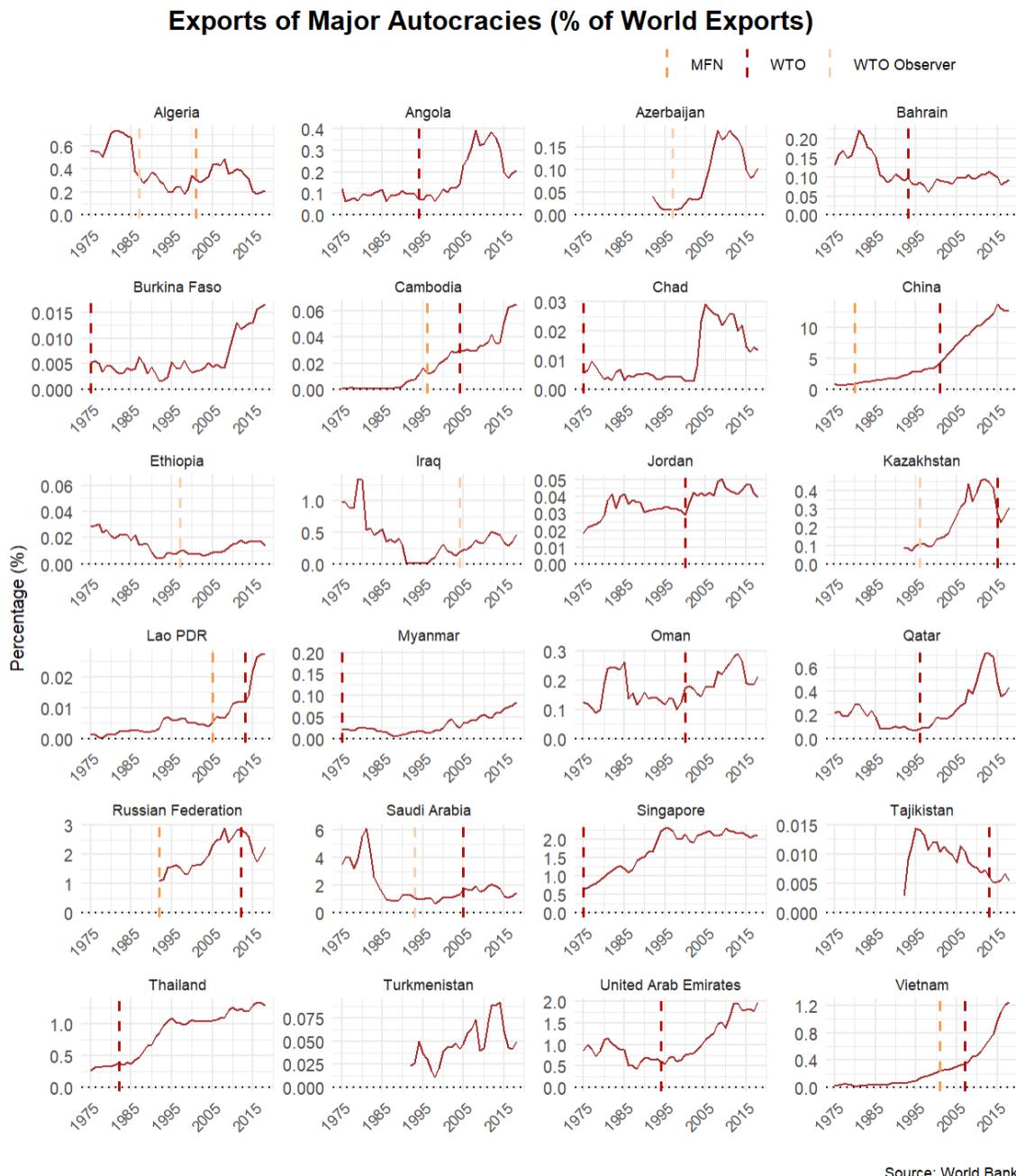


Table B.2: Share of World Exports for Major Autocracies. *Note:* For illustration purpose, vertical dashed lines begin in 1975 if MFN/WTO/Observer in effect earlier. Most autocracies' global share in exports show an increasing trend.

C Main Empirical Tests

C.1 Sensitivity Analysis

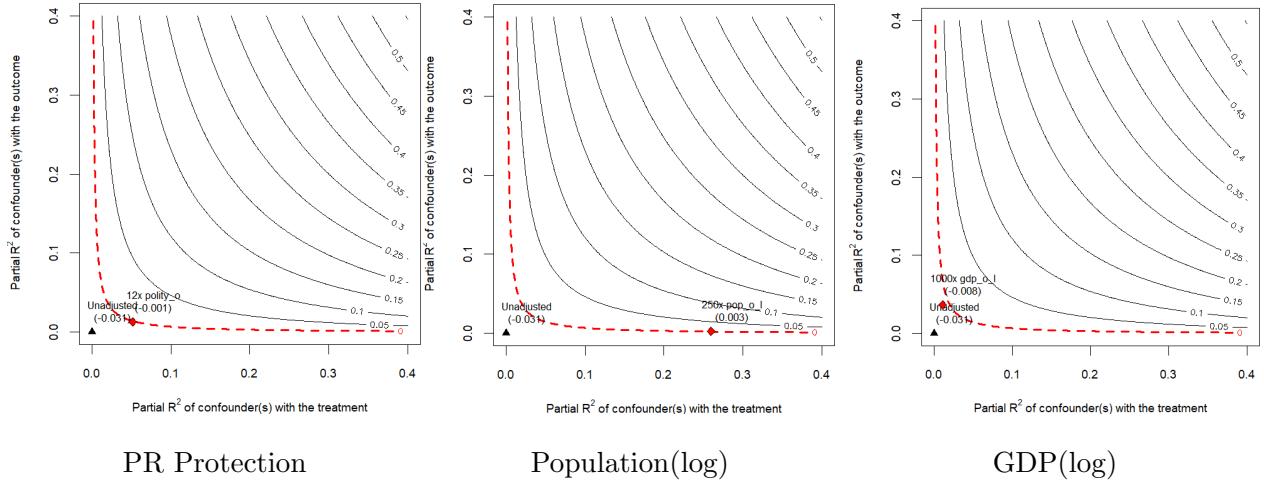


Figure C.9: Improved Covariate Balance via CBPS Weighting, Post-1990. Note: overall, all covariates' balance improve significantly. The green line natural resource intensity is slightly not balanced. However, it may not be an concern as it does not significantly affect WTO accession theoretically.

C.2 WTO Effect

	Exports (FE)		Exports (FE)		Exports (FE)		Exports (FE)		Exports (CRE)	
	Pre-1990	Post-1990	Pre-1990	Post-1990	Pre-1990	Post-1990	Pre-1990	Post-1990	Pre-1990	Post-1990
<i>One WTO</i>	0.304*** (0.052)	-0.131** (0.061)							0.309*** (0.015)	0.209*** (0.012)
<i>One WTO × Polity_i</i>	-0.003 (0.005)	-0.025*** (0.008)							0.012** (0.001)	-0.038*** (0.002)
<i>Both WTO</i>	0.615*** (0.084)	0.143 (0.092)	0.314*** (0.046)	0.273*** (0.047)						
<i>Both WTO × Polity_i</i>	0.007 (0.006)	-0.041*** (0.010)	0.011*** (0.004)	-0.033*** (0.006)						
<i>WTO_i Only</i>			0.306*** (0.052)	-0.037 (0.065)					0.304*** (0.017)	0.099*** (0.017)
<i>WTO_i Only × Polity_i</i>			0.005 (0.005)	-0.037*** (0.007)					0.004** (0.001)	-0.038*** (0.002)
<i>WTO_{-i}</i>					0.307*** (0.042)	0.210*** (0.045)	0.240*** (0.049)	-0.022 (0.059)		
<i>WTO_{-i} × Polity_i</i>					0.009** (0.008)	-0.033*** (0.004)	-0.001 (0.006)	-0.003 (0.008)		
<i>WTO_i (3y lag)</i>						(0.008)			0.105** (0.042)	0.365*** (0.051)
<i>WTO_i (3y lag) × Polity_i</i>									0.012** (0.005)	-0.032*** (0.007)
<i>GD_P_i</i>	0.035 (0.096)	0.216** (0.091)	-0.076 (0.091)	0.211** (0.091)	-0.107 (0.091)	0.202** (0.090)	-0.061 (0.093)	0.127 (0.095)	-0.213*** (0.081)	0.416*** (0.115)
<i>GD_{PPC}_i</i>	0.502*** (0.088)	0.278*** (0.093)	0.620*** (0.085)	0.285*** (0.093)	0.654*** (0.084)	0.288*** (0.092)	0.600*** (0.086)	0.282*** (0.098)	0.758*** (0.079)	0.070 (0.115)
<i>PTA</i>	0.144*** (0.030)	0.191*** (0.030)	0.225*** (0.032)	0.192*** (0.030)	0.226*** (0.032)	0.193*** (0.030)	0.224*** (0.032)	0.074** (0.031)	0.170*** (0.012)	0.191*** (0.013)
<i>RTA</i>	0.165*** (0.042)	0.024 (0.031)	0.121*** (0.045)	0.024 (0.031)	0.127*** (0.045)	0.020 (0.031)	0.111** (0.045)	0.074** (0.031)	0.133*** (0.021)	0.005 (0.015)
<i>Customs Union</i>	0.312** (0.144)	0.088 (0.083)	0.233 (0.144)	0.096 (0.083)	0.242* (0.144)	0.099 (0.083)	0.233 (0.142)	0.105 (0.084)	0.343*** (0.049)	0.134*** (0.034)
<i>Colonial Dependency</i>	0.600*** (0.091)	1.434*** (0.216)	0.626*** (0.085)	1.440*** (0.217)	0.622*** (0.086)	1.445*** (0.216)	0.618*** (0.089)	1.345*** (0.227)	0.613*** (0.118)	1.217*** (0.406)
<i>Polity_i</i>	0.013** (0.005)		0.009** (0.004)		0.009** (0.004)		0.007* (0.004)			
<i>Com. Col. Post45</i>									0.469*** (0.056)	0.733*** (0.042)
<i>Col. Dep. Post45</i>									2.207*** (0.137)	1.736*** (0.125)
<i>Distance</i>									-1.063*** (0.021)	-1.380*** (0.016)
<i>Common Language</i>									0.196*** (0.045)	0.700*** (0.036)
<i>Common Religion</i>									0.075	0.324***

<i>Bordered</i>								(0.063)	(0.048)	
Exporter Means								0.658***	0.870***	
Dyad Means								(0.091)	(0.080)	
Exporter FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Importer FE	✓	✓	✓	✓	✓	✓	✓	✓	RE	
Dyad FE	✓	✓	✓	✓	✓	✓	✓	✓	RE	
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Num.Obs.	210 809	538 470	210 809	538 470	210 809	538 470	208 242	502 944	210 049	
R2 Adj.	0.858	0.886	0.868	0.886	0.868	0.886	0.869	0.892	0.882	
BIC	805 515.9	2 258 339.3	833 195.6	2 258 125.3	833 258.2	2 258 320.9	824 099.5	2 103 706.2	691 636.8	1 901 073.2

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

Table C.3: The Effects of Joining the WTO

	Exports (FE Model)		Exports (CRE Model)	
	PR Protection	RoL	PR Protection	RoL
<i>WTO_i : polity2000</i>	0.033 (0.040)	0.165*** (0.036)	-0.068*** (0.015)	0.122*** (0.019)
<i>WTO_i : polity2000 : inst_prpty_low</i>	-0.057 (0.046)		0.044** (0.017)	
<i>WTO_i : polity2000 : inst_prpty_mid</i>	-0.092** (0.041)		0.009 (0.015)	
<i>WTO_i : polity2000 : inst_rule_low</i>		-0.083** (0.040)		-0.033* (0.020)
<i>WTO_i : polity2000 : inst_rule_mid</i>		-0.226*** (0.037)		-0.183*** (0.019)
<i>WTO_i</i>	-0.365 (0.285)	-1.265*** (0.307)	0.270** (0.112)	-1.020*** (0.152)
<i>Polity_i</i>	-0.025*** (0.004)	-0.025*** (0.004)	-0.024*** (0.001)	-0.024*** (0.001)
<i>Polity_j</i>	-0.001 (0.003)	-0.001 (0.003)	0.004*** (0.001)	0.003*** (0.001)
<i>WTO_j</i>	-0.055 (0.064)	-0.059 (0.063)	-0.110*** (0.030)	-0.107*** (0.030)
<i>Both WTO</i>	0.217*** (0.065)	0.220*** (0.064)	0.268*** (0.031)	0.266*** (0.031)
<i>GDP_i</i>	1.770 (16.391)	1.603 (16.287)	-0.026 (6.526)	-0.237 (6.519)
<i>GDP_j</i>	1.304*** (0.243)	1.298*** (0.244)	1.393*** (0.171)	1.386*** (0.170)
<i>GDPPC_i</i>	-1.339 (16.391)	-1.192 (16.288)	0.455 (6.525)	0.651 (6.519)
<i>GDPPC_j</i>	-0.568** (0.242)	-0.562** (0.244)	-0.513*** (0.171)	-0.507*** (0.170)
<i>PTA</i>	0.117*** (0.038)	0.111*** (0.038)	0.146*** (0.019)	0.142*** (0.019)
<i>RTA</i>	0.067* (0.040)	0.061 (0.039)	0.088*** (0.021)	0.083*** (0.021)
<i>Customs Union</i>	-0.008 (0.097)	-0.019 (0.097)	0.067 (0.044)	0.058 (0.044)
<i>Population_i</i>	-1.673 (16.390)	-1.509 (16.286)	0.226 (6.526)	0.419 (6.519)
<i>Population_j</i>	-0.177 (0.250)	-0.192 (0.251)	-0.325* (0.171)	-0.321* (0.170)
<i>WTO_i : inst_prpty_low</i>	0.086 (0.302)		-0.612*** (0.124)	

<i>WTO_i</i> : <i>inst_prpty_mid</i>	0.377 (0.288)	-0.308*** (0.111)	
<i>WTO_i</i> : <i>inst_rule_low</i>	0.921*** (0.325)	0.630*** (0.152)	
<i>WTO_i</i> : <i>inst_rule_mid</i>	1.325*** (0.302)	1.041*** (0.150)	
<i>polity2000</i>		0.152 (0.141)	-0.058 (0.097)
<i>inst_prpty_catlow</i>		-0.266 (1.192)	
<i>inst_prpty_catmid</i>		0.165 (1.156)	
<i>Common Colonizer</i>		0.789*** (0.057)	0.785*** (0.057)
<i>Colonial Dep.</i>		2.072*** (0.191)	2.077*** (0.191)
<i>Distance</i>		-1.437*** (0.023)	-1.440*** (0.023)
<i>Common Language</i>		0.687*** (0.051)	0.687*** (0.051)
<i>Common Religion</i>		0.271*** (0.068)	0.273*** (0.068)
<i>Bordered</i>		0.911*** (0.106)	0.912*** (0.106)
<i>polity2000 : inst_prpty_catlow</i>		-0.043 (0.160)	
<i>polity2000 : inst_prpty_catmid</i>		-0.099 (0.148)	
<i>inst_rule_catlow</i>			-1.207 (0.974)
<i>inst_rule_catmid</i>			-0.809 (0.822)
<i>polity2000 : inst_rule_catlow</i>			0.066 (0.177)
<i>polity2000 : inst_rule_catmid</i>			0.167 (0.104)
Exporter Means		✓	✓
Dyad Means		✓	✓
Exporter FE	✓	✓	RE
Importer FE	✓	✓	RE
Dyad FE	✓	✓	RE
Year FE	✓	✓	✓
Num.Obs.	284 345	284 345	275 914
R2	0.866	0.866	
R2 Adj.	0.858	0.858	
R2 Marg.			0.420
R2 Cond.			0.860
BIC	1 201 319.8	1 200 671.1	1 034 876.7
			1 034 368.6

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

Table C.4: The Effects of Joining the WTO by Institutional Range.

	FE	FE	RE	RE/No OPEC	RE/Developing	RE/WTO Post-90	80-95
<i>Polity</i>	-0.212*** (0.039)	-0.123*** (0.043)	-0.146*** (0.049)	-0.135*** (0.049)	-0.139*** (0.053)	-0.225* (0.119)	0.095* (0.052)
<i>GDP (log)</i>		1.744*** (0.129)	1.430*** (0.265)	1.427*** (0.271)	1.440*** (0.296)	1.032 (0.707)	0.433 (0.414)
<i>GDPPC (log)</i>		0.787*** (0.251)	-0.148 (0.399)	-0.624 (0.415)	-0.385 (0.449)	1.229 (0.916)	-0.121 (0.697)
<i>GDP Growth</i>		-0.182** (0.093)	-0.118*** (0.031)	-0.146*** (0.032)	-0.127*** (0.035)	-0.034 (0.063)	-0.074 (0.046)
<i>Net Borrowing(%)</i>		0.657*** (0.061)	0.473*** (0.027)	0.453*** (0.031)	0.519*** (0.032)	0.657*** (0.053)	-0.014 (0.072)
<i>Foreign Asset(%)</i>		0.418* (0.231)	0.068 (0.119)	0.060 (0.114)	0.053 (0.128)	-0.065 (0.158)	0.724** (0.301)
<i>KA Open</i>		-0.264* (0.140)	-0.342** (0.172)	-0.230 (0.171)	-0.382** (0.185)	-0.370 (0.390)	-0.382 (0.287)
Δ Private Credit (%)		-0.195*** (0.038)	-0.139*** (0.015)	-0.138*** (0.014)	-0.178*** (0.021)	-0.238*** (0.041)	-0.127*** (0.036)
Δ Term of Trade		0.064** (0.026)	0.085*** (0.011)	0.061*** (0.012)	0.096*** (0.012)	0.082*** (0.019)	0.031** (0.015)
<i>Population (under 14, %)</i>		15.831*** (4.223)	23.902*** (5.444)	19.920*** (5.558)	25.587*** (6.330)	55.684*** (11.228)	13.231 (11.693)
<i>Population (over 65, %)</i>		5.094 (6.103)	41.690*** (8.405)	41.891*** (8.305)	49.794*** (11.467)	98.099*** (21.183)	42.435 (34.278)
<i>Trade Openness</i>		0.041*** (0.005)	0.041*** (0.006)	0.043*** (0.006)	0.028*** (0.008)	-0.013 (0.015)	-0.004 (0.018)
<i>Year</i>		-0.316*** (0.062)	-0.278*** (0.082)	0.024 (0.165)	-0.039 (0.048)	-0.118 (0.112)	0.299*** (0.070)
Year FE	✓	✓	✓	✓	✓	✓	✓
Country RE			✓	✓	✓	✓	✓
Num.Obs.	2704	1499	1499	1698	1469	540	290
R2 Marg.			0.422	0.384	0.322	0.420	0.252
R2 Cond.			0.759	0.757	0.691	0.755	0.605
BIC	43 454.6	20 230.6					

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

Table C.5: Regime Type's Effect on Current Account Balance.

	DV: Trade Balance (%)						
	FE	FE	RE	RE/No OPEC	RE/Developing	RE/WTO Post-90	80-95
<i>Polity</i>	-0.410*** (0.050)	-0.480*** (0.069)	-0.241*** (0.056)	-0.179*** (0.055)	-0.227*** (0.064)	-0.268** (0.124)	0.140** (0.057)
<i>GDP (log)</i>		2.594*** (0.183)	1.692*** (0.453)	1.896*** (0.442)	2.189*** (0.534)	0.309 (1.587)	0.411 (0.845)
<i>GDPPC (log)</i>		4.872*** (0.411)	3.032*** (0.592)	2.002*** (0.595)	3.007*** (0.698)	7.007*** (1.703)	-2.969*** (1.142)
<i>GDP Growth</i>		0.054 (0.102)	-0.070** (0.034)	-0.176*** (0.035)	-0.092** (0.041)	0.074 (0.067)	-0.048 (0.043)
<i>Net Borrowing (%)</i>		0.704*** (0.075)	0.467*** (0.031)	0.376*** (0.035)	0.524*** (0.037)	0.719*** (0.056)	-0.082 (0.073)
<i>Foreign Asset (%)</i>		-0.589 (0.522)	0.137 (0.137)	0.139 (0.127)	0.107 (0.155)	0.063 (0.177)	0.044 (0.313)
<i>KA Open</i>		-0.746*** (0.253)	-0.008 (0.214)	0.189 (0.205)	0.002 (0.246)	0.427 (0.506)	-0.235 (0.295)

Δ Private Credit (%)	-0.234*** (0.055)	-0.194*** (0.017)	-0.185*** (0.016)	-0.230*** (0.025)	-0.303*** (0.046)	-0.145*** (0.035)
Δ Term of Trade	0.105*** (0.038)	0.094*** (0.012)	0.061*** (0.013)	0.105*** (0.014)	0.084*** (0.020)	0.032** (0.014)
Population (under 14, %)	32.852*** (5.722)	25.700*** (6.973)	22.400*** (6.947)	35.155*** (8.605)	29.318** (14.287)	-50.296*** (14.655)
Population (over 65, %)	-7.151 (7.680)	15.419 (10.876)	18.005* (10.555)	44.023*** (16.531)	119.972*** (30.229)	14.179 (56.648)
Trade Openness	0.053*** (0.007)	0.042*** (0.008)	0.041*** (0.007)	0.023** (0.010)	-0.051*** (0.018)	-0.047** (0.021)
Year	-0.950*** (0.113)	-1.251*** (-0.261)	-0.136 (0.185)	-0.236*** (0.061)	-0.537*** (0.138)	0.119 (0.073)
Year FE	✓	✓	✓	✓	✓	✓
Country RE			✓	✓	✓	✓
Num.Obs.	2829	1560	1560	1463	1243	551
R2 Marg.			0.447	0.436	0.347	0.341
R2 Cond.			0.882	0.880	0.848	0.938
BIC	46 158.5	22 594.1				0.900

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

Table C.6: Regime Type's Effect on Trade Balance.

Since property-rights protection and rule of law have quite different distributions across autocratic WTO-joiners, I make sure both low and high institutional ranges contain at least some autocracies that joined the WTO during 1990-2020. The separation looks like $\{0, 0.3, 0.7, 1\}$. For each range, I compare autocracies to all democracies that joined during the same period to keep the control group the same and I dichotomize polity into a democracy dummy so that the interaction effect (WTO x polity) doesn't reflect within-democracy variation.

PanelMatch (country-years)

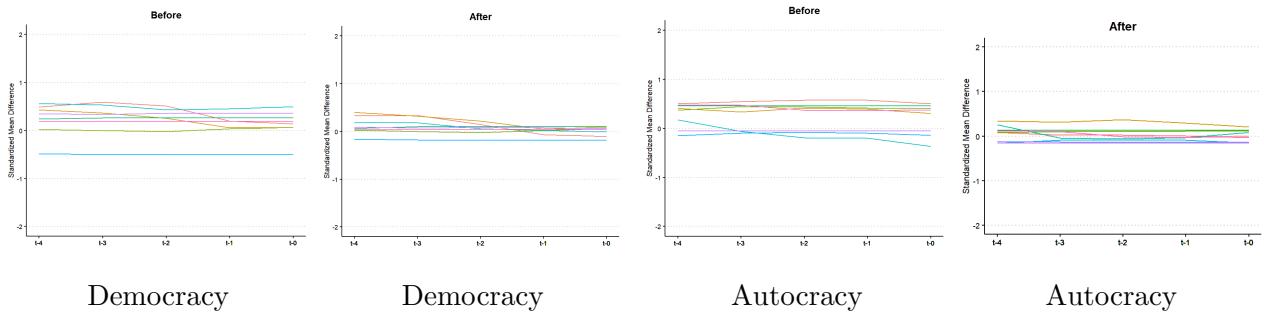


Figure C.10: Improved Covariate Balance via CBPS Weighting, Post-1990. Note: overall, all covariates' balance improve significantly. The green line natural resource intensity is slightly not balanced. However, it may not be an concern as it does not significantly affect WTO accession theoretically.

PanelMatch (dyad-years)

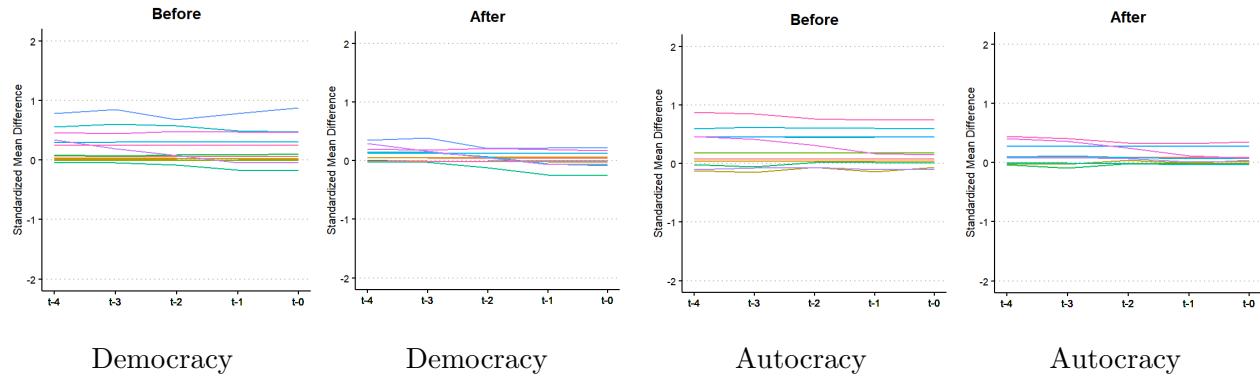


Figure C.11: Improved Covariate Balance via CBPS Weighting, Post-1990. *Note:* overall, all covariates' balance improve significantly.

C.3 Moderated WTO Effect across Institutional Range

General Additive Model (GAM)

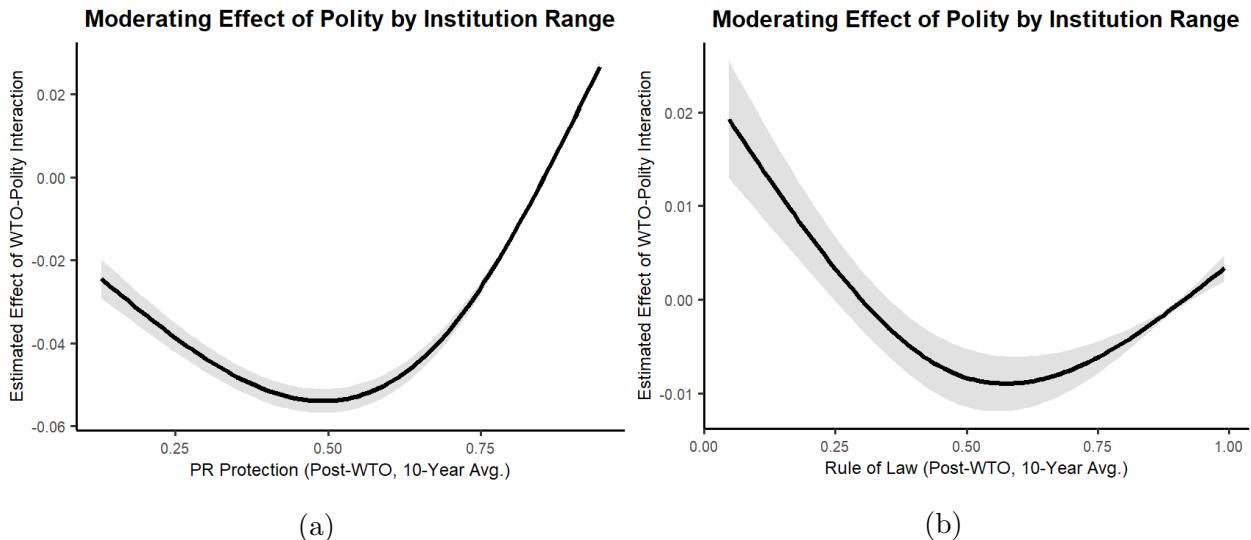


Figure C.12: The Moderated Effect of Polity across Institutional Ranges (GAM).

C.4 Domestic Reform Effect

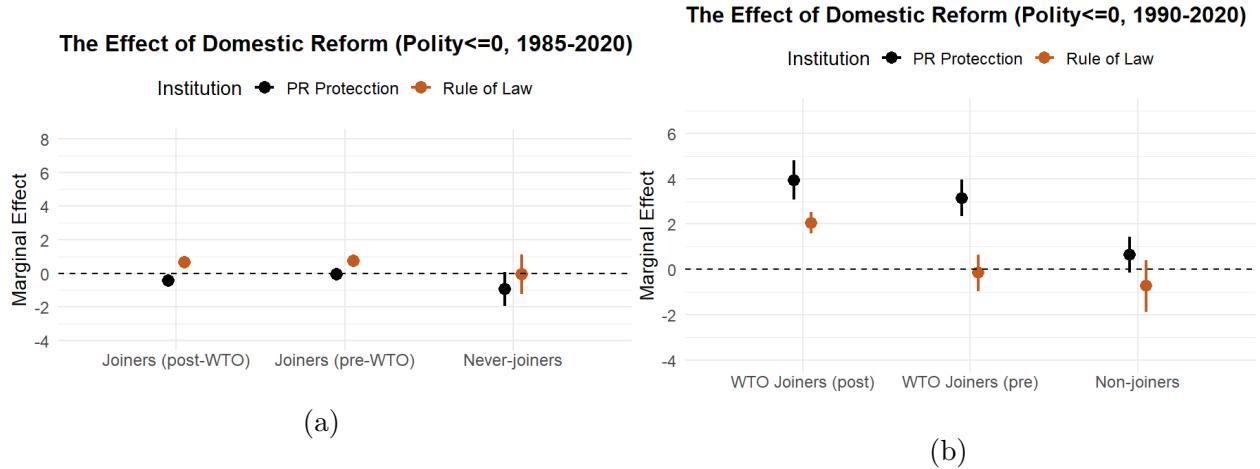


Figure C.13: The Effects of Domestic Reform by WTO-related Category. *Note:* (a) plots the effects of within-dyad changes of institutions by WTO-related Category for democracies only ($\text{Polity} > 0$ in 2000). I only include developing countries (GDP per capita lower than \$20,000 in 2000) to focus on institutional reform. (b) plots the effects of within-dyad changes of institutions for autocracies only. “Joiner” means a country joined the WTO during 1990-2020.

D Mechanism Tests

E Robust Tests

F Qualitative Tests