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White Paper

Trade Policy in the Trump Administration: Advancing Reduction of Anti-Competitive Market Distortions

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Executive Summary

The global economic system is not working as it was intended to, and economic growth has stagnated because of the failure to address this over the last 30 years. We believe that Anti-Competitive Market Distortions (ACMDs) have been and continue to be the greatest threat to economic growth, and our historic inability to confront them has allowed them to proliferate. In fact, our calculations indicate that around 80% of the economic impact of trade barriers come, not from tariffs, but from a set of insidious policies that favor incumbent interests over new entrants to the market. We have described these as ACMDs. They have been historically resistant to diplomatic and economic efforts to eliminate them, and it has never been clearer that urgent, dramatic, and drastic action is needed to combat them. This is the context for the Trump Administration's reaction.

The Trump administration's recalibration of global trade policy, embodied in the Trump Tariff Doctrine (TTD) and the Trump Economic Doctrine (TED), represents a fundamental realignment of the global trading system. Central to this shift is recognition that barriers to trade include not only conventional tariffs but also the whole network of ACMDs, which operate behind borders and inhibit voluntary exchange, suppress innovation, and destroy economic value. The framework presented focuses not only on the dismantling of tariffs, but on the broader economic distortions that undermine productive and allocative efficiency, damaging trade and devastating economies. ACMDs often appear invisible to traditional trade frameworks but exert a significant drag on economic growth by weakening internal competition and suppressing investment and innovation. The defining criterion is whether the distortion impairs voluntary exchange between willing buyers and sellers.

While many have been critical of the TTD, the context for it is that these ACMDs have been proliferating, and US efforts to tame those in their trading partners over the last thirty years or so have failed. In that light the TTD is designed to use access to the US market to drive countries into deals that reduce their ACMDs. If the result of the TTD is to reduce ACMDs around the world, and to lower US tariffs as a result, this would lead to substantial economic growth. Because the TED is also focused on reducing the US' own anti-competitive regulations, the Administration recognizes that the reduction of these ACMDs around the world is critical to boosting economic growth.

To quantify the effects of these distortions, we have developed an econometric model to measure the GDP per capita gains associated with improvements across three pillars: trade openness, domestic competition, and property rights. The analysis reveals that domestic competition carries the greatest weight, with a one-point improvement in this pillar correlating with an estimated 11.2 percent increase in GDP per capita. The damage to US exporters has been severe. But less well understood is the massive damage to the economies that impose these distortions as well, an overall lose-lose proposition.

We also use the gap between distorted and optimal performances reflected in a decade's worth of cross-country data, to construct an ordinal index of distortions Index. Even the most market-oriented economies increased their level of distortions during this period. The overall weight of distortions has increased sharply over the review period.

The persistence and expansion of ACMDs has not been adequately addressed by traditional trade agreements, which have historically emphasized tariff reductions. As the visible tip of the iceberg, tariffs now represent a diminishing share of the trade policy challenge. The submerged mass of behind-the-border distortions accounts for a far greater share of the economic loss. As such, the framework proposes that trade negotiations incorporate explicit commitments to reduce ACMDs, using GDP per capita loss as a diagnostic proxy and as a basis for calibrated reciprocal concessions.

This structural problem is not limited to economic performance. ACMDs reinforce geopolitical tensions by creating environments of scarcity, suppressing broad-based growth, and encouraging resource nationalism. In particular, distortions linked to state-owned enterprises and outbound capital controls such as found in China have allowed certain economies to expand influence through non-market channels, destabilizing both markets and strategic alliances. The failure to correct these dynamics therefore poses a national security risk to the United States but also threatens general global stability.

Trading partners should view ACMD reduction not as a concession to the US, but as a direct pathway to reciprocal economic benefit. The National Trade Estimate (NTE) whose entries have been steadily increasing over the years contains listings of barriers which US trading partners must address, and correlates to ACMDs and the ordinal index of distortions. Countries that make credible offers to reduce barriers listed in their NTE entries, particularly in areas related to anti-competitive regulations, regulatory discrimination, and

failure to protect property rights in all their forms are more likely to see corresponding relief from US tariff reductions. Offers that are measurable, transparent, and lower the damage to the US economy as proxied by the GDP per capita metric are most likely to be durable, enforceable, and mutually beneficial.

US companies also have a role to play. The barriers catalogued in the NTE originate from submissions by US firms. In the current environment, these firms are in a strong position to press for structural reform abroad by using the possibility of US tariff relief as leverage. Companies should also re-evaluate supply chains to minimize exposure to jurisdictions with persistent distortions and should coordinate with trading partners on mutual reform priorities. The likelihood of achieving market access improvements has never been higher, provided that firms engage constructively with policymakers and foreign counterparts to eliminate entrenched barriers.

The benefits of reducing ACMDs are not marginal. Gains in GDP per capita translate into higher wages, broader market access, increased consumer choice, and fiscal space to address pressing domestic needs. For the United States, sustained growth through ACMD reduction offers the most viable strategy for reversing the rising debt-to-GDP trajectory without sacrificing public investment. For trading partners, reform unlocks latent economic energy and mitigates the political risks associated with stagnation, inequality, and capital misallocation. For developing countries, the reduction of ACMDs directly supports poverty alleviation and inclusive growth.

If properly implemented, the framework set forth in the TTD and TED could mark the beginning of a new era of US and global growth. The opportunity is not just to rebalance trade, but to reverse decades of wealth destruction caused by entrenched distortion. A reduction in ACMDs, if undertaken at scale, could catalyze the kind of broad-based prosperity that characterized the postwar period. But for this to happen, there will need to be agreements that meaningfully reduce ACMDs and a pathway to achieving them.

Purpose and Scope

The Trump administration's trade policy has realigned the world's trading system, and this realignment requires a deeper dive into the causes and solutions related to its actions in the trade sphere, and its recasting of the trade sphere to include behind the border barriers and what we have called Anti-Competitive Market Distortions ("ACMDs"). The Trump Tariff Doctrine ("TTD") when its underlying principles are understood, will become codifiable and can be standardized and written into the chapters of new agreements. It can also support domestic remedies that the US and indeed other countries can apply to the problems that TTD seeks to address. While many have discussed and described the interaction between domestic distortions and international trade (from the time of Adam Smith), the global economic system has struggled to apply these concepts in a holistic manner that actually contributes to the wider goal of economic growth and wealth creation, and the job creation and poverty alleviation that is a necessary corollary to increasing growth. TTD must also be viewed in the wider economic context and strategy of the Administration, which includes a focus on eliminating domestic distortions in the US (EO 14267).[1]

This White Paper, intended for all parties to these agreements, including the United States, foreign governments and the industry and business interests they represent, hopes to chart a pathway to the benefits that could accrue from this new approach, while mitigating the downside risk. The White Paper will look in the round at all ACMDs, not only tariff and non-tariff barriers, but also other ACMDs that operate to destroy wealth from national economies and simultaneously damage the interests of trading partners. We think that the benchmark of competition on the merits as an organizing principle is the right one, provided all parties understand what competition actually means – for this reason we view ACMDs as those things that get in the way of voluntary exchange between willing buyers and willing sellers.

Many have speculated that this Trump reset spells the end of the free trade system which has enabled the enormous global wealth creation in the past 75 years. We disagree.

[1] Reducing Anti-Competitive Regulatory Barriers," *Federal Register* 89, no. 71 (April 15, 2025): 25563–25568, https://www.federalregister.gov/documents/2025/04/15/2025-06463/reducing-anti-competitive-regulatory-barriers.

Introduction

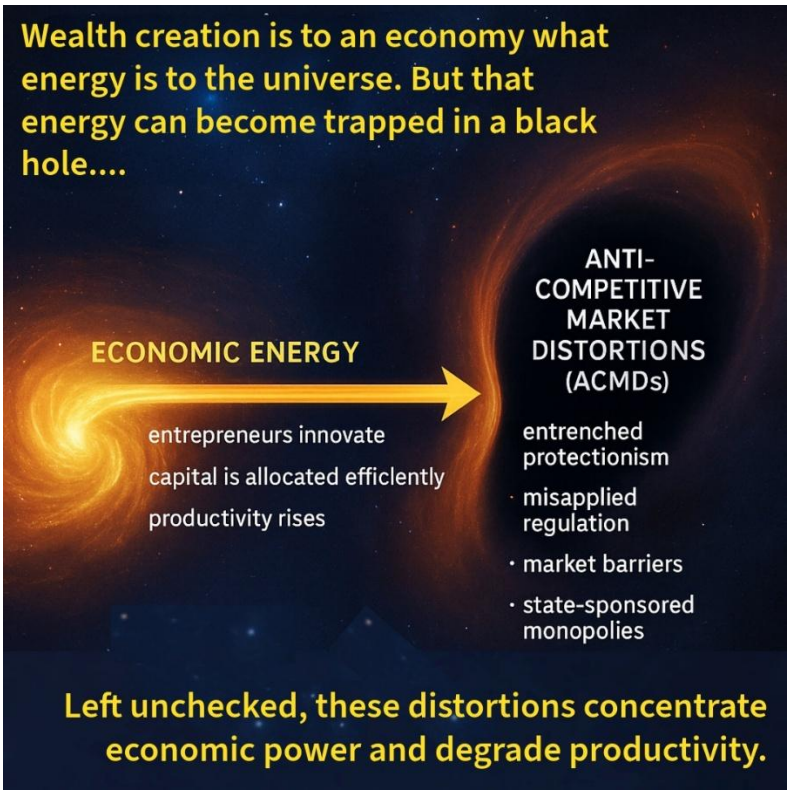
There is no doubt that the reduction of tariffs after the Second World War has contributed to global economic prosperity and lifted billions out of poverty. As a result of this, pure free trade advocates have assumed that any reversal of that tariff reduction must automatically lead to a reduction in economic growth. This world view misses a fundamental element of the underlying purposes of free trade, which is to ensure not only free trade at the border but undistorted markets behind it. The TTD is the result of the world trading system's failure to deal with these underlying distortions that have led to damaging consequences for the US industrial sector especially in sectors like steel, and the loss of blue-collar jobs as a result.

The economic elite has taken great umbrage at the Trump administration's approach to trade. They see the use of tariffs as anathema to the fundamental dogma that it is free trade that has brought the world its prosperity in the post Second World War period.

But trade, writ large, is simply voluntary exchange between willing buyers and willing sellers. Some of that trade occurs within borders and some of it occurs across borders. Barriers to that trade, what I and my co-authors have called Anti-Competitive Market Distortions (ACMDs) matter regardless of whether that trade is across borders or not. These ACMDs have lurked under the surface of the trading system, like dark matter in space, invisible to most but causing severe damage. It is these the TTD seeks to address.

1. What are ACMDs?

Wealth creation is to an economy what energy is to the universe, a fundamental driver of expansion, dynamism, and growth. In a competitive environment, that energy flows freely: entrepreneurs innovate, capital is allocated efficiently, and productivity rises. But just as in astrophysics, energy can be trapped by a black hole, a gravitational well from which not even light escapes, so too can economic energy be trapped by ACMDs. These distortions, in the form of entrenched protectionism, anti-competitive regulation, market barriers, or state-sponsored monopolies, absorb productive effort, divert capital, and suppress innovation. They do not merely slow the system; they bend it inward, distorting incentives, collapsing feedback loops, and eventually shutting off the escape routes for competitive pressure.



The analogy is more than just illustrative. A black hole forms when gravity overwhelms all opposing forces. Similarly, an ACMD emerges when rent-seeking interests overpower market signals: when price mechanisms, consumer choice, and innovation incentives are subordinated to regulatory capture or political discretion. At a certain point, the distortion becomes self-sustaining. Market actors adapt to it, institutional structures reinforce it, and an economic "event horizon" forms beyond which recovery is increasingly difficult. Left unchecked, these distortions concentrate economic power, degrade productivity, and create systemic drag. This is not marginal inefficiency, it is collapse in slow motion.

But, as in physics, the extent of the distortion can be measured. We can quantify the "mass" of an ACMD by estimating the GDP per capita gains from improving trade openness, domestic competition and property rights protection, the three fundamental pillars of economic growth.

We have developed an ACMD econometric model that allows us to correlate GDP per capita gains with improvements across the dimensions of trade openness, competition inside the border (especially in the regulatory area) and property rights. Improvements on these pillars translates into real economic value released back into the system. We can then use this as a diagnostic tool: by modelling where the economic energy is being pulled inward, and by how much, we can identify where policy intervention is required.

Highlight: Unlocking Economic Value

Our **ACMD econometric model** correlates **GDP per capita gains** with measurable improvements in three core policy areas: **trade openness**, **domestic competition** (inside the border regulatory reform), and **property rights**. Enhancing these pillars leads to **real economic value being released back into the system**.

These ACMDs have a profound effect on trading partners, but they also impact the countries which engage in the distortions. Not all government actions are ACMDs, however. In order to qualify the government action, intervention or toleration of private sector practice must have an anti-competitive effect in a relevant market. In other words, it must distort the ordinary voluntary exchange between willing buyer and willing seller. The benchmark for how this is measured is the effect of the government action on productive and allocative efficiency.

This matters because an expanding, opportunity-generating economy cannot tolerate regions of permanent stagnation. Reform is not ideological; it is gravitational countermeasure. The task at hand is to prevent markets from collapsing inward under the weight of distortion, and to reintroduce competitive forces capable of driving sustained, broad-based growth. In doing so, we not only rescue trapped value, but reorient the economy back toward the principles of open exchange, merit, and enterprise, thereby creating wealth.

In any given sector, the ability of US firms to have market access to that sector will be limited if that sector itself is diminished by ACMDs, and the GDP per capita loss in the sector is therefore a proxy for the damage to US exporters who lose market access. It is therefore reasonable to focus on the GDP per capita loss arising from the ACMD as a proxy for US losses. It is possible to compute from the losses to the market opportunity the damage done to key US sectors because of specific ACMDs in a particular country.

So why do countries distort markets if doing so damages their own economies? They do so because while the losses to the economy are general, there are limited gains to specific protected incumbents who are beneficiaries of distortion. These incumbents are able to do significant damage to US firms with whom they are in competition. The advantage of a GDP per capita metric is it enables the country with whom the US is negotiating to argue internally for the ACMD reduction.

1.1 The proper scope of ACMDs

As we have noted not every government action is an ACMD. We have explained that only market distortions that damage competition qualify as ACMDs. Additionally, regulatory arbitrage must be factored into the model. This occurs where production in one country is replaced by production from another with standards that are much lower (usually in prudential regulation involving environmental or labor standards). Indeed, over burdensome regulation in one country can survive public scrutiny because the price effects are not felt due to imports from countries with significantly lower standards. This is the origin of the "fair trade" versus "free trade" debate.

An example is the UK's decision to prohibit drilling in the North Sea for Net Zero and Climate Change reasons. However, if the UK fills the energy gap (and therefore prevents energy costs escalating) by importing the same North Sea oil from Norway for example, the UK's decision makes no difference to the underlying climate change problem. But it does allow UK politicians to achieve net zero goals without passing on the actual cost of those goals to the public.

The difficulty with assessing whether regulatory arbitrage constitutes a market distortion is resolved by looking at the benchmarks and objectives of regulation. As we have noted in our books,[2,3,4,5] the benefit of regulatory competition is that it is most likely to find the most pro-competitive regulation consistent with legitimate and publicly stated regulatory goals. Countries can then interoperate their regulations on the basis of equivalence and mutual recognition. If countries believe that a particular regulatory minimum is that pro-competitive norm, then they may agree it in an international agreement. That agreement would only be operative in the US if the US government agrees to implement it into law in

[2] Singham, Shanker A. 2007. *A General Theory of Trade and Competition: Trade Liberalization and Competitive Markets*. London: Cameron May.
[3] Singham, Shanker A., and Alden F. Abbott. 2023. *Trade, Competition and Domestic Regulatory Policy: Trade Liberalisation, Competitive Markets and Property Rights Protection*. Abingdon: Routledge.
[4] Singham, Shanker A. 2022. *Market Distortions in Privatisation Processes*. Abingdon: Routledge.
[5] Singham, Shanker A. *International Trade, Regulation and the Global Economy: The Impact of Anti-Competitive Market Distortions*. Abingdon: Routledge, forthcoming 2025.

the manner that laws are made in the US. But if the US has made that decision, then deviations below that regulatory minimum are clearly for trade advantage and would be potentially market distorting in anti-competitive ways.

Another example of this is clean air and clean water. In these cases, no regulatory standards would certainly lower cost for some industries but potentially increase them for others. Suppose the US came up with a set of standards, based on its interpretation of achieving the goals of protecting the nation's air and water quality which are the least anti-competitive possible to achieve the regulatory goal. If an industry lobbied for a reduction in those standards, the reduction in standards would be a government action that damaged ordinary market competition (because it ignores the market externalities or the likelihood and competition impact of regulatory arbitrage). It would be an actionable ACMD.

Countries will also be able to cite to national security concerns to ensure that they are able to protect their critical infrastructure. However, national security should be applied to actual national security concerns and not be disguised restraints on trade. Part of the problem, historically, has been the inability to use a trade-types mechanism to deal with ACMDs, and therefore to protect undistorted trade using the only tool that was available, drawn from the national security toolbox. We propose a tool to deal with ACMDs through the current application of TTD and a unilateral remedy going forwards, with a national security carve-out which would recognize the very real national security threats at play in the world and their vastly increased scope because of our reliance on technology.

One indication of how much of the US's national security is impacted by trade is evidenced by the work of Charles Parton. Parton shows the considerable risk associated with China's planting of Cellular (IoT) Modules (or CIMs) into the supply chain, and the high degree of risk to all US data networks as a result.[6,7] But from a national security perspective, a tariff

[6] Charles Parton, *The Infrastructure Threat from Chinese Cellular (IoT) Modules (CIMs)* (London: CIM Coalition, 2024), https://cim-coalition.co.uk/wp-content/uploads/2024/10/CIM-The-Infrastructure-Threat-from-Chinese-Cellular-IoT-Modules-CIMs-1.10.2024-2.pdf.
[7] Charles Parton, *Chinese Cellular IoT Modules: Countering the Threat* (London: Council on Geostrategy, 2023), https://www.geostrategy.org.uk/research/chinese-cellular-iot-modules-countering-the-threat/.

would be inappropriate as risks to national security require import and investment bans and will not resolved by tariff actions alone.

Countries can also skew their own investment restrictions in artificial ways that lead to adverse consequences for the countries to which investment flows. For example, China restricts external investment into certain sectors, which may increase the demand for that sector (e.g. speculative property investment leading to artificial increases in US housing costs). The problem arises because Asian central banks, formerly in Japan and Korea and increasingly now in China, have a surfeit of US dollars in their foreign reserves as a result of their ACMD-fueled over production. Artificial investment restrictions employed by the Chinese government then forces Chinese investors to pour money into certain US sectors in non-rational ways, distorting ordinary market competition in those sectors. We see

particular problems in the following sectors since China tightened its investment controls on outbound investment.[8,9]

1. Real estate
2. Entertainment
3. Non-core financial sectors
4. "Irrational" large M&A deals
5. Companies like HNA, Anbang, Wanda, and Fosun were curtailed or forced to divest overseas assets.

In real estate, prior to 2016, Chinese investors represented the largest pool of foreign purchasers of US residential and commercial property. Following the introduction of outbound capital restrictions, direct investment in the sector dropped sharply. According to Rhodium Group, Chinese investment in US real estate and hospitality fell from a peak of over $16 billion in 2016 to well under $1 billion by 2019 (a decline of more than 90 percent). However, investment did not cease.[10] Instead, flows shifted toward indirect routes, including purchases made via Hong Kong intermediaries, opaque cash vehicles, and offshore trusts. These transactions were often executed without reference to return on investment, resulting in price inflation in key markets and the crowding out of economically rational buyers. The consequence was not simply higher asset prices but a distortion of competition for access to housing stock and commercial space.

Similarly, in the digital asset space, Chinese capital has entered USD-denominated stablecoins (e.g. USDT and USDC) as a means of preserving dollar liquidity in the face of domestic controls.[11] These inflows spike during periods of internal stress (e.g., the Evergrande crisis) and are driven by circumvention behavior rather than market pricing or

[8] National Development and Reform Commission (NDRC). *Guiding Opinions on Further Guiding and Regulating the Direction of Overseas Investment*. Beijing: Government of the People's Republic of China, August 18, 2017. http://www.ndrc.gov.cn/xwdt/tzgg/201708/t20170818_962028.html.
[9] State Administration of Foreign Exchange (SAFE), internal circular on capital outflow monitoring, issued November 29, 2016.
[10] Thilo Hanemann, Daniel H. Rosen, Cassie Gao, and Adam Lysenko, "Two-Way Street – US-China Investment Trends – 2020 Update," Rhodium Group, May 11, 2020, https://rhg.com/research/two-way-street-us-china-investment-trends-2020-update/
[11] Chainalysis. *The 2020 Geography of Cryptocurrency Report*. New York: Chainalysis, August 2020. https://go.chainalysis.com/2020-geography-of-cryptocurrency.html.

expected return.[12] They reflect a pattern of asset acquisition not based on opportunity but constraint.

These distortions extend further. Chinese capital has consistently flowed into non-productive asset classes (e.g., art, wine, collectibles) not for appreciation or yield, but for wealth storage.[13] In other cases, capital is moved through trade misinvoicing and underground banking further severing capital from return expectations.[14]

The common feature across these behaviors is the absence of return discipline. China's outbound investment restrictions are creating market distortions in the US by channeling capital into asset classes where preservation, not return, is the main motivation. This decoupling of capital from return-seeking behavior leads to inflated asset prices, reduced market efficiency, and the potential misallocation of US capital and resources.

1.2 How have we got to this point?

Historically, the global trading system has done a reasonably good job in reducing obvious border barriers like tariffs, but it has not done a good job of reducing other ACMDs. If we could reduce all ACMDs, we would generate significant GDP per capita which would be transformative for the world, promising the golden age President Trump has suggested. While it is certainly true that a decrease in trade liberalization will lead to a decrease in GDP per capita for the nation doing it, the losses from ACMDs in other countries to the exporting nation and distorting nation are much higher than border barriers. If the TTD can be used to realign the world to lower ACMDs as a whole, this will be a major contribution to the US and the wider global economy.

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[12] Scott Neuman, "Here's What to Know about the Collapse of China's Evergrande Property Developer," *NPR*, January 30, 2024, https://www.npr.org/2024/01/30/1227554424/evergrande-china-real-estate-economy-property-collapse.

[13] Emily Liu, "Alternative Investments: China's Rich Looking to Art, Wine and Jewelry," *China Briefing*, July 29 2014, https://www.china-briefing.com/news/alternative-investments-chinas-rich-looking-to-art-wine-and-jewelry/.

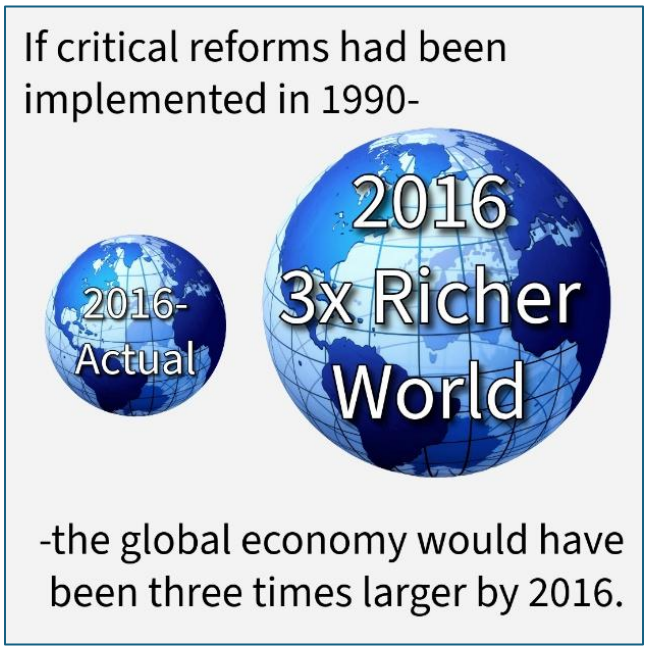
[14] Laurence Howland, "ANALYSIS: Inside China's Underground Banking Network and Assessing Exposure to Money Laundering Risk," *AML Intelligence*, October 25, 2022, https://www.amlintelligence.com/2022/10/analysis-inside-chinas-underground-banking-network-and-assessing-exposure-money-laundering-risk/.

Many of the ACMDs in the world relate to a fundamental battle for the world's operating system. One system is based on regulatory competition between countries, where they inter-operate with each other through mutual recognition, adequacy and equivalence. The other is based on regulatory harmonization, where only if a country has copied or mirrored the other's regulation does it have access to that other's market. Most countries operate on the basis of the former, and indeed that is how the international trading system was built. The EU and China operate on the basis of the latter, despite the fact that the EU single market was itself built on mutual recognition. The question is which of these systems is most likely to lead to wealth creation for the world, and what are the consequences in economic terms of both of these trajectories. The importance of this battle depends on the different wealth creating effects of these two trajectories. If the difference could be significant, then the battle becomes of central importance. If on the other hand the economic difference is slight, harmonization becomes the preferred option.

Our ACMD SRB-y economic model uses cross-country regression analysis to show how the impact of ACMDs differs across three different pillars: International Competition (IC), Domestic Competition (DC), and Property Rights (PR). What is clear is that the impact of the DC pillar is by far the strongest (a one-point increase in each pillar, IC, DC and PR leads to an increase in 4.4%, 11.2% and 7.6% GDP per capita increase respectively).

Between 1990 and 2016, the global economy did not grow as fast as it should have due to a failure to improve domestic competition and property rights alongside trade liberalization that focused on tariff and border barrier reductions. Although many countries opened their markets, especially post-transition economies in the former Soviet Union, Latin America, and India, this liberalization was not matched by reforms that ensured competition on the merits within domestic markets. As a result, the benefits of liberalization were often captured by entrenched monopolies or oligarchs. These distortions became deeply rooted, eroding the potential gains from trade. Based on the SRB-y model and assuming a feasible two-point increase in the DC score over 20 years, this equates to a cumulative 22% potential gain that never materialized. A modeled exponential trend from 1990 to 2016 shows that each person in the global economy missed out on approximately $47,782 in cumulative GDP per capita, translating into trillions of dollars in lost global wealth. These foregone gains, rooted in neglected domestic reforms, suggest that had liberalization been

coupled with serious market and legal reforms, global prosperity would have been far higher and geopolitical tensions and instability likely far lower. Indeed, the global economy would have grown by 2016 to three times the size it attained. The combination of GDP per capita gains and the law of large numbers and compounding would have had profound effects on the way we live.



The impact of ACMDs has been felt for much longer than the period after the fall of the Berlin Wall. The East Asian "economic miracle" was achieved by systematically distorting markets for trade advantage by Japan, Korea and most recently China. Initially successful, the resulting distortions damaged the distorters' economy as well as the producers in the country to which product was being exported. The US challenged Japan on this point and attempted to tackle the country's systemic distortions through the 1985 Plaza Accord: a currency accord signed by the G5 nations to coordinate intervention in currency markets to depreciate the US dollar and reduce trade imbalances such as the US trade deficit with Japan; and through the Structural Impediments Initiative (SII): an 1989 bilateral US – Japan dialogue to address the underlying structural causes of trade imbalances by focusing on

domestic economic and regulatory reforms rather than tariffs or exchange rates. While the former did rebalance Japan's currency, the latter was largely unsuccessful. Some of the effects of the agreement actually increased the levels of distortion as they allowed entrenched anti-competitive practices, such as binding in voluntary export restraints (VERs) which had been agreed by Japan in 1981, to continue unchallenged. The VER on automobiles, under which Japan agreed to limit exports to the US not through true market liberalization but through managed trade mechanisms that preserved protected domestic markets while constraining competition abroad, ultimately reinforced rather than dismantled anti-competitive structures.

The impact of this on the world is stark. The delta between what the economy would look like without ACMDs and what it does look like now is the prize which policy must attain. US producers and workers have particularly suffered from the proliferation of ACMDs.

1.3 What should our goal be?

If the goal is wealth creation, it is important to ask what wealth creation is. Wealth creation is not the creation of money; it is the realization of ideas. It is the way we maximize, enhance and speed up the process that goes from idea generation to idea crystallization. It is measured by money. Hence money is (or should be) a measurement tool, a way of showing the quantum of wealth creation. But this distinction is important because money can be increased without ideas being realized (through distortions of one type or another).

Wealth, as we have noted previously, can be created or destroyed and it is much easier to destroy than create.[15] Competition is the most powerful force we know to create it. But it is equally important to be clear what we mean by competition. Our perspective here is formed from the need for voluntary exchanges between willing buyers and sellers not to be disturbed by interventions that damage ordinary market competition. The goal of competition then is to maximize both productive and allocative efficiency. Competition, to our mind, is therefore definitely not itself an intervention to secure a particular preferred market paradigm such as fragmented markets or disciplining large players differently than

[15] Shanker A. Singham and Alden F. Abbott, *Trade, Competition and Domestic Regulatory Policy: Trade Liberalisation, Competitive Markets and Property Rights Protection* (London: Routledge, 2023).

others. Where competition agencies act to achieve these latter goals, their interventions are themselves ACMDs.

So, if wealth creation is the goal, the best measurement of it is GDP per capita which is a productivity measure. GDP per capita is treated as the most robust proxy for wealth creation because it captures the average economic output per person, directly links to household income, and allows meaningful comparison of how distortions impede productivity across countries.[16,17] We have noted that the global economy missed out on 10% GDP per capita growth year on year because of a failure to deal with ACMDs, especially in the DC and PR areas between 1990 and 2016. This then is the prize.

GDP Per Capita: The Best Measure of Wealth Creation

As a productivity measure, **GDP Per Capita** is the best metric for wealth creation. Directly linked to both individual output and household income, it enables showing the impact of **distortions of productivity** across nations.

1.4 How do we attain this prize?

One of the reasons we have failed to make progress on ACMDs in the past fifty years is that our trade and domestic regulatory economic policymaking delivery systems have not been aimed at reducing them. By deprioritizing them, and not understanding their impact, we have lost significant potential for wealth creation.

[16] Shanker A. Singham and A. Molly Kiniry, *Introduction to Anti-Competitive Market Distortions and the Distortions Index* (London: Legatum Institute, September 2016), https://shankersingham.com/wp-content/uploads/2023/08/LIIntro-to-ACMDDistortionsIndex.pdf.
[17] "About Us," *Growth Commission*, accessed June 23, 2025, https://www.growth-commission.com/about-us/.

The question is what we can do to correct for this and attain the prize of significantly enhanced economic growth in the US and elsewhere as a result of ACMD reduction.

1.5 The definition of madness is doing the same thing and expecting different results

Clearly, what the US has done in the last thirty years to reduce non-tariff ACMDs has not worked. We have seen ACMDs increase significantly through behind-the-border barriers and distortions, industrial policies with embedded ACMDs such as the US Inflation Reduction Act (IRA) and the EU Green Deal, and the rapid increase of subsidies in the world since 2008. As noted in the heading of this section, madness is repeating the same thing and expecting different results. In Appendices A and B, we have set out an ordinal index of distortions by countries for the first year of our ten year panel data (2010) and the final year (2019). We see that even for the least distorted countries, the overall level of distortion has increased. In other words, even in the decade of the 2010s, the most recent decade, the world economy has been going in the wrong direction.

It is clear that something different is needed. President Trump has opted for the big stick of high tariffs based on the trade deficit that the US has with countries. The deficit is being used as a proxy for distortions in this case.

Viewed in this light, the Administration's action is a needed realignment or corrective, much as an oil tanker needs to be slowed down before it can turn around. However, further actions will be needed in order to reduce ACMDs over time. These include:

- A statutory and administrative process for a new ACMD trade mechanism to enhance existing trade remedy tools. Such a trade remedy would enable companies that are adversely affected by ACMDs to effectively deal with them.
- A way of determining the quantum of distortion that will make economic sense to trading partners.
    - The Administration has said the trade deficit is the quantum of distortion.
    - But the size of the deficit may be the result of ACMDs in the other country or may simply be because of ordinary economic efficiencies and the working out of comparative advantage.

- Equally there is no doubt that distortions in some countries do suppress US exports and artificially enhance imports into the US, contributing to the deficit.
- A better mechanism is understanding the impact on GDP per capita by ACMDs, and we believe our ACMD model is the best proxy for the negative trade effects of distortion. Our suggestion is that the ACMD's effect on a country's GDP per capita also equates to the losses to US exporters and so one can use the GDP per capita loss as a proxy for the impact on trade.
- We have additionally been developing a probabilistic model of ACMDs that is showing a very similar scale of the ACMD problem, giving further support to the metrics we are deploying.

The ACMD framework begins with the SRB model, a panel-data econometric analysis that confirms how government distortions in the three pillars suppress wealth creation. The model (refined through "β" and "γ" iterations) employs ordinary least squares on country data to isolate each pillar's contribution to GDP per capita. It finds statistically significant coefficients for all three pillars, implying that strengthening them all independently drive higher income levels. Notably, the DC pillar carries the greatest weight, which is consistent with the idea that internal anti-competitive practices inflict the most economic harm. These results align with other studies (OECD and others have similarly found that anti-competitive regulation drags down growth), lending credibility to the model.

Building on the econometric findings, our latest work explores a "quantum" model of distortions, using analogies from physics to capture the complex, dynamic nature of markets. In this approach (inspired by econophysics and agent-based modelling), buyers and sellers are treated as particles moving in a probabilistic space, and the three distortion pillars become forces that influence their interactions. The pillar scores represent the potential terms in a probability density function. As pillar scores decline (i.e. distortions worsen), the potential for wealth creation shrinks and the frequency and intensity of voluntary exchanges diminish, leading to less economic activity.[18] In addition, countries

[18] For more information on the probabilistic model, see forthcoming book, Shanker A. Singham, International Trade, Regulation and the Global Economy: The Impact of Anti=-Competitive Market Distortions, (Published Routledge, August, 2025), available at International Trade, Regulation and the Global Economy: The Impact of

are assigned various probabilistic states based on the strength of institutions, human capital and use of natural resources to convey the way these forces (the three pillars) are attenuated or enhanced as they are applied to the probability of voluntary exchanges occurring. The model therefore tells us about the frequency and intensity of these voluntary exchanges and thus the additional wealth created by a reduction of distortions.

Initial results of the quantum model suggest broad similarity with the results of the econometric model, although the quantum model is able to tell us individual effects for countries. We also see an extraordinarily high level of correlation between what the model suggests and actual GDP per capita movements for countries between 2010 and 2019.

The SRB-γ model's predicted per-capita GDP improvements for 2010–2019 closely track the actual outcomes across 118 countries, with robust and statistically significant correlations across all three pillars. Countries that the model identified as having large distortion-induced losses did indeed experience sluggish growth, whereas those with fewer distortions saw stronger gains. Such alignment between model and reality bolsters confidence in using its outputs for policy.

This model shows that when countries engage in ACMDs, they damage their own economies, as well as damaging their trading partners. By using the damage to their own GDP per capita as a proxy for the trading partner damage, we are able to express the tariffication in a manner that, if ACMDs are reduced, leads to economic gains for both parties. This can create a win-win for economic growth which enables both parties to deliver positive results to domestic constituencies making deals much more likely.

As noted previously, our Distortions Index (see appendices A and B) aggregates numerous policy factors into a single gauge of how distorted a country's market is across the three pillars. It is the first-ever attempt to quantify these distortions on a global scale, allowing us to rank and compare countries by the impact of distortions on their economies. The Index thus serves as a diagnostic tool: a high index score signifies a greater distance between how the country performs and how it would perform if optimized and therefore is a measure of overall distortion.

Equally important is recognizing the "iceberg nature" of trade barriers: the tip of the iceberg represents conventional tariffs and border barriers, while a much larger mass of hidden

distortions (our pillar 2 and 3 distortions in domestic competition and property rights protection) lies beneath the surface. In our framework, these underwater iceberg components are the behind-the-border barriers (i.e. burdensome regulations, subsidies, state-owned enterprise advantages, weak IP enforcement, etc.) that are less obvious but far more economically damaging. Traditional trade policy dealt mostly with the tip, but the ACMD theory exposes the iceberg below. Excessive regulation or a tilted playing field for state-backed firms can "absorb" economic energy much like an iceberg dragging on a ship.

This insight is why the Distortions Index was needed, to shine light on those submerged elements and quantify them. By doing so, we acknowledge that free trade agreements must address more than tariffs**.** If we eliminate the distortions that lurk beneath the surface, we unleash far greater gains than by shaving a few percentage points off tariff rates. Our models suggest that while about twenty per cent of the iceberg is visible (tariff

barriers), eighty percent is under the water. The precise breakdown differs from country to country, but this is a good proxy.

The 2019 ordinal index suggests that the direction of travel of all countries seems to be in the wrong direction. Many countries remain highly distorted or have worsened. Chad remains the most distorted economy. Countries like Zimbabwe, Burundi, and Madagascar have entered or moved up the distortion rankings. Even the least distorted are more distorted in 2019 than they were in 2010. Singapore, one of the least distorted countries in the world, saw a decrease in its PR score from 2010 to 2019 resulting in losses of potential GDP per capita growth.

IC, PR, and DC pillars all show different patterns, with DC remaining the dominant source of distortion. Reform has been patchy or ineffective in many areas.

- Africa: Persistent or worsening distortions.
- South Asia: High and persistent PR and DC losses.
- Eastern Europe: Mixed results with some minor improvements.

Many of the worst-performing countries in 2010 remain so in 2019, suggesting policy traps and lack of effective reform.

Some modest improvements are noted in India, China, Mexico, and the Philippines. Incremental reforms appear to reduce distortion mass measurably.

Even high-income countries show measurable distortions, particularly in the DC pillar. The US, UK, Germany, and Japan show only marginal improvements.

The top 20 performers are analyzed below, showing that in almost all cases, even here distortions have increased. The UAE is a glittering exception to this rule.

Country	2010 Loss	2019 Loss	Change	Interpretation
Singapore	16.66	20.31	+3.65	Slight regression; still best performer overall.
New Zealand	22.54	25.20	+2.66	Mild increase in distortions.

Country	2010 Loss	2019 Loss	Change	Interpretation
Denmark	21.70	27.39	+5.69	Regressed noticeably, especially in DC.
Sweden	28.47	34.34	+5.87	Moderate regression, mainly in DC and PR.
Australia	28.93	34.38	+5.45	Distortions increased, especially in DC.
Canada	30.46	36.82	+6.36	Noticeable worsening in domestic competition.
United Kingdom	31.42	31.94	+0.52	Stable, minimal change.
Finland	32.33	30.13	−2.20	Improved slightly; less distortion by 2019.
Austria	32.55	35.76	+3.21	Increased distortion, mostly DC-related.
Switzerland	32.93	34.06	+1.13	Small regression.
United States	32.97	32.85	−0.12	Essentially unchanged.
Netherlands	33.93	32.09	−1.84	Improvement; less distorted in 2019.
Iceland	36.10	36.56	+0.46	Stable, very slight increase in distortion.
Germany	37.40	36.93	−0.47	Slight improvement.
Norway	37.46	36.10	−1.36	Mild improvement, particularly in PR.
Japan	37.79	35.35	−2.44	Improved; distortions reduced across pillars.
Belgium	38.80	38.65	−0.15	Very stable performance.
Luxembourg	40.87	42.17	+1.30	Slight increase in distortion mass.
France	44.72	43.68	−1.04	Slight improvement.
United Arab Emirates	46.33	33.07	−13.26	Major improvement; sharp drop in distortion mass.

The bottom 20 performers are analyzed below. While there were general improvements across most countries, they all remain highly distorted.

Country	2010 Loss	2019 Loss	Change	Interpretation
Chad	94.67	92.92	−1.74	Slight improvement; modest reduction in distortion.
Madagascar	79.81	87.97	+8.16	Noticeable regression; distortion rising across pillars.
Bolivia	83.57	81.56	−2.01	Slight improvement; modest reduction in distortion.
Cameroon	87.54	81.07	−6.47	Major improvement; strong drop in total distortion.
Mozambique	83.01	79.99	−3.02	Slight improvement; modest reduction in distortion.
Cambodia	85.89	79.85	−6.04	Major improvement; strong drop in total distortion.
Mali	81.26	79.4	−1.86	Slight improvement; modest reduction in distortion.
Bangladesh	84.56	79.14	−5.42	Major improvement; strong drop in total distortion.
Burkina Faso	81.46	78.76	−2.7	Slight improvement; modest reduction in distortion.
Pakistan	79.2	78.07	−1.14	Slight improvement; modest reduction in distortion.
Paraguay	80.98	77.69	−3.29	Slight improvement; modest reduction in distortion.
Nicaragua	74.93	77.18	+2.26	Mild increase in distortion.
Ecuador	83.2	77.13	−6.07	Major improvement; strong drop in total distortion.
Guatemala	75.68	76.64	+0.96	Mild increase in distortion.
Algeria	77.32	76.61	−0.71	Slight improvement; modest reduction in distortion.
Nepal	83.27	75.96	−7.3	Major improvement; strong drop in total distortion.

Country	2010 Loss	2019 Loss	Change	Interpretation
Honduras	76.31	75.83	−0.48	Slight improvement; modest reduction in distortion.
Benin	84.78	75.57	−9.21	Major improvement; strong drop in total distortion.
Senegal	81.09	74.54	−6.55	Major improvement; strong drop in total distortion.
Ukraine	83.4	74.36	−9.03	Major improvement; strong drop in total distortion.

Key Observations

- Singapore, New Zealand, and Sweden remain among the least distorted, though most saw modest increases in ACMD losses.
- UAE shows a dramatic reduction in distortion mass from 46.3 → 33.1 — possibly due to pro-market reforms in property rights and domestic regulation.
- The UK, US, and Germany are largely stable, with no major improvement or deterioration.
- Finland, Japan, and Netherlands made incremental improvements in reducing distortions.
- A few countries (e.g. Austria, Canada, Denmark) have regressed, mostly in domestic competition.

The general picture is one of increased "mass" of ACMDs across the board. There are very few cases of a country that was a good performer improving. The UAE stands alone and shows what can be done with focus from policymakers. Reforms in the DC and PR pillars have proven to be the most difficult to accomplish even for better performers. This shows how difficult it is for all countries to improve and how powerful incumbent interests who wish to maintain the status quo actually are. Without some credible external threat, little can be expected to change.

2. Trump Economic Doctrine ("TED") includes domestic ACMD reduction

Implicitly, the Trump administration accepts that ACMDs damage domestic economic productivity. The Administration has issued an executive order which calls for agencies and departments to identify anti-competitive regulations for removal. Ideally all countries should adopt the type of approach the US is adopting as it will deal with many of the barriers to trade at the same time.

The OECD and International Competition Network (ICN) have both made similar recommendations regarding regulation.

The OECD's Competition Assessment Toolkit provides governments with a practical methodology to identify and eliminate unnecessary regulatory restrictions on competition.[19] It supports policymakers in ensuring that laws and regulations achieve legitimate public objectives without unduly limiting market competition. The toolkit consists of a step-by-step guide that includes:

1. Screening regulation for potential competitive impact, using a checklist to flag provisions that:
    - Limit the number or range of suppliers,
    - Limit the ability of suppliers to compete,
    - Reduce incentives of suppliers to compete,
    - Limit the choices and information available to consumers.
2. Conducting detailed competition assessments to evaluate whether restrictions are justified by public interest and if less restrictive alternatives can achieve the same objective.

[19] Organisation for Economic Co-operation and Development, *Competition Assessment Toolkit: Principles. Version 4.0 (Volume I)*, OECD Publishing, 2019, 56 pp., https://www.oecd.org/en/publications/2019/01/competition-assessment-toolkit-principles-version-4-0-volume-i_931b4e2c.html.

3. Developing and implementing pro-competitive reforms through inter-agency cooperation and public consultation.

The ICN defines competition advocacy as the use of non-enforcement tools, such as outreach, research, and advisory input, to promote a culture of competition and improve public understanding of competitive markets. Through its work, the ICN encourages governments and regulators to embed competition principles into broader economic policy, especially in sectors not traditionally subject to antitrust scrutiny.

Key elements of ICN advocacy include:

- Advising policymakers on the unintended anticompetitive effects of regulation.
- Encouraging public-sector bodies to assess competition impacts before enacting new rules.
- Collaborating with other institutions (e.g., finance ministries, sector regulators, consumer organizations) to promote pro-competition outcomes.

The US is developing a way to deal with its own ACMDs. In its April 9th Executive Order The Administration is effectively saying that it is prepared to reduce the very thing it is asking other countries to reduce.[20] Just as ACMDs in other countries impact the US economy, so ACMDs in the US impact the US's trading partners. There is now a mechanism to reduce both of these sets of distortions. The table in Appendix C sets out a sample group of anti-competitive regulations in the US. These are a group of regulations that may have anti-competitive effects and so should be considered as part of the review of US ACMDs. The fact that these regulations appear on this list does not mean that they are necessarily ACMDs, only that they may be if anti-competitive effects can be shown. By comparison potential EU and UK anti-competitive regulations are described in Appendices D and E. It should be noted that as a result of Brexit when the UK ported over all EU regulations and is now proposing to align its SPS regime with the EU's, that the UK list must be supplemented by the EU list unless the UK has expressly derogated from it.

[20] The White House, **"**Executive Order 14267: Reducing Anti-Competitive Regulatory Barriers**,"** *Presidential Actions* (Executive Orders), April 9, 2025, https://www.whitehouse.gov/presidential-actions/2025/04/reducing-anti-competitive-regulatory-barriers/

3. What should be in agreements between the US and its trading partners

Agreements among coalitions of the willing countries to do similar things:

- Common approach to China
- Similar approach to reducing distortions

Every trade agreement the US enters should include explicit commitments to limit and discipline ACMDs. We have developed a sample chapter on ACMDs that would go beyond the usual WTO-plus provisions by directly addressing behind-the-border practices.[21] In essence, it would require each party to curtail new distortive measures and provide transparency and remedies for any that do arise. Key elements would likely include obligations to maintain competitive neutrality (so state-owned or favored firms don't get anti-competitive advantages), to limit subsidization or regulatory discrimination that skews markets, and to cooperate on identifying and removing barriers as they crop up. By embedding such rules, trade partners ensure that market liberalization is accompanied by fairness: it's not enough to cut tariffs if one side can simply replace them with hidden barriers. We recommend that all US-X agreements once frameworks are reduced to binding obligations should include these provisions.

[21] Competere Foundation, *Anti-Competitive Market Distortions: A Sample Chapter for Trade Agreements*, February 2024, https://competerefoundation.org/wp-content/uploads/2024/02/Competere-Sample-Chapter-Report-Final.pdf.

4. The benefits of ACMD reduction

If the TED and TTD are successful, then net ACMDs could decrease around the world, including in the US, leading to economic gains. By removing distortions, we expand the economic pie, which helps address multiple current concerns. For businesses and exporters, reducing foreign ACMDs means a fairer playing field abroad: US firms won't be undercut by rivals who enjoy the benefits of ACMDs that artificially reduce their costs, and enable them to outcompete US firms at home and in third country markets. That translates into higher sales and more jobs in competitive US industries. For consumers, it means lower prices and more choices, as protectionist barriers and local monopolies are dismantled. Perhaps most notably, for the US government and taxpayers, faster growth directly alleviates fiscal pressure.

The major effect will be to lower the current concerns about governmental spending and debt as a percentage of GDP.

Increasing IC, DC and PR scores as a result of the TED over the next ten years will lead to significant GDP per capita growth and will have a powerful effect on reducing the debt to GDP ratio in the United States.

Bond markets have manifested concern about the long-term projections especially for highly indebted countries, such as the US. There is a risk that the ten-year treasury will rise considerably if there is fear about the fiscal stability of the US. The impact of economic growth in bringing the debt to GDP ratio down to sustainable levels is crucial. It is only economic growth that can achieve these results. Since ACMD reduction is a major contributor to economic growth, it should take up the highest priority in the minds of policymakers.

5. How should companies react to the TTD?

Supply chains that include big distorters such as China need to be revisited. It is unlikely that the administration will do deals with big distorters who do not indicate a likelihood of change, and so eliminating those markets from supply chains should be a priority as a US tariff is likely to remain in place for them. On the other hand, countries that look like they are willing to reduce ACMDs, particularly those where other costs are low because of the ordinary working out of comparative advantage would become more attractive.

The most likely pathway to trade deals that involve ACMD reduction is for countries to lower their barriers to US exporters. Companies should therefore work with foreign governments to prioritize ways of removal of these barriers with concrete plans of how they can be eliminated, recognizing the reality that many of these barriers are in place because of powerful vested interests. For example, textile producers who operate in low labor cost areas will need to show that they have systems in place to prevent any China circumvention. Another example would be pharma companies pressuring the EU to reverse its recent pharmaceutical patent policy which is very damaging to intellectual property rights. Finally, tech companies could encourage the EU and UK to change the way they implement competition policy returning it to its original consumer welfare roots, as well as removing their digital services taxes and other data related barriers to trade.[22] This will more likely lead to the kind of deal which will lower US tariffs and trading partner distortions, a win-win for both countries.

Since US corporates are the demandeurs for all the entries in the National Trade Estimate (NTE) and are at the sharp end of foreign country barriers, it makes sense for them to take advantage of this moment to push for reduction of these barriers. In addition to merely complaining about them as they have in the past, they now have an opportunity to use the carrot of reduction of a high US tariff to help persuade countries to lower their barriers. Never has this chance been stronger.

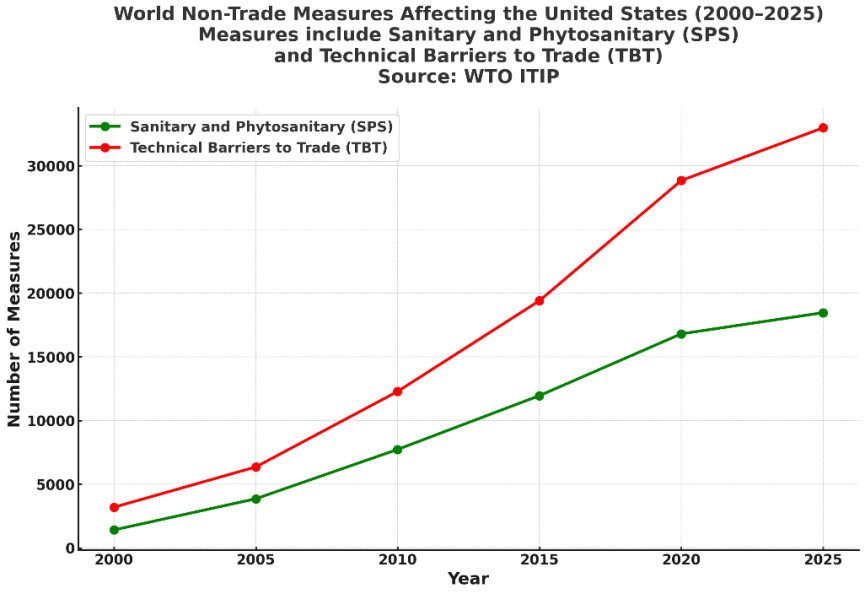
[22] Shanker A. Singham and Alden F. Abbott, *Trade, Competition and Domestic Regulatory Policy: Trade Liberalisation, Competitive Markets and Property Rights Protection*, 1st ed. (London: Routledge, March 29, 2023).

Companies who cannot move elements of the supply chain are advised to push those governments to lower their distortions in order to secure US tariff reductions. These should form part of country's offers to the US, and if they do, the US should be encouraged to react positively to them.

Given that a successful implementation of the TED and TTD would lead to a world of no or low ACMDs, firms should next consider where most efficient supply chain deployment could then take place in a world of reduced distortions.

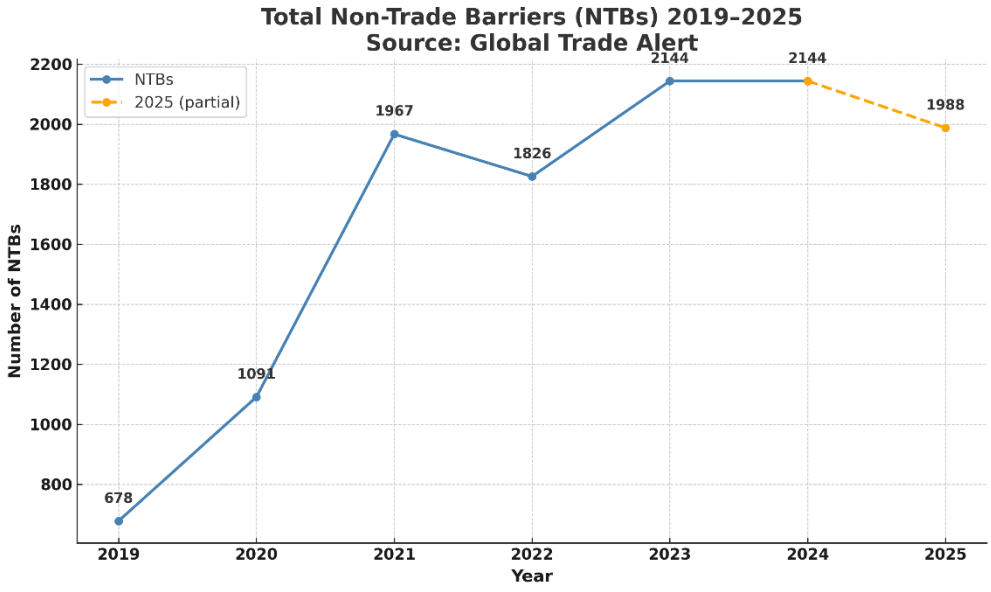
6. How should trading partners react?

Clearly reducing one's own ACMDs will lead to deals and a reduction of the US tariff. Trading partners are therefore advised to make offers to the US based on reduction of their ACMDs as set out specifically in their NTE entries. The NTE is an annual catalog of foreign trade barriers, and it vividly demonstrates the persistence of ACMDs worldwide. Each year, the NTE lists hundreds of pages of tariffs, quotas, discriminatory regulations, subsidy schemes, and other market distortions maintained by America's trading partners. Trading partners could also highlight US ACMDs and use both trade negotiations and the domestic DOJ/FTC led task force to affect their removal. Using the economic models described in this note, countries can also prioritize the most damaging ACMDs and develop strategies to communicate the benefits of their removal to domestic publics. They should note that powerful vested interests pushed for the enactment of these ACMDs in the first place and will fight hard with policymakers and in the media to retain the public's wrongheaded support for them. Governments will need to show that their domestic consumers as well as small businesses and new entrants gain from their removal. They can also use the economic models discussed here to show precisely how much this gain could be.

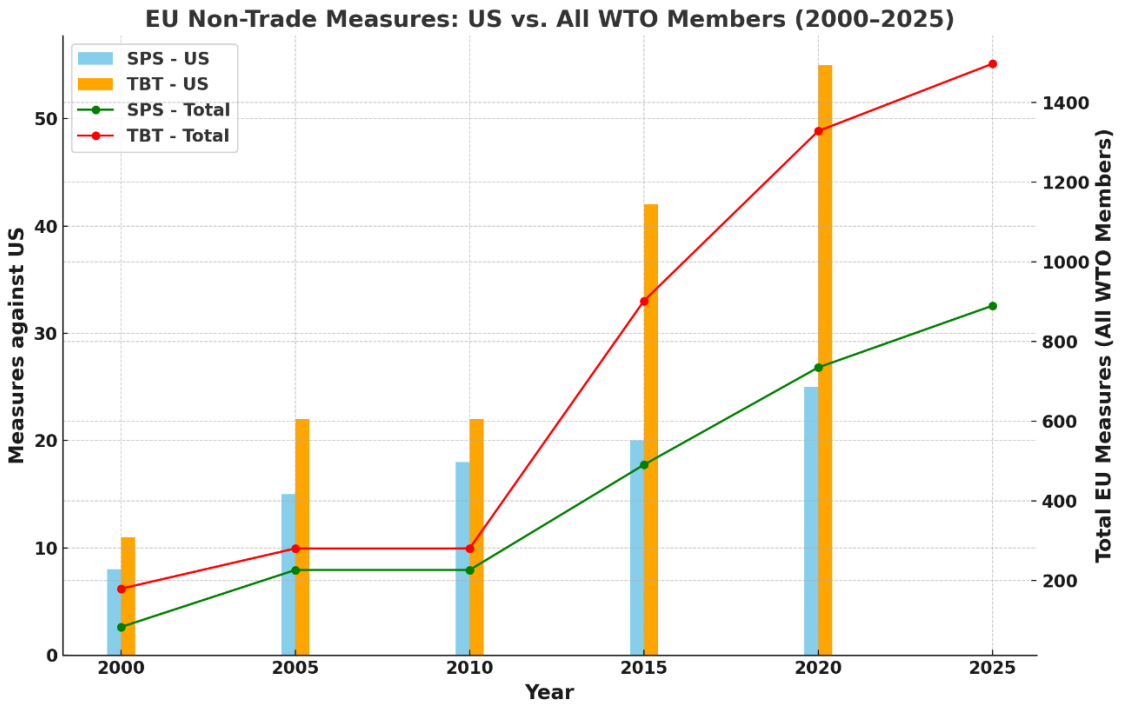


6.1 The EU: A case study of increasing ACMDs

It is clear from the ordinal index of distortions and the increasing mass of distortions or ACMDs over the last thirty years, that non-tariff barriers of all kinds have significantly increased. While the number of entries in the NTE can only tell you so much (it depends on what the corporate sector chooses to list, and what the Administration chooses to include), it is noteworthy that the NTE itself has grown from the low 300s of total pages (in the 1980's) to the high 400s (even reaching over 500 in 2021). The EU's entry has increased in size dramatically even accounting for the addition of new countries. But with regard to the EU, it is worth pointing out that the critical concerns raised in the NTE for the EU which are primarily in the regulatory space applies to more and more countries as they accede to the EU system, so merely aggregating the entries of the EU-27 would not show the overall trend in EU central planning and ACMD generation. For the recent disturbing trend post GFC, the Global Trade Alert's inventory of NTBs since 2008 shows a significant uptick in NTBs in this period, further evidencing our major point that the mass of ACMDs has significantly increased, and the global system has done nothing about them, which is a central thesis of this paper.



Since 1985, the USTR has documented a persistent and expanding set of non-tariff barriers imposed by the EU (and its predecessor the European Community), beginning with SPS measures and agricultural trade barriers, and evolving to encompass technical regulations, and, more recently, digital governance frameworks such as the GDPR and Digital Services Taxes. The persistence of these distortions, despite decades of bilateral trade engagement, underscores the EU's resistance to reform in key sectors. [23]



Source: WTO

[23] In reference to the chart below and on page 35, WTO notified SPS and TBT issues are a small subset of all ACMDs, yet we see even these increasing dramatically, so we can expect the totality of ACMDs to rise faster which is what the ordinal index on ACMDs in the document shows. Please note that all statistics for 2025 are partial.

7. The connection between ACMD removal and geo-politics

ACMDs are not merely economic weapons of mass destruction, they also have important geopolitical impacts. In the case of China, many ACMDs are in the area of State-Owned Enterprises which are directly connected to the Chinese Communist Party. Their revenues therefore directly strengthen the CCP's non-commercial projects (such as developments in the South China Sea or aspirations for control in developing countries).

If we fail to address ACMDs and allow wealth creation to stall, we risk a slide back into scarcity and conflict. History teaches that widespread prosperity is the exception, not the rule. Poverty and war have been the natural state of man for most of his history. Distortions that destroy wealth can quickly recreate that grim "zero-sum" environment. When economic growth falters, politics turns into a fight over slices of a shrinking pie. As competition is throttled, inefficiencies cause the costs of key goods to rise, resources become scarce creating the conditions for resource nationalism and resource conflicts. A world riddled with ACMDs would be one of mounting geopolitical friction, as pressure mounts to acquire scarce critical resources. This can increase the chances of conflict. Thus, removing distortions is not just an economic imperative but a US national security imperative. By maximizing wealth creation (through open, competitive markets), we reduce the probability of conflict.

The emerging TED and TTD could therefore lead to a reduction in potential for conflicts around the world.

8. The development of a Coalition of the Willing

The group of countries that initially agree to reduce ACMDs are likely to be the same group that will be core allies geopolitically. We suggest building on the UK-US alliance, expanding to AUKUS, (through its pillar 2 activities which focuses on developing advanced capabilities and technology sharing between Australia, the United Kingdom, and the United States to improve interoperability and enhance defense capabilities) and reinforcing key alliances with Japan and others in East Asia provided they have agreed to reduce their ACMDs. The Five Eyes intelligence alliance (FYEY) could also be included in this early group. India will be a key potential partner, and it will be important to draw India into both the economic approach of the US and its allies, but also to wean it away from historic Russian dependence. If the EU can agree to lower ACMDs which will depend on significant pressure from the Administration, such as the 50% tariff on steel and aluminum imports, and the threat of a general 30% tariff, then it can ultimately be brought into this grouping as well, however, this is likely to be at least a second order effect. Each of the countries will be affected by the actions of the others, so it is possible that if the overall approach is successful, it would prompt the EU to lower distortions indicating the connection between ACMDs and geopolitical matters.

For this reason, initial deals with the UK, Japan, Australia, India, and Korea will be very important.

9. Developing countries and the relief of poverty

Many of the most damaging global conflicts take place in developing countries. As we have noted here, many of the needed critical minerals for the world are also located in them. It is not coincidental, that countries at the bottom of the Distortions Index have a disproportionate share of global conflict.

It is therefore a matter of US national security that these countries do not become failed states. This has an impact on issues such as critical minerals, but also on other important resources, including water and food. Allowing ACMD issues to fester in developing countries creates several negative effects that can damage the US. First, failed states can attract terrorist and other ideologies that seek harm to the US. Second, failed or failing states can be captured by oligarchic interests who then control the mineral wealth in those countries. Third, failed or failing states then push their people out in waves of uncontrolled migration that threaten hard and soft infrastructure in the US if not properly controlled, as well as creating a political backlash. In developing countries, the oligarchs and beneficiaries of distortion are some of the most powerful people in those countries.

But as we can see from the Distortions Index set out in Appendix B, developing countries are particularly distorted, and their distortions are getting worse not better. Their DC and PR distortions which are less visible (the submerged part of the iceberg) are also much bigger proportionately than for their developed country peers. In that sense, developing countries have the most to gain from lowering their distortions. One consequence of the TTD is that some of these countries are opening up to each other and lowering their own ACMDs. This is particularly true in Africa, and Asia. The TTD may even spur the EU to negotiate with or even accede to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) which will require significant change to the EU's regulatory distortions. In this sense the TTD is forcing actions on countries which they would not have taken but for this intervention.

Our analysis demonstrates that GDP per capita growth stemming from the reduction of ACMDs drives broader economic inclusion and job creation. It shows that enhancing domestic contestability and property rights unlocks economic energy previously trapped by rent-seeking interests and structural inefficiencies. As these reforms take hold,

household incomes increase, especially in economies undergoing legal and institutional restructuring, and poverty is alleviated. These modelled outcomes are consistent with broader empirical findings, such as those from the World Bank, which estimate that, on average, a 1% increase in GDP per capita reduces poverty rates by approximately 1.2% to 1.7%, depending on country context and baseline inequality.[24] Together, these insights underscore that ACMD-driven reforms do not merely boost macroeconomic indicators, they translate into tangible improvements in livelihoods and economic mobility.

The US can do deals with these countries to give their governments the cover to lower distortions. The US can work with the Coalition of the Willing group to improve access to their markets for developing countries willing to make the changes necessary.

The US could also support prosperity zones in developing countries that have shown a willingness to remove ACMDs. Digital trade corridors could be constructed to support trade between countries and regions with a commitment to reducing ACMDs. This could be particularly important in developing countries with significant critical minerals and other natural resources.

[24] See R. Adams (2002), Economic Growth, inequality and Poverty: Findings from a New Dataset., Policy Research Working Paper 2972, World Bank, February 2002, and Ravallion, M. and S. Chen (1997) "What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?" World Bank Economic Review, 11(2); 357-82

Conclusion

In short, the emerging TED and TTD, if properly understood by stakeholders and trading partners, could lead to an overall reduction in wealth destroying ACMDs around the world. Such an outcome would reverse the previous several decades of proliferation of ACMDs in developing and developed countries alike.

Because of the scale of ACMDs compared to pure tariff barriers, reduction of them would have a disproportionate impact on wealth creation as measured by GDP per capita. If this policy is to have a chance of success, the US' trading partners must understand it, corporate stakeholders must play a role in executing it, and the US must respond positively if countries are actually lowering their ACMDs. If this can be achieved, there is no reason the policy cannot lower ACMDs around the world and deliver the Golden Age that President Trump has promised.

Findings

1. **Key Takeaway:** There are many scenarios possible as a result of Trump Economic Doctrine and Trump Tariff Doctrine. These could be positive or negative**. We have focused on one scenario which we have shown could unlock significant economic growth in the US and wider world.**
2. **US deals with trading partners** are likely to contain limited market access terms, plus frameworks for further negotiations.
3. ACMD modelling provides a basis for a tariff on NTMs based upon potential loss to economic wealth measured in GDP per capita.
4. It is crucial that all parties understand that competition means allocative and productive efficiency, meaningful ACMDs are distortions that imperil voluntary exchange between willing buyers and willing sellers. Competition does not mean small and fragmented markets or disciplining large firms simply because they are large.
5. ACMD economic model can be used to identify GDP per capita gains from ACMD reduction. A one-point improvement of Pillar 1,2 and 3 scores leads to 4.4%, 11.2% and 7.6% respectively in GDP per capita increases. These correlate to impact of the particular ACMD on US trade.
6. **Nations should enter** into mutual recognition, equivalence and adequacy regulations to ensure inter-operability of regulatory systems based on outcomes, thus preserving regulatory competition and ensuring the greatest likelihood of pro-competitive regulatory outcomes.
7. **US negotiators can use** the ACMD model to provide support for other nations willing to reduce their ACMDs, by demonstrating the gains for those nations' own growth potential and thus creating a countervailing force to powerful vested interests who lobby for ACMDs, and block deals.

8. Standardizing trade negotiations by using ACMD modelling and tariffication provides **a new framework moving forward on FTAs**, regional and other broader trade agreements.
9. **Nations are urged** to bear these frameworks in mind in crafting domestic trade remedy processes that tarifficate ACMDs in trading partners as a powerful supplement to negotiations to reduce ACMDs.
10. **Nations are advised** to deepen their trade integration with each other and work to reduce their ACMDs inter se.
11. **USTR is advised** to respond positively to trading partners who raise meaningful ACMD reductions in their offers.
12. **Agreements amongst allied nations** to use the ACMD model and tariff approach will provide a positive unified approach for dealing with China's trade distortions, which have not been adequately addressed through the WTO or elsewhere.
13. **Companies are advised** to raise ACMD issues with US trading partners so that they are included in the negotiation of framework deals.
14. **Companies are advised** to raise ACMD issues in the US with DOJ/FTC.
15. **Bond dealers are advised** to evaluate the economic impact of ACMD reductions to estimate economic growth prospects for the US and globally over medium (2-5 years) and long term (ten years).
16. **Media are advised** to assess success of announced deals based on ACMD reductions secured, and through the lens of the normative framework set out here.

Appendix A: Ordinal Index of 2010 Market Distortions

2010 Total Losses		2010 IC Losses		2010 PR Losses		2010 DC Losses	
Country	**Total Losses**	**Country**	**IC Losses**	**Country**	**PR Losses**	**Country**	**DC Losses**
Singapore	16.664	Singapore	4.312	New Zealand	5.928	Denmark	5.6
Denmark	21.704	Luxembourg	5.412	Singapore	6.08	Singapore	6.272
New Zealand	22.544	Netherlands	6.512	Sweden	8.284	New Zealand	7.728
Sweden	28.472	Sweden	7.084	Denmark	8.36	Australia	8.848
Australia	28.928	Belgium	7.216	Finland	8.892	Canada	11.088
Canada	30.464	Germany	7.304	Norway	10.032	Switzerland	11.088
United Kingdom	31.424	United Kingdom	7.348	Austria	10.26	United States	11.648
Finland	32.328	Austria	7.392	United Kingdom	10.412	Sweden	13.104
Austria	32.548	Switzerland	7.48	Canada	10.488	United Kingdom	13.664
Switzerland	32.932	Denmark	7.744	Australia	10.488	Iceland	14.336
United States	32.972	Norway	8.052	Germany	10.716	Austria	14.896
Netherlands	33.932	United Arab Emirates	8.096	United States	11.248	Finland	15.12
Iceland	36.1	Finland	8.316	Iceland	11.248	Netherlands	15.792
Germany	37.396	Estonia	8.36	Netherlands	11.628	Japan	16.016
Norway	37.46	Slovak Republic	8.668	Japan	12.844	Belgium	16.912
Japan	37.792	Latvia	8.668	Cyprus	14.212	Bahrain	18.144
Belgium	38.796	Korea, Rep.	8.712	Switzerland	14.364	Norway	19.376
Luxembourg	40.872	Lithuania	8.8	Luxembourg	14.516	Germany	19.376
France	44.716	New Zealand	8.888	Belgium	14.668	France	19.376
United Arab Emirates	46.328	Canada	8.888	Israel	15.2	Chile	20.72

2010 Total Losses		2010 IC Losses		2010 PR Losses		2010 DC Losses	
Country	Total Losses	Country	IC Losses	Country	PR Losses	Country	DC Losses
Cyprus	46.58	Japan	8.932	France	16.188	Luxembourg	20.944
Mauritius	47.152	France	9.152	Mauritius	16.188	United Arab Emirates	21.056
Bahrain	47.536	Israel	9.284	South Africa	16.416	Oman	21.28
Korea, Rep.	47.844	Italy	9.372	Botswana	16.72	Mauritius	21.504
Israel	48.228	Hungary	9.372	United Arab Emirates	17.176	Georgia	21.504
Oman	50.132	Poland	9.372	Korea, Rep.	17.404	Korea, Rep.	21.728
Estonia	50.964	Mauritius	9.46	Spain	18.012	Qatar	22.176
Spain	51.908	Australia	9.592	Oman	18.468	Cyprus	22.512
Qatar	52.616	Spain	9.592	Thailand	18.468	Estonia	23.072
Chile	52.692	Kuwait	9.592	Namibia	18.772	Uruguay	23.072
Kuwait	54.66	Cyprus	9.856	Portugal	19.228	Kuwait	23.408
Portugal	55.292	Portugal	9.856	Bahrain	19.228	Israel	23.744
Slovenia	55.34	Jordan	9.988	Estonia	19.532	Slovenia	24.08
Slovak Republic	55.38	United States	10.076	Qatar	19.836	Spain	24.304
South Africa	55.464	Bulgaria	10.076	Tunisia	19.912	Namibia	24.304
Botswana	55.708	Bahrain	10.164	Azerbaijan	20.748	Lithuania	24.64
Thailand	56.096	Slovenia	10.208	Jamaica	20.976	Botswana	24.864
Lithuania	56.772	Romania	10.208	Gambia, The	20.976	Slovak Republic	24.976
Jordan	56.96	Panama	10.296	Slovenia	21.052	Hungary	25.088
Uruguay	57.14	Oman	10.384	India	21.128	Jordan	25.312
Namibia	57.596	Iceland	10.516	Chile	21.28	Italy	25.872
Italy	57.74	Qatar	10.604	Colombia	21.356	Portugal	26.208
Georgia	58.464	Chile	10.692	Mexico	21.432	Thailand	26.32
Hungary	58.932	South Africa	10.824	Montenegro	21.584	Colombia	26.432
Tunisia	59.128	Kyrgyz Republic	10.824	Kuwait	21.66	Bulgaria	26.432

2010 Total Losses		2010 IC Losses		2010 PR Losses		2010 DC Losses	
Country	Total Losses	Country	IC Losses	Country	PR Losses	Country	DC Losses
Latvia	59.74	Peru	10.868	Jordan	21.66	Tunisia	26.544
Jamaica	60.46	Honduras	10.868	Slovak Republic	21.736	Jamaica	26.768
Colombia	61.208	Georgia	11.044	China	21.736	Montenegro	26.768
Montenegro	61.596	Paraguay	11.088	Italy	22.496	Greece	26.768
Bulgaria	62.424	Croatia	11.132	Uruguay	22.496	Latvia	27.664
Mexico	62.76	Nicaragua	11.176	Uganda	22.572	South Africa	28.224
Greece	62.9	Kazakhstan	11.264	Brazil	22.876	Armenia	28.336
Poland	63.256	Thailand	11.308	Zambia	23.256	El Salvador	28.336
Azerbaijan	63.48	Philippines	11.352	Kenya	23.256	Kazakhstan	28.672
Kazakhstan	65.548	Costa Rica	11.396	Lithuania	23.332	Mexico	29.008
Costa Rica	65.576	Uruguay	11.572	Latvia	23.408	Poland	29.792
Romania	65.924	Greece	11.66	Costa Rica	23.94	Peru	29.904
Panama	66.024	Serbia	11.88	Poland	24.092	Azerbaijan	30.016
Peru	67.296	Bosnia and Herzegovina	11.968	Ghana	24.092	Costa Rica	30.24
Uganda	68.22	Dominican Republic	12.1	Romania	24.244	Panama	30.8
El Salvador	68.42	China	12.232	Tanzania	24.244	Mongolia	30.912
Armenia	68.732	Mexico	12.32	Hungary	24.472	Serbia	31.248
Brazil	68.964	Ecuador	12.364	Greece	24.472	Romania	31.472
Kyrgyz Republic	69.12	Uganda	12.496	Albania	24.624	Kyrgyz Republic	31.696
Croatia	69.264	Guatemala	12.584	Panama	24.928	Croatia	32.368
China	70.144	Argentina	12.584	Tajikistan	25.308	Albania	32.928
Serbia	70.716	Tunisia	12.672	Kazakhstan	25.612	Uganda	33.152
Albania	71.016	Jamaica	12.716	Croatia	25.764	Brazil	33.152
Zambia	71.644	Azerbaijan	12.716	Indonesia	25.764	Bosnia and Herzegovina	33.264

2010 Total Losses		2010 IC Losses		2010 PR Losses		2010 DC Losses	
Country	Total Losses	Country	IC Losses	Country	PR Losses	Country	DC Losses
Mongolia	71.776	Bolivia	12.848	Bulgaria	25.916	Dominican Republic	33.6
Kenya	72.712	Brazil	12.936	Georgia	25.916	Algeria	34.384
Dominican Republic	73.06	Indonesia	13.068	Armenia	26.448	Ghana	34.496
India	73.58	Ukraine	13.068	Peru	26.524	Nicaragua	34.72
Gambia, The	73.596	Montenegro	13.244	Kyrgyz Republic	26.6	Zambia	35.056
Ghana	74.208	El Salvador	13.332	Pakistan	26.6	Argentina	35.056
Nicaragua	74.928	Zambia	13.332	Russian Federation	26.676	Guatemala	35.28
Guatemala	75.68	Colombia	13.42	Benin	26.676	Kenya	35.728
Honduras	76.308	Albania	13.464	El Salvador	26.752	Burkina Faso	36.064
Argentina	76.976	Kenya	13.728	Cambodia	26.752	China	36.176
Indonesia	77.136	Tanzania	13.772	Mongolia	26.828	Madagascar	36.96
Bosnia and Herzegovina	77.152	Armenia	13.948	Honduras	27.36	Pakistan	37.072
Algeria	77.32	Russian Federation	13.992	Dominican Republic	27.36	Mali	37.184
Tanzania	77.776	Mongolia	14.036	Nepal	27.36	Gambia, The	37.968
Philippines	78.54	India	14.036	Serbia	27.588	Honduras	38.08
Pakistan	79.204	Botswana	14.124	Mali	27.664	Philippines	38.08
Russian Federation	79.308	Madagascar	14.124	Burkina Faso	27.664	Bolivia	38.192
Tajikistan	79.58	Senegal	14.212	Guatemala	27.816	Indonesia	38.304
Madagascar	79.812	Namibia	14.52	Algeria	28.196	Senegal	38.304
Paraguay	80.976	Cambodia	14.564	Mozambique	28.272	India	38.416
Senegal	81.092	Gambia, The	14.652	Senegal	28.576	Russian Federation	38.64
Mali	81.26	Algeria	14.74	Madagascar	28.728	Tajikistan	39.312
Burkina Faso	81.46	Tajikistan	14.96	Bangladesh	28.728	Mozambique	39.424

2010 Total Losses		2010 IC Losses		2010 PR Losses		2010 DC Losses	
Country	**Total Losses**	**Country**	**IC Losses**	**Country**	**PR Losses**	**Country**	**DC Losses**
Mozambique	83.008	Mozambique	15.312	Nicaragua	29.032	Tanzania	39.76
Ecuador	83.2	Pakistan	15.532	Philippines	29.108	Nepal	39.76
Nepal	83.268	Ghana	15.62	Argentina	29.336	Paraguay	40.096
Ukraine	83.396	Bangladesh	15.62	Ukraine	29.336	Bangladesh	40.208
Bolivia	83.568	Chad	15.664	Paraguay	29.792	Ecuador	40.208
Bangladesh	84.556	Benin	16.104	Cameroon	29.868	Ukraine	40.992
Benin	84.78	Nepal	16.148	Ecuador	30.628	Cameroon	41.44
Cambodia	85.892	Cameroon	16.236	Bosnia and Herzegovina	31.92	Benin	42
Cameroon	87.544	Mali	16.412	Chad	32.3	Cambodia	44.576
Chad	94.668	Burkina Faso	17.732	Bolivia	32.528	Chad	46.704

Appendix B: Ordinal Index of 2019 Market Distortions

2019 Total Losses		2019 IC Losses		2019 PR Losses		2019 DC Losses	
Country	**Total Losses**	**Country**	**IC Losses**	**Country**	**PR Losses**	**Country**	**DC Losses**
Singapore	20.308	Singapore	4.62	Finland	7.6	Singapore	6.72
New Zealand	25.204	Belgium	5.28	New Zealand	8.664	New Zealand	8.4
Denmark	27.392	United Arab Emirates	5.412	Singapore	8.968	Denmark	9.52
Finland	30.132	Netherlands	5.764	United States	10.412	Australia	11.648
United Kingdom	31.944	Sweden	6.336	Netherlands	11.096	United Kingdom	12.096
Netherlands	32.092	Austria	6.424	Denmark	11.096	United States	12.32
United States	32.852	Germany	6.424	Iceland	11.248	United Arab Emirates	13.216
United Arab Emirates	33.068	Ireland	6.512	Norway	11.704	Switzerland	13.44
Switzerland	34.06	Luxembourg	6.512	Malaysia	11.856	Japan	14.784
Sweden	34.336	Denmark	6.776	Japan	11.856	Canada	14.896
Australia	34.376	Switzerland	6.864	Canada	11.932	Finland	15.008
Japan	35.352	Portugal	7.304	United Kingdom	12.236	Netherlands	15.232
Ireland	35.6	Spain	7.348	Australia	12.388	Iceland	15.232
Austria	35.764	Finland	7.524	Belgium	12.54	Sweden	15.232
Norway	36.1	Qatar	7.568	Austria	12.54	Norway	15.904
Iceland	36.556	Hungary	7.568	Sweden	12.768	Ireland	16.016
Canada	36.816	United Kingdom	7.612	Germany	12.92	Austria	16.8
Germany	36.928	Slovenia	7.612	Ireland	13.072	Germany	17.584
Belgium	38.652	Estonia	7.7	France	13.3	Qatar	19.152
Malaysia	39.86	Poland	7.92	Switzerland	13.756	Georgia	19.264

2019 Total Losses		2019 IC Losses		2019 PR Losses		2019 DC Losses	
Country	Total Losses	Country	IC Losses	Country	PR Losses	Country	DC Losses
Luxembourg	42.172	Italy	8.096	Israel	13.832	Malaysia	19.6
France	43.68	New Zealand	8.14	United Arab Emirates	14.44	Brunei Darussalam	19.936
Israel	45.008	Cyprus	8.14	Mauritius	15.2	Luxembourg	20.384
Qatar	45.036	Slovak Republic	8.272	Luxembourg	15.276	Korea, Rep.	20.496
Korea, Rep.	45.764	France	8.316	Cyprus	16.34	Chile	20.608
Estonia	46.468	Malaysia	8.404	Korea, Rep.	16.644	Belgium	20.832
Spain	49.496	Norway	8.492	Spain	16.948	Estonia	20.832
Bahrain	49.66	Korea, Rep.	8.624	Indonesia	17.86	Israel	21.056
Slovenia	49.832	Bulgaria	8.624	Estonia	17.936	Uruguay	21.392
Chile	50.092	Japan	8.712	Oman	17.936	Bahrain	21.952
Cyprus	50.576	Chile	8.888	Kenya	18.088	France	22.064
Portugal	50.676	Thailand	8.976	Thailand	18.24	Slovenia	23.296
Georgia	51.108	Lithuania	8.976	Botswana	18.24	Kazakhstan	23.296
Oman	51.956	Malta	8.976	Qatar	18.316	Namibia	23.632
Thailand	52.08	Panama	9.196	Bahrain	18.468	Oman	23.856
Botswana	52.38	Bahrain	9.24	Portugal	18.62	Rwanda	24.08
Mauritius	52.532	Romania	9.416	Jamaica	18.62	Botswana	24.416
Rwanda	53.292	Greece	9.504	Rwanda	18.696	Lithuania	24.416
Brunei Darussalam	53.796	Croatia	9.504	Slovenia	18.924	Jamaica	24.64
Poland	54.652	Botswana	9.724	Colombia	19.304	Portugal	24.752
Uruguay	54.788	Canada	9.988	Mexico	19.608	Thailand	24.864
Kazakhstan	54.796	South Africa	10.032	South Africa	20.064	Armenia	24.864
Lithuania	54.824	Iceland	10.076	Morocco	20.14	Spain	25.2
Jamaica	55.932	United States	10.12	Montenegro	20.368	Latvia	25.536
Namibia	56.304	Israel	10.12	Kazakhstan	20.368	Mauritius	25.76
Armenia	56.788	Oman	10.164	India	20.368	Colombia	25.984

2019 Total Losses		2019 IC Losses		2019 PR Losses		2019 DC Losses	
Country	**Total Losses**	**Country**	**IC Losses**	**Country**	**PR Losses**	**Country**	**DC Losses**
Colombia	56.816	Latvia	10.164	China	20.444	Poland	25.984
Latvia	56.904	Indonesia	10.252	Chile	20.596	Cyprus	26.096
Montenegro	57.024	Australia	10.34	Poland	20.748	Montenegro	26.096
Malta	57.86	Rwanda	10.516	Armenia	20.748	Malta	26.768
Italy	57.976	Philippines	10.516	Namibia	20.748	Costa Rica	27.216
Indonesia	58.24	Montenegro	10.56	Georgia	20.976	Kyrgyz Republic	27.888
Costa Rica	59.148	Peru	10.56	Costa Rica	20.976	Serbia	27.888
South Africa	59.44	Mexico	10.824	Latvia	21.204	Italy	28.448
Slovak Republic	60.284	Serbia	10.824	Italy	21.432	Greece	28.784
China	60.956	Georgia	10.868	Lithuania	21.432	China	28.896
Romania	61.544	Albania	10.912	Kuwait	21.508	Mongolia	29.12
Mexico	61.68	Costa Rica	10.956	Jordan	21.584	Jordan	29.232
Bulgaria	62.264	Bosnia and Herzegovina	11	Slovak Republic	21.66	South Africa	29.344
Jordan	62.432	Kazakhstan	11.132	Uruguay	21.736	Russian Federation	29.344
Kuwait	62.54	Armenia	11.176	Romania	21.888	Kuwait	29.68
Hungary	62.58	Zambia	11.176	Uganda	21.964	Peru	30.016
Panama	63.112	Mozambique	11.22	Malta	22.116	Indonesia	30.128
Serbia	63.716	Cambodia	11.308	Brunei Darussalam	22.42	Panama	30.128
Greece	64.28	Kuwait	11.352	Russian Federation	22.496	Albania	30.128
Russian Federation	64.512	Brunei Darussalam	11.44	Pakistan	22.572	Romania	30.24
Kyrgyz Republic	65.132	Colombia	11.528	Brazil	22.648	Slovak Republic	30.352

2019 Total Losses		2019 IC Losses		2019 PR Losses		2019 DC Losses	
Country	**Total Losses**	**Country**	**IC Losses**	**Country**	**PR Losses**	**Country**	**DC Losses**
Morocco	65.568	Mauritius	11.572	Ghana	22.724	Hungary	30.464
Kenya	65.916	China	11.616	Guinea	22.724	Bulgaria	30.688
Mongolia	66.56	Jordan	11.616	Bulgaria	22.952	Tunisia	31.024
Peru	66.872	Uruguay	11.66	Senegal	22.952	Sri Lanka	31.024
India	66.948	El Salvador	11.748	Tanzania	23.104	Mexico	31.248
Tunisia	67.228	Paraguay	11.748	Gambia, The	23.104	Philippines	31.584
Philippines	67.712	Lebanon	11.836	Tunisia	23.18	Croatia	31.808
Albania	67.868	Honduras	11.88	Panama	23.788	Morocco	31.92
Croatia	67.988	Namibia	11.924	Sri Lanka	23.788	Gambia, The	32.256
Brazil	68.952	Dominican Republic	11.924	Nepal	23.94	Ghana	32.368
Uganda	69.592	Nicaragua	11.968	Kyrgyz Republic	24.396	Bosnia and Herzegovina	33.152
Ghana	69.7	Uganda	12.012	Moldova	24.472	Kenya	33.264
Sri Lanka	69.728	Brazil	12.144	Hungary	24.548	India	33.6
Tanzania	69.764	Moldova	12.232	Mongolia	24.548	Argentina	33.712
Gambia, The	70.76	Tanzania	12.276	Lesotho	24.624	Iran, Islamic Rep.	34.048
Zambia	71.28	Argentina	12.54	Benin	24.624	Brazil	34.16
Argentina	72.092	Ukraine	12.54	Serbia	25.004	Tanzania	34.384
Dominican Republic	72.588	Jamaica	12.672	Algeria	25.156	El Salvador	34.496
El Salvador	72.692	Russian Federation	12.672	Zambia	25.384	Zambia	34.72
Moldova	73.216	Ecuador	12.76	Dominican Republic	25.384	Dominican Republic	35.28
Bosnia and Herzegovina	73.26	Kyrgyz Republic	12.848	Cameroon	25.46	Algeria	35.392
Ukraine	74.364	Guatemala	12.848	Honduras	25.536	Uganda	35.616

2019 Total Losses		2019 IC Losses		2019 PR Losses		2019 DC Losses	
Country	Total Losses	Country	IC Losses	Country	PR Losses	Country	DC Losses
Lesotho	74.48	Mongolia	12.892	Ukraine	25.536	Gabon	35.728
Senegal	74.544	Bolivia	12.936	Philippines	25.612	Nicaragua	35.728
Benin	75.572	India	12.98	Argentina	25.84	Lesotho	35.952
Honduras	75.832	Tunisia	13.024	Burundi	25.916	Ukraine	36.288
Nepal	75.964	Iran, Islamic Rep.	13.112	Greece	25.992	Ecuador	36.4
Guinea	76.172	Morocco	13.508	Burkina Faso	26.144	Bolivia	36.4
Algeria	76.608	Burkina Faso	13.64	Peru	26.296	Moldova	36.512
Guatemala	76.64	Lesotho	13.904	Ethiopia	26.296	Nepal	36.624
Iran, Islamic Rep.	76.724	Benin	14.212	El Salvador	26.448	Bangladesh	36.624
Ecuador	77.128	Madagascar	14.256	Croatia	26.676	Benin	36.736
Nicaragua	77.184	Senegal	14.52	Albania	26.828	Guatemala	36.736
Paraguay	77.688	Kenya	14.564	Mali	26.904	Senegal	37.072
Pakistan	78.068	Ghana	14.608	Guatemala	27.056	Mali	37.408
Burkina Faso	78.76	Bangladesh	14.696	Cambodia	27.664	Guinea	37.52
Lebanon	78.816	Sri Lanka	14.916	Zimbabwe	27.74	Paraguay	37.744
Bangladesh	79.136	Zimbabwe	14.96	Bangladesh	27.816	Ethiopia	37.968
Mali	79.404	Mali	15.092	Lebanon	27.892	Honduras	38.416
Ethiopia	79.576	Ethiopia	15.312	Ecuador	27.968	Mozambique	38.752
Cambodia	79.852	Gambia, The	15.4	Paraguay	28.196	Pakistan	38.864
Mozambique	79.992	Nepal	15.4	Gabon	28.424	Burundi	38.976
Gabon	80.564	Guinea	15.928	Madagascar	28.804	Burkina Faso	38.976
Cameroon	81.072	Algeria	16.06	Bosnia and Herzegovina	29.108	Lebanon	39.088
Bolivia	81.56	Gabon	16.412	Chad	29.108	Cameroon	39.2
Burundi	81.964	Cameroon	16.412	Nicaragua	29.488	Cambodia	40.88
Madagascar	87.972	Pakistan	16.632	Iran, Islamic Rep.	29.564	Madagascar	44.912

2019 Total Losses		2019 IC Losses		2019 PR Losses		2019 DC Losses	
Country	**Total Losses**	**Country**	**IC Losses**	**Country**	**PR Losses**	**Country**	**DC Losses**
Zimbabwe	88.956	Burundi	17.072	Mozambique	30.02	Zimbabwe	46.256
Chad	92.924	Chad	17.336	Bolivia	32.224	Chad	46.48

Appendix C: U.S. Federal Regulations Exhibiting Anti-Competitive Market Distortion Characteristics

Sector/ Area	Regulation	ACMD Type	Explanation
Agriculture	USDA Marketing Orders (7 CFR Part 900)	DC / PR	Potentially grants producer groups cartel-like power to restrict supply or control entry
Healthcare	Certificate of Need (CON) laws	DC	Protects existing providers; restricts entry under guise of need-based licensing; rights of IPR holders needs to be considered
Telecom	FCC Title II reclassification of broadband (47 CFR § 8)	DC / IC	Creates uncertainty and disincentives for infrastructure investment
Energy	Renewable Fuel Standards (EPA, 40 CFR Part 80)	PR / DC	Favors certain energy sources over others by regulatory fiat
Finance	Dodd-Frank "Too Big to Fail" provisions (Title I, §§ 113–121)	PR / DC	Institutionalizes large players via enhanced regulation, deterring SME entry
Transport / Rail	Surface Transportation Board legacy rate regulation	DC	Maintains old cost-plus pricing for rail monopolies; disincentivizes innovation
Alcohol Distribution	Federal tied-house rules (27 CFR Part 6)	DC / PR	Protects entrenched distributors; limits vertical integration and consumer choice
Pharmaceuticals	FDA exclusivity rules (21 CFR Parts 314 & 601)	PR / DC	Potentially could extend exclusivity beyond reasonable terms, delaying generics unnecessarily, but impact on property rights of IPR holder needs to be considered.

Sector/ Area	Regulation	ACMD Type	Explanation
Construction / Labor	Davis-Bacon Act wage mandates (29 CFR Part 5)	DC	Artificially inflates costs, protects union labor from competition
Environment	EPA New Source Review (NSR) program (40 CFR §§ 51–52)	DC / PR	Discourages modernization; entrenches old emitters
Professional Licensing	Federal guidelines on restrictive occupational licensing (29 CFR Parts 1600 and 1625)	DC / IC	Endorses entry restrictions not tied to public safety risk
Shipping	Shipping Act antitrust immunity (46 U.S. Code § 40307)	DC	Grants antitrust immunity to ocean carrier alliances
Securities	SEC ESG reporting rules (17 CFR §§ 210, 229, 240)	PR / DC	Encourages non-economic criteria that obscure market signals
Education	Title IV restrictions on for-profit colleges	DC	Entry barriers for innovative education models
Shipping	Jones Act (Merchant Marine Act)	DC	Restricts foreign competition in U.S. coastal trade
Procurement	Buy American provisions (FAR Part 25)	PR / DC	Discriminates against foreign competition
Agricultural Subsidies	Price support and crop insurance programs	PR / DC	Creates artificial pricing signals
Financial Markets	CFTC Rule Certification (17 CFR Part 40)	DC / IC	Delays innovation and favors established players
Immigration	Non-immigrant employment conditions (8 CFR § 214.2)	DC	Potentially restricts labor market flexibility
Healthcare	Foreign health worker certification (8 CFR § 212.15)	PR / DC	Potentially creates barriers to entry and limits competition
Environment	Clean Water Act § 401 Certification	DC / PR	Leads to delays and barriers for infrastructure projects
Defense Trade	ITAR Definitions (22 CFR Part 120)	DC / PR	Licensing requirements potentially limit SME participation; national

Sector/ Area	Regulation	ACMD Type	Explanation
			security implications need to be considered
Banking	International banking rules (12 CFR Part 347)	DC / PR	Restricts international expansion
Relocation	Relocation program rules (25 CFR Part 700)	DC	Imposes administrative burdens
Federal Grants	Prior written approvals for costs (2 CFR § 200.407)	DC	Limits flexibility of grant recipients
Export Controls	End-user based controls (15 CFR § 744)	DC / PR	Potentially restricts access for smaller exporters; need to consider national security issues.
Housing Finance	GSE prior product approval (12 U.S.C. § 4541)	DC / PR	Limits innovation in housing finance
Transportation / Freight	Content rules (49 CR Part 215)	DC / IC	Increases costs and imposes administrative burdens
Consumer Protection	Guides against deceptive pricing (16 CFR Part 233)	DC	Reduces flexibility, which could have adverse effects competition and increase prices
Energy	Licensing of Production and Utilization Facilities and Licenses, Certifications, and Approvals for Nuclear Power Plants (10 CFR Parts 50 and 52)	DC	Increases construction costs and imposes administrative burden causing delays
Healthcare	Premarket approval of medical devices (21 CFR Part 814)	DC / PR	Imposes administrative burden slowing down medical innovations
Healthcare	Fair health insurance premiums (45 CFR § 147)	DC	Increase premiums and reduce consumer choice
Financial Markets	Standard Disclosure Requirements (17 CFR Part 229)	DC / PR	Increase compliance costs and disclosures are sometimes redundant

Sector/ Area	Regulation	ACMD Type	Explanation
Environment	Regulation of Fuels and Fuel Additives (40 CFR Part 80)	DC	Imposes costs and limits consumer choice
Energy	Energy Conservation Program for Consumer Products and the Energy Efficiency Program for Certain Commercial and Industrial Equipment (10 CFR Parts 430 and 431)	DC	Reduce product performance
Labor	Defining and Delimiting the Exemptions for Executive, Administrative, Professional, Outside Sales, and Computer Employees (29 CFR Part 451)	DC	Imposes burden on employers and reduces flexibility in the labor market
Financial Markets	Financial Statement Disclosure (17 CFR Part 210)	DC / PR	Stifles innovation in financial reporting
Financial Markets	Fair Disclosure (17 CFR Part 243)	DC / PR	Reduces transparency
Healthcare	Outpatient Services and Payment for Part B Medical and Other Health Services (42 CFR Parts 410 and 414)	DC	Reduces healthcare accessibility
Environment	Mandatory Greenhouse Gas Reporting (40 CFR Part 98)	DC	Imposes costs and reduces innovation

Appendix D: Comprehensive EU Regulations Exhibiting Anti-Competitive Market Distortion Characteristics

Sector	Regulation	ACMD Type	Explanation
Digital Markets	Digital Markets Act (EU) 2022/1925	DC / PR	Obligates gatekeepers to avoid unfair practices; may limit competition and innovation.
Competition Law[25]	Article 102 TFEU	DC	Targets abuse of dominance which can suppress market competition.
State Aid	Articles 107–109 TFEU	PR	Subsidies that may distort markets by favoring certain firms or sectors.
Public Procurement	2014/24/EU and 2014/25/EU	DC / PR	Complex procedures may favor incumbents and deter market entrants.
Agriculture	Common Agricultural Policy (CAP)	PR / DC	Subsidies and market interventions that distort agricultural competition.
Energy	Renewable Energy Directive (2018/2001/EU)	PR / DC	Favors specific energy sources, creating barriers to alternative technologies.
Telecom	European Electronic Communications Code (2018/1972)	DC / PR	May favor incumbent operators; harmonization can impose uniformity on diverse markets.
Pharmaceuticals	Medicines Directive (2001/83/EC)	PR / DC	Complex authorization processes can delay generics and reduce competition.

[25] The manner in which competition law is implemented may itself be anti-competitive. If competition law is implemented in ways that are interventionist and lead to losses in consumer welfare, they could be damaging to competition. We believe this to be the case for the EU, the UK and China.

Sector	Regulation	ACMD Type	Explanation
Pharmaceuticals	Directive 2004/27/EC (amending 2001/83/EC)	PR	Allows generic applicants to reference originator data after the 8+2+1 exclusivity window, even when patents may still be active, creating a regulatory pathway that weakens IP enforcement.
Pharmaceuticals	French Social Security Code, Article L162-16-4	DC	Government sets reference prices for drug reimbursement. Prices not aligned with this reference are not reimbursed, limiting competition and crowding out market-based pricing.
Pharmaceuticals	Directive 89/105/EEC (Transparency Directive)	DC	Allows opaque national discretion over pricing and reimbursement, enabling non-price discrimination.
Pharmaceuticals	Germany's AMNOG Law	DC / PR	Mandates early price negotiations tied to health benefit assessments. Caps prices and retroactively enforces them, limiting firms' ability to compete on value.
Financial Services	MiFID II (2014/65/EU)	DC / PR	Imposes burdensome compliance, potentially favoring large incumbents.
Energy	Net-Zero Industry Act	DC / PR	Domestic content requirements favor EU firms; reduces global competition.
Trade / Environment	Carbon Border Adjustment Mechanism (CBAM)	PR / DC	Discriminates against foreign producers on carbon content; acts as a trade barrier.

Sector	Regulation	ACMD Type	Explanation
Energy	EU ETS Phase IV	PR / DC	Free allocations entrench incumbents; distorts carbon pricing.
Climate Policy	Fit for 55 Package	DC / PR	Complex obligations that may deter new entrants and increase compliance costs.
State Aid	Temporary Crisis and Transition Framework	PR / DC	Allows targeted subsidies favoring selected firms.
Trade / Investment	Energy Charter Treaty	PR	Grants legacy protections to incumbents, discouraging reform.
Corporate Regulation	Corporate Sustainability Reporting Directive (CSRD)	PR / DC	High compliance costs for SMEs; barriers to entry.
Trade / Raw Materials	Critical Raw Materials Act (CRMA)	PR / DC	Favors domestic suppliers; limits foreign participation.
Electricity	Electricity Market Design Reform	DC / PR	Design interventions may favor renewables over flexible technologies.
Standards / Trade	EU Technical Barriers to Trade (TBT)	DC / PR	Deviation from global norms creates unnecessary trade obstacles.
SPS / Agriculture	EU Sanitary and Phytosanitary Measures	DC / PR	Non-scientific standards create import barriers and limit competition.
SPS / Agriculture	Beef Hormone Ban	DC / PR	Blocks foreign imports despite WTO rulings; non-scientific justification.
Forestry	Regulation (EU) 2023/1115 (EU	DC / IC	Requires firms to trace and verify supply chains for deforestation-

Sector	Regulation	ACMD Type	Explanation
	Deforestation Regulation)		free sourcing with detailed geolocation data. Imposes significant compliance burdens and market entry barriers, particularly on foreign SMEs.
SPS / Biotech	GMO Restrictions	DC / PR	Strict rules on GMOs block foreign agri-tech products.
Standards	Conformity Assessment Procedures	DC / PR	Complex and costly for non-EU SMEs; limits access.
Labelling	Labelling and Packaging Rules	DC / PR	Divergence from international norms raises compliance burdens.
General Regulation	Precautionary Principle Application	DC / PR	Restrictive decisions without risk evidence; impedes innovation and trade.
Market Access	Lack of Mutual Recognition	DC / PR	Disrupts cross-border trade when other standards not accepted.

Appendix E: UK Regulations Exhibiting ACMD Characteristics[26]

Sector	Regulation	ACMD Type	Explanation
Competition Law	Competition Act 1998	DC	Prohibits anti-competitive agreements and abuse of dominance, but exemptions may favor certain firms; application and implementation of competition law may itself be an ACMD
State Aid	UK Subsidy Control Framework	PR	Post-Brexit subsidies may distort competition if not transparent or limited.
Public Procurement	Public Contracts Regulations 2015	DC / PR	Complex rules can deter SMEs and favor incumbents.
Energy	Renewable Heat Incentive (RHI) Scheme	PR / DC	Subsidies may favor certain suppliers or technologies.
Telecommunications	Ofcom Market Reviews and Remedies	DC / PR	May entrench incumbents or restrict entrants based on how remedies are applied.
Financial Services	FCA Regulatory Framework	DC / PR	Compliance costs may disadvantage small/new entrants.
Professional Services	Licensing and Certification Requirements	DC / PR	Creates barriers to entry in regulated professions.
Agriculture	Agricultural Subsidy Schemes (e.g., Basic Payment Scheme)	PR / DC	Government subsidies distort pricing and competition.

[26] It should be noted that the UK regulatory rule-book includes all EU regulation unless the UK deliberately deviated from it. Hence most if not all of the EU regulations set out in Appendix D also apply to the UK.

Appendix F: Overview of the SRB and SRB-γ Models

Introduction

The following sections explaining the Singham-Rangan-Bradley (SRB) and SRB-γ models were directly extracted from Chapters 3 and 4 of Shanker A. Singham's August 2025 book, *International Trade, Regulation and the Global Economy: The Impact of Anti-Competitive Market Distortions*.[27]

This Annex includes extracts from the book to help the reader understand the model, its genesis and refinements.

"The SRB Model

We model productivity as a function of factors which have a direct impact on productivity in a country. These factors are themselves influenced by the policy decisions of a country. The factors affecting productivity are: stock of foreign direct investment, stock of capital provided by the financial sector, health expenditures, educational attainment, fuel exports, and ore and metal exports. The policy decisions are captured using our three indicators: Property Rights Protection, Domestic Competition, and International Competition. The structure of the estimation and the results are described below.

Productivity is measured in terms of GDP per capita. We estimate a reduced-form model to determine the factors which affect productivity. These factors are themselves influenced by the scores for Domestic Competition, International Competition, and Property Rights Protection. Our productivity model is:

[27] Shanker A. Singham, *International Trade, Regulation and the Global Economy: The Impact of Anti-Competitive Market Distortions* (Routledge, 2026), https://www.routledge.com/International-Trade-Regulation-and-the-Global-Economy-The-Impact-of-Anti-Competitive-Market-Distortions/Singham/p/book/9781032944166.

$$\log\ of\ GDP\ per\ cap = \beta_0 + \beta_1 * \log\ of\ FDI\ stock + \beta_2 * Health\ Expenditures\ per\ cap + \beta_3 * Domestic\ credit\ stock + \beta_4 * School\ persistence + \beta_5 * Fuel\ exports + \beta_6 * Ore\ and\ Metal\ exports$$

The *log of FDI stock* variable is the logarithm of the stock of Foreign Direct Investment per capita in a given country in a given year[28] and represents the stock of foreign capital available to each person in a given country in a given year. The *Health expenditures per cap* variable is a dollar value per person spent on healthcare in a country in a given year and it captures the influence of overall health in a country. *Domestic credit stock* is measured as the value of credit provided in an economy by its own financial sector and is reported as a percentage of GDP. This captures the available credit in an economy from its own financial sector. *School persistence* measures the portion of the population that reports to have completed primary school and/or advanced to secondary school. This controls for the human capital stock within a country. *Fuel exports* and *Ore and Metal exports*[29] are both reported as percentages of total merchandise exports and are both controls for differences in productivity which arise from the existence of natural resources within a country.

The specification of this productivity function follows theoretically from Robert Solow's critique of productivity growth regressions[30]. Solow argues for the use of productivity as the left-hand side variable and using factors directly influencing productivity on the right-hand side. Our desire to find the impact of policies on productivity also led to the decision to specify our regression using productivity as the dependent variable because it is differences in productivity – not growth – that we are trying to capture. We want to know how ACMDs are impeding economic efficiency and, thus, we want to know what level of productivity

[28] Source: http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sRF_ActivePath=p,5&sRF_Expanded=,p,5

[29] Source for health expenditures per cap, domestic credit stock, school persistence, fuel exports, and ore and metal exports: http://databank.worldbank.org/data/home.aspx

[30] Solow, Robert M. What have we learned from a decade of empirical research on growth? Applying Growth Theory across Countries *World Bank Econ Rev (2001) 15 (2): 283-288 doi:10.1093/wber/15.2.283*

countries could reach absent all ACMDs. The path to that particular level of productivity is important and interesting, but it is a separate issue from the one we are exploring here.

Our right-hand side variables also extend from the Solow critique. The types of variables recommended to be used on the right-hand side can be classified into four categories: economic factors, institutions, social base, and physical base[31]. These categories are partially captured by the variables in our productivity function but are also covered through our ACMD category scores. For further inspiration for specifying our productivity function, we returned also to the traditional Solow model of productivity which models productivity as a function of capital and labor[32] [33]. In addition to the traditional approach, our model fully subscribes to the notion of the importance of total factor productivity. We will now discuss the factors directly affecting productivity and how the Property Rights Protection, Domestic Competition, and International Competition scores influence these factors.

Domestic Stock Credit

In our model, the effect of capital on productivity includes financial capital and natural resources. *Domestic credit stock* is a measure of the capital provided to the private sector from domestic financial institutions expressed as a percentage of GDP. The more credit

[31] *Economic factors* includes things like 'size of the government,' 'openness of the economy,' etc.; *Institutions* includes things like 'political stability,' 'democratic rights,' etc.; *Social base* includes things like 'ethnic and religious composition of the population,' etc.; *Physical base* includes things like 'location of a country,' 'climate,' 'access to sea,' etc.
Source: Islam, Nazrul. Determinants of Productivity: A Two-Stage Analysis. Working Paper Series Vol. 2005-13. International Centre for the Study of East Asian Development. October 2005.

[32] Solow, Robert M. A Contribution to the Theory of Economic Growth. The Quarterly Journal of Economics, Vol. 70, No. 1. (Feb., 1956), pp. 65-94.

[33] Total factor productivity (TFP) has been shown to be a key component of productivity as well (for example: Solow, Robert M. 1957. "Technical Change and the Aggregate Production Function." Review of Economics and Statistics39 (August), pp. 312-20.; Denison, Edward F. 1985. Trends in American Economic Growth, 1929-1982. Washington: Brookings Institution.; Jones, Charles I. 1997. "On the Evolution of the World Income Distribution." Journal of Economic Perspectives11 (Summer) pp. 19-36.). TFP is typically measured as the Solow residual, which would be the residual in our model. Our concern here is estimating the effect of removing ACMDs on GDP through the effect of reducing ACMDs on capital and labor. This is essentially the first step in the process of using the ACMD index to evaluate the impact of ACMDs. Future research should attempt to disaggregate the types of inputs (capital, labor, TFP) to find the specific way in which ACMDs reduce productivity and welfare.

available (the greater the supply), the easier it will be for firms and individuals to access that capital and then use it for productive activities. Because it is measured as a percent of GDP, the ease of access is relative to the size of the economy and, so, it is capturing the availability of credit given the size of the economy. This means that comparisons made across countries are picking up the relative ease of access to capital. Also, domestic credit available falls into the Solow critique category of 'economic factors.'

The amount of credit available domestically will depend on how well property rights are protected in a country. For example, the weaker property rights, the less certainty borrowers and lenders have that the arrangement they agree upon will be the reality once the loan is disbursed. This will make lenders less willing to make funds available because the uncertainty generated by poor property rights protection means there is greater risk in lending. In general, the less certain property rights are the less total investment there will be in an economy and the slower will be economic growth[34].

All else equal, liberalizing financial markets – and markets in general – will increase the supply of domestic credit, which leads to economic growth[35]. Improving the Domestic Competition score in a country can be thought of as liberalization (with an emphasis on liberalization in every sector and the added component of government transparency and accountability). However, the financial crises associated with liberalizing financial markets in the 1990s provide an excellent example of why improving Domestic Competition alone will not create a thriving financial sector. Countries which liberalized their financial sectors in the 1990s failed to make necessary reforms in Property Rights Protection, International

[34] Numerous studies show this relationship. A few examples include:
Barro, Robert J. Economic Growth in a Cross Section of Countries. Quarterly Journal of Economics. May, 1991.
Mauro, Paolo. Corruption and Growth. Quarterly Journal of Economics. August, 1995.
Besley, Timothy. Property Rights and Investment Incentives: Theory and Evidence from Ghana. The Journal of Political Economy. Vol. 103, Issue 5. Oct. 1995. Pp. 903-937.
Svensson, Jakob. Investment, Property Rights, and Political Stability. European Economic Review. 42. Pp. 1317-1341. 1998.

[35] See, for example: Levine, Ross, Loayza, Norman, and Beck, Thorsten. Financial Intermediation and Growth: Causality and Causes. Journal of Monetary Economics 46 (2000).
Levine, Ross and Zervos, Sara. Stock Markets, Banks, and Economic Growth. The American Economic Review. June 1998.

Competition policies, and in other Domestic Competition areas. Examples of existing issues which became detrimental once financial markets were deregulated include: unsustainable fiscal policy, defense of unsustainable exchange rate pegs, absence of meaningful oversight, and growing concern over deposit guarantees[36].

Financial institutions are tied – either directly or indirectly through other institutions – to foreign capital. If access to foreign capital markets is restricted, then domestic credit will see a reduced supply in comparison to open access. It has been shown that when a country's access to foreign capital markets is restricted it reduces the supply of domestic credit[37]. Therefore, policies which lower the International Competition score of a country will lead to a tightening of domestic credit.

Stock of FDI

Another measure of capital is *log of FDI stock*. This measure captures the amount of foreign money that has come into a country and how that money is spread cross the population on average. The stock of FDI is used instead of the change in FDI because the stock essentially tells us the amount of foreign money available to the average individual. Current flows, on the other hand, will slow down once the stock reaches a certain threshold and pick up if the stock starts to dwindle. The stock of FDI also reflects the openness of an economy. If trade is truly allowed to flow freely in and out of a country, then the FDI stock will be higher because the costs associated with investing will be reduced. FDI brings, "needed capital, skills, and know-how, either producing goods needed for the domestic market or contributing new exports."[38] Thus, FDI falls into the Solow critique category of 'economic factors.'

Property rights play a significant role in the inflow of FDI. The positive relationship between property rights and FDI is due in large part to the roles played by intellectual property rights protection and protection from expropriation. The strength of intellectual property rights

[36] Zagha, Roberto, and Gobind T. Nankani, eds. *Economic Growth in the 1990s: Learning from a Decade of Reform*. Chapter 7. World Bank Publications, 2005.
[37] Aiyar, Shekhar and Jain-Chandra, Sonali. The Domestic Credit Supply Response to International Bank Deleveraging: Is Asia Different? IMF Working Paper WP/12/258. Asia and Pacific Department. IMF. 2012.
[38] Williamson, John. "What Washington Means by Policy Reform." Chapter 2 from *Latin American Adjustment: How Much Has Happened?* Ed. John Williamson. April 1990. http://iie.com/publications/papers/paper.cfm?ResearchID=486

protection has a positive effect on FDI inflows[39] since greater intellectual property rights protection attracts investment in innovative technology[40]. Ensuring that property will not be expropriated is a necessary insurance for foreign entities considering investing in a country[41]. One of the reasons FDI is so low in developing countries when the potential returns are so high is what Lucas[42] called 'political risk.' Lucas described 'political risk' as an imperfection or absence in the mechanism for enforcing international borrowing agreements. Put differently, one explanation for the reason FDI does not flow into developing countries where returns are greatest is because this relationship is a possible equilibrium when property rights are not protected.

Domestic competition related policies also play an important role in attracting FDI. In particular, the less costly it is to start a business the greater FDI inflows – especially in developing countries[43]. Improving domestic competition regulations can even make countries less abundant in natural resources more competitive in attracting FDI[44]. Even if trade is open between two countries and FDI is technically allowed to flow freely between them, a distorted domestic market creates uncertainty for foreign firms and reduces the likelihood of investing. The exception to this pattern would, of course, be a case where the foreign firm has political connections in the domestic market which allow it to bypass the burdensome regulations[45].

[39] Adams, Samuel. Intellectual Property Rights, Investment Climate, and FDI in Developing Countries. International Business Research. Vol. 3, No. 3. July, 2010.
[40] Adams (2010) shows that patent protection had a greater, positive influence on FDI after the adoption of TRIPS, which tells us that committing to protecting intellectual property and actually increasing patent protection together attracted more FDI.
[41] Ramamurti, Ravi and Doh, John P. Rethinking Foreign Infrastructure Investment in Developing Countries. Journal of World Business. Vol. 39. 2004.
[42] Lucas, Jr., Robert E. Why Doesn't Capital Flow from Rich to Poor Countries? The American Economic Review 80 (2):92-6. May 1990.
[43] Bayraktar, Nihal. Foreign Direct Investment and Investment Climate. Procedia Economics and Finance 5 (2013) 83 – 92
[44] Nnadozie, E. and A. E. Njuguna. 2013. Investment Climate and Foreign Direct Investment in Africa. Mimeo, United Nations Economic Commission for Africa.
[45] Pan, Yigang, et al. Firms' FDI ownership the influence of government ownership and legislative connections. Journal of International Business Studies. Vol 45. 2014.

All else equal, reducing or removing trade barriers will increase FDI as firms considering investing into a particular country will now observe fewer barriers to investment. The degree to which open trade policies or free trade agreements positively influence FDI is entirely dependent on the 'investment climate' and 'political stability' in the host country[46]. Put differently the quality of Domestic Competition and Property Rights Protection in a country each combine with the quality of International Competition policy to determine the amount of FDI entering the country. If any of these factors is poor it will divert FDI to a more open, stable environment[47].

Health Expenditures

The *Health expenditures per capita* variable is a proxy for health outcomes[48]. The initial goal was to measure of health outcomes here, but an ideal single measure of health outcomes is difficult to define because there are many indications of overall health (life expectancy, infant mortality, malnutrition, etc.) and the data for each is not uniformly available. Health expenditures per person are a labor input in the original Solow context. All else equal, a

[46] Pilarska, Czeslawa and Walega, Grzegorz. Determinants of FDI Inflows to Poland, Czech Republic and Hungary in Context of Integration into European Union. The 8th International Days of Statistics and Economics, Prague, September 11-13, 2014

[47] This interdependence has been documented many times. Some examples include:
Dunning, John H. The Role of Foreign Direct Investment in Upgrading China's Competitiveness. Journal of International Business and Economics. Fall 2003.
United Nations Conference on Trade and Development's World Investment Reports (numerous reports, but the 1998 and 2012 report focus on trends in determinants of FDI and investment climate, political stability, and openness of trade are factors in each report).

[48] The literature supports the use of health expenditures as a proxy for health outcomes: Farag, Marwa et al. Health Expenditures, Health Outcomes and the Role of Good Governance. *Int J Health Care Finance Econ* 13.1 (2012): 33-52. Shows that health expenditures reduce child and infant mortality rates in low- and middle-income countries and that good governance improve this effect; Bokhari, Farasat A. S., Yunwei Gai, and Pablo Gottret. Government Health Expenditures and Health Outcomes. *Health Econ.* 16.3 (2007): 257-273. Shows that health expenditures reduce infant and maternal mortality rates across all income levels; Anyanwu, John C. and Erhijakpor, Andrew E. O. Health Expenditures and Health Outcomes in Africa. Working Paper No. 91.African Development Bank. 2007. Show that the relationship between health expenditures and child and infant mortality rates holds for Africa; Joumard, I., C. Andre and C. Nicq (2010), "Health Care Systems: Efficiency and Institutions", OECD Economics Department Working Papers, No. 769, OECD Publishing, Paris. Show that 40% of the increase in life-expectancy since 1990 for OECD countries can be attributed to increases in health expenditures.

healthier population will be more productive. Also, *Health expenditures per capita* falls into the 'economic factors' and 'social base' categories in the Solow critique context.

Property rights have a mixed effect on health expenditure. On the one hand, if property rights are protected the returns to innovation can be captured by the innovator, which increases the incentive for people to enter the field and for the government to spend money in the health sector. On the other hand, healthcare is an industry which can generally be characterized by highly inelastic demand and the necessity of large financial and time investments for innovation. High costs and inelastic demand can lead to high prices for medications, equipment, and training. In the face of such high costs, limited government resources may be diverted away[49]. However, increased protection of property rights (particularly patent protection) has a positive impact on the availability of medications across countries[50]. So, property rights protection has an ambiguous effect on health expenditures on its own.

The negative effect on health expenditures from increased property rights protection is due primarily to increased prices. The sources of relatively high prices include inelastic demand, government price controls, and other disincentives to enter a market (fixed costs of launching, potential competition from generics, etc.)[51]. However, these issues apply to developing countries. As countries develop and property rights are more strongly protected, innovation becomes more common domestically (as highlighted above). Thus, strong property rights increase health expenditures when domestic competition and open trade are promoted because countries with these characteristics are stronger economically.

Domestic competition improvements will increase the quality of health services and, therefore, the return to health expenditures. One avenue through which this effect occurs is the potential for competition over patients and health insurance subscribers. If hospitals must compete for patients and insurers must compete for clients, quality will improve relative to the case where these entities are not allowed to compete. This is true even when

[49] Cockburn, Iain M. (2009), "Intellectual Property Rights and Pharmaceuticals: Challenges and Opportunities for Economic Research", in The Economics of Intellectual Property, Chapter 5, World Intellectual Property Organization, Geneva.
[50] Berndt, Ernst R., Nathan Blalock, and Iain M. Cockburn. "Diffusion of New Drugs In The Post-TRIPS Era." *International Journal Of The Economics Of Business* 18.2 (2011): 203-224.
[51] Berndt, et al. (2011)

price is regulated; though, a higher regulated price can also lead to higher quality of services. Furthermore, when prices are determined competitively, pries may not rise compared to the regulated price. It stands to reason that competition over insurers will lead hospitals to charge lower prices – particularly if insurers are competing over clients[52].

Also, health expenditures have become linked to international trade relationships. Health services trade is a growing segment and the potential gains in health outcomes and, therefore, returns to health expenditures from trading health services openly have been documented[53]. These potential gains can make an important difference globally, as the demand for health services is predicted to grow as populations become "older, wealthier, and subject to more chronic disease."[54]

Fuel Exports and Ore and Metal Exports

The effect of natural resources on productivity is captured using *Fuel exports* and *Ore and Metal exports*. These factors clearly have a direct effect on our measure of productivity because GDP includes exports. When a large percent of manufacturing exports consists of these goods, the relative productivity of workers will be impacted. *Fuel exports* bias GDP per capita upwards because large export values can be generated with relatively few workers. Oil's share of GDP reaches almost as high as 50% for some countries[55] and oil exports can reach a value equal to over 40% of GDP[56]. *Ore and Metal exports* bias GDP per capita downwards because fairly low export values for the volume of goods produced are generated with relatively many workers[57]. Also, the types of infrastructure and other businesses which exist in high fuel exporting and high ore and mineral exporting countries

[52] Gaynor, Martin and Town, Robert J. Competition in Health Care Markets. NBER Working Paper 17208. July 2011.
[53] Waeger, Patricia. Trade in Health Services: an Analytical Framework. Kiel advanced studies working papers, No. 441. 2007.
[54] Recent Trends in U.S. Services Trade – Annual Report 2013. U.S. International Trade Commission.
[55]Regional Economic Outlook Update. Middle East and Central Asia Department. International monetary Fund. May 2014.
[56] Harb, N. (2009), Oil Exports, Non-Oil GDP, and Investment in the GCC Countries. Review of Development Economics, 13: 695–708
[57] Davis, Graham A. Trade in Mineral Resources: Background Paper to the 2010 World Trade Report.. World Trade Organization: Economic Statistics and Research Division. Staff Working Paper ESRD-2010-01. January 2010.

are different than those which exist in other countries. So, these variables capture their direct effect on productivity as well as the indirect effect generated by the relative dependence of countries on these goods. Also, *Fuel exports* and *Ore and Metal exports* fall into the categories of 'economic factors' and 'physical base.'

School Persistence

Finally, *School persistence* is our measure of human capital in a country. The more people who have reported to have completed primary school or attended some amount of secondary school the better educated the population is. The higher the level of education, the more skilled the population and, therefore, the more productive the population[58]. Also, *School persistence* falls into the 'economic factors' and 'social base' categories in the Solow critique context.

Results

The coefficients in the productivity function are estimated using an Ordinary Least Squares regression with heteroskedasticity robust standard errors. The results of this regression are as follows:

[58] Many studies have examined the relationship between education and productivity or wages. Some examples include:
Duflo, Esther. 2001. "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." *American Economic Review*, 91(4): 795-813.
Rosenzweig, M. (1995), Why are there returns to schooling, American Economic Review, 85(2), 153-8.
Ashenfelter, Orley and Alan Krueger. 1994. "Estimates of the Economic Return to Schooling from a New Sample of Twins." American Economic Review, 84(5): 1157-1173.

Table 1:

	log of gdp per capita
log of fdi stock	0.362***
	(0.0254)
health expenditure	0.000258***
	(0.0000)
domestic credit provided by financial sector	0.00197***
	(0.0006)
school persistence	0.0217***
	(0.0023)
fuel exports	0.00695***
	(0.0012)
ores and metals exports	-0.00537***
	(0.0016)
constant	3.592***
	(0.1430)
N	383
adj. R-sq	0.903
Standard errors in parentheses	
* p<0.10, ** p<0.05, *** p<0.01	

Each variable is statistically significant at the 99% confidence level and the regression as a whole explains about 90% of the variance in GDP per capita between countries. This production function captures the determinants of productivity within a country at a given time with a high degree of accuracy. The mean absolute prediction error is about 4%, which means that the above regression is roughly 96% accurate when estimating GDP per capita when given the values for the independent variables.

Next, we evaluate the effect of improving a country's score in Domestic Competition, International Competition, and/or Property Rights Protection on the stock of FDI, the stock of domestic credit, and overall health in an economy. Our model counterintuitively shows that school persistence is largely uncorrelated with our policy indicators. This is likely because school persistence can simply be mandated or prohibited by a government regardless of the quality of Domestic Competition, International Competition, or Property Rights Protection. So, we instead use school persistence as a control in our productivity function to control for differences in human capital stock. In reality, for a particular country it is likely that improving the regulatory environment may provide a new path to improve education where necessary. Because the pattern across all countries is ambiguous, we treat school persistence as a control.

Each factor influencing GDP is itself influenced by policy and these policies determine the scores a country receives for Domestic Competition, International Competition, and Property Rights Protection. Therefore, we estimate the impact of the three policy scores on the productivity factors using the following regressions:

$$\log FDI\ stock = \alpha_{fdi0} + \alpha_{fdi1} * Property\ rights + \alpha_{fdi2} * Domestic\ competition + \alpha_{fdi3} * International\ Cometition + \alpha_{fdi4} * (Property\ rights * domestic\ comp) + \alpha_{fdi5} * (Property\ rights * interntional\ comp) + \alpha_{fdi6} * (domestic\ comp * international\ comp) + \alpha_{fdi7} * (Property\ rights * domestic\ competition * international\ competition)$$

$$\text{Healh expenditure per cap} = \alpha_{health0} + \alpha_{health1} * Property\ rights + \alpha_{health2} * Domestic\ competition + \alpha_{health3} * International\ Cometition + \alpha_{health4} * (Property\ rights * domestic\ comp) + \alpha_{health5} * (Property\ rights * interntional\ comp) + \alpha_{health6} * (domestic\ comp * international\ comp) + \alpha_{health7} * (Property\ rights * domestic\ competition * international\ competition)$$

$$\text{Domestic credit stock} = \alpha_{dcs0} + \alpha_{dcs1} * Property\ rights + \alpha_{dcs2} * Domestic\ competition + \alpha_{dcs3} * International\ Cometition + \alpha_{dcs4} * (Property\ rights * domestic\ comp) + \alpha_{dcs5} * (Property\ rights * interntional\ comp) + \alpha_{dcs6} * (domestic\ comp * international\ comp) + \alpha_{dcs7} * (Property\ rights * domestic\ competition * international\ competition)$$

In each function, the only variables entering are the scores for the three policy areas. These scores enter the equations alone and multiplied with other scores. The multiplications represent the interaction effects from changing each score included in the interaction. The coefficients on the scores by themselves represent the change in the dependent variable when that particular score changes and the other scores equal zero. For the interactions, the coefficient represents the effect on the dependent variable of changing at least one score while the other score or scores remains constant – and greater than zero – or of changing all scores in the interaction. If none of the scores for a country equals zero, then the effect of changing one score on the dependent variable will be the total of the individual effect plus all the interaction effects containing the score that is changing. Changing the score for any of the policy categories will impact each dependent variable through the total effect of the interactions and the solo effect. The results of the OLS regressions above are:

Table 2:

	log FDI stock	Health expenditures	Domestic credit stock
Property Rights	-0.652	-3463.2***	-169.5***
	(0.98)	(1059.50)	(39.85)
International Competition	-3.011***	-15.02	-133.5***
	(0.71)	(611.60)	(22.51)
Domestic Competition	-4.845***	-1498.4**	-129.8***
	(0.74)	(631.30)	(20.82)
Property Rights * Domestic Competition	0.475**	792.0***	39.13***
	(0.24)	(280.00)	(9.08)
Property Rights * International Competition	0.374*	496.5**	52.55***
	(0.21)	(245.70)	(9.64)
Domestic * International	1.020***	-115.1	28.68***
	(0.16)	(147.80)	(4.91)
Property Rights * domestic * International	-0.111**	-59.81	-9.895***
	(0.05)	(58.74)	(1.89)
constant	19.17***	6186.5***	535.6***
	(2.63)	(2194.00)	(78.99)
N	807	803	774
adj. R-sq	0.634	0.623	0.493
Standard errors in parentheses			
* p<0.10	** p<0.05	*** p<0.01	

It is important to remember that the effects of changing a score in one policy are equal to the total effect from each component of the regression. So, a negative coefficient should not be

seen as a negative impact on the dependent variable from improving a score, but should be seen as reducing the positive impact of the effect from the change somewhere else in the regression. This portion of the model explains between 49.4% and 63.4% of the variation in the factors effecting productivity."[59]

"The weights used in calculating the values for Property Rights, Domestic Competition, and International Competition were found by optimizing an estimating equation using the statistical analysis program STATA. First, each of our available data points from the World Bank and the World Economic Forum's Global Competitiveness Indicator databases were divided into subcategories within the three competition policy areas (Property Rights Protection, Domestic Competition, and International Competition). Using the estimating equations of FDI stock as a function of property rights, domestic competition, and international competition; health expenditures as a function of property rights, domestic competition, and international competition; Domestic credit stock as a function of property rights, domestic competition, and international competition; school persistence as a function of property rights, domestic competition, and international competition; and GDP per capita as a function of FDI stock, domestic credit stock, health expenditures per capita, and school persistence, we determined the weights which would optimize the predictive power of the set of estimating equations[60].

We assigned a random weight to each potential indicator in each subcategory and a weight for each subcategory in each policy area. Then, the equations for FDI stock, domestic credit stock, health expenditures, and school persistence were estimated using OLS regressions. The fitted (or predicted) values for each regression were then used to estimate the regression for GDP per capita. The mean absolute prediction error was calculated as a percent of GDP per capita. Then, the program assigned a new weight to each value and subcategory, re-ran the regressions, and then predicted GDP per capita using the new fitted values. We repeated this process to minimize the distance between the mean absolute prediction error and perfect predictive power (0 prediction error). The resulting weights predicted GDP increases

[59] Shanker A. Singham, *International Trade, Regulation and the Global Economy: The Impact of Anti-Competitive Market Distortions* (Routledge, 2026), 20–28.

[60] We used this specification to calculate the weights because we were trying to maximize the correlation between the three policy areas and productivity through the factors directly affecting productivity. After the weights were determined, we revisited the model and came to the specification used here.

with 93% accuracy, using the simple regression set up, and now predict with GDP increases with 96% accuracy using the current framework."[61]

We have refined the SRB model to take into account endogeneity concerns, and have simplified it to deal with each pillar separately as follows.

"Changes to SRB Model

The issues which have been raised by the SRB model above principally related to endogeneity concerns.

Initial projections from the SRB model suggest that a reduction in ACMDs does lead to a significant increase in GDP per capita in line with the projections from the agency based model and from other sources, such as OECD and other figures on the impact of anti-competitive regulation on growth.

In order to deal with the concerns which emanate form attempting a single correlation between a single pillar score covering IC, DC and PR we then attempted to break down each pillar or force to correlate that force with GDP per capita by itself. We found this eliminated the endogeneity concern. We also greatly simplified the model specifications as below.

$$\ln(GDP\ per\ capita)_{it} = \beta_0 + \beta_1 Domestic\ Competition_{it} + \boldsymbol{X'_{it}\gamma} + v_t + \lambda_i + \epsilon_{it} \quad (1)$$

$$\ln(GDP\ per\ capita)_{it} = \beta_0 + \beta_1 Property\ Rights_{it} + \boldsymbol{X'_{it}\gamma} + v_t + \lambda_i + \epsilon_{it} \quad (2)$$

$$\ln(GDP\ per\ capita)_{it} = \beta_0 + \beta_1 International\ Competition_{it} + \boldsymbol{X'_{it}\gamma} + v_t + \lambda_i + \epsilon_{it} \quad (3)$$

We construct a panel data model of GDP as a function of each competition index, several observed control variables and an unobserved time invariant country specific effect and a country invariant time period specific effect. Below we discuss these variables.

[61] Shanker A. Singham, *International Trade, Regulation and the Global Economy: The Impact of Anti-Competitive Market Distortions* (Routledge, 2026), 30.

Variables

GDP per Capita

GDP per capita data is used in 2017 international dollar PPP terms (sourced from IMF World Economic Outlook) to enable comparison between countries. This variable in logged. This means we can interpret the coefficients in terms of percentage changes.

Modification to Indices

Central to the modelling approach is the use of the indices developed in Singham, Rangan, Bradley and Kiniry[62]. This data has been updated for each index and where publications have been discontinued, we have used alternative sources which essentially measure similar aspects of competition.

The updated sources and weights are given below.

[62] Shanker A. Singham, U. Srinivasa Rangan and Robert F. Bradley. Introduction to Anti-Competitive Market Distortions and the Distortions Index (Legatum Institute (September 2016) available at LIIntro-to-ACMDDistortionsIndex.pdf; We also refer to work done by the Centre for Business Research on the development of the SRB model; See also Anticompetitive Market Distortions: Causes, Consequences and Corrections, for OECD-World Bank Conference, May 2015, Singham, Rangan and Bradley, available at Anticompetitive Market Distortions: Causes, Consequences, and Corrections - Draft

Domestic Competition:

Sub index	Source	Weights
Labour freedom score Minimum wage Associational right Paid annual leave Notice period for redundancy dismissal Severance pay for redundancy dismissal Labour productivity Labour force participation rate Restrictions on overtime work Redundancy dismissal permitted by law	Index of Economic Freedom	25.0%
Business freedom score Access to electricity Business environment risk Regulatory quality Women's economic inclusion	Index of Economic Freedom	25.0%

Financial freedom score The extent of government regulation of financial services The degree of state intervention in banks and other financial firms through direct and indirect ownership Government influence on the allocation of credit The extent of financial and capital market development Openness to foreign competition	Index of Economic Freedom	6.3%
Electricity cost	WB Doing Business	3.1%
Electricity time	WB Doing Business	3.1%
Quality of roads 1-7	Global Competitiveness Index	3.1%
Quality of ports 1-5	Logistics Performance Index	3.1%
Mobile telephone subscription	Global Competitiveness Index	3.1%
Individuals using internet %	Global Competitiveness Index	3.1%
Government Integrity Score Perceptions of corruption Bribery risk Control of corruption	Index of Economic Freedom	25.0%

The Domestic Competition Index is a composite one made up of the sub-indices shown above. The sub-indices from the Index of Economic Freedom take into account the following factors:

- **Business Freedom**

The business freedom component measures the extent to which a country's regulatory and infrastructure environments constrain the efficient operation of businesses. The quantitative score is derived from an array of factors that affect **the ease of starting, operating, and closing a business**. The business freedom score for each country is a number between 0 and 100 with 100 indicating the freest business environment. It is based on four equally weighted sub-factors:

  - Access to electricity
  - Business environment risk
  - Regulatory quality
  - Women's economic inclusion.

- **Labour Freedom**

The labour freedom component is a quantitative measure that considers various aspects of the legal and regulatory framework of a country's labour market. The score for the labour freedom component is based on nine equally weighted sub-factors:

  - Minimum wage
  - Associational right
  - Paid annual leave
  - Notice period for redundancy dismissal
  - Severance pay for redundancy dismissal
  - Labour productivity

- Labour force participation rate
- Restrictions on overtime work
- Redundancy dismissal permitted by law

- **Financial Freedom**

Financial freedom is both an indicator of banking efficiency and a measure of independence from government control and interference in the financial sector.

To assess the overall level of financial freedom that ensures easy and effective access to financing opportunities for people and businesses in a country's economy, the Index takes account of five broad areas:

- The extent of government regulation of financial services
- The degree of state intervention in banks and other financial firms through direct and indirect ownership
- Government influence on the allocation of credit
- The extent of financial and capital market development
- Openness to foreign competition

- **Government Integrity**

The score for this component is derived by averaging scores for three equally weighted sub-factors:

- Perceptions of corruption,
- Bribery risk, and
- Control of corruption including "capture" of the state by elites and private interests

International Competition

Sub component	Source	Weights
LPI timeliness indicator	Logistics Performance Index	11%
LPI international shipment indicator	Logistics Performance Index	36%
LPI customs indicator	Logistics Performance Index	10%
Trade Freedom score	Index of Economic Freedom	29%
Freedom of foreigners to visit	Human Freedom Index	8%
Freedom to own foreign currency	Human Freedom Index	4%
Capital controls	Human Freedom Index	1%

- The LPI Timeliness indicator measures the frequency with which shipments reach consignees within schedules or expected delivery times from hardly ever to nearly always
- The International Shipment indicator measures the ease of arranging competitively priced shipments from very difficult to very easy
- The LPI Customs indicator measures the efficiency of customs and border management clearance from very low to very high
- The Trade freedom score is a composite measure of the extent of tariff and nontariff barriers that affect imports and exports of goods and services. The trade freedom score is based on two inputs, the trade-weighted average tariff rate and a qualitative evaluation of nontariff barriers (NTBs).

Property Rights

Sub component	Source	Weights
Efficiency of the judicial system		**30%**
Efficiency of the legal framework in challenging regulations	Global Competitiveness Index	80%
Efficiency of the legal framework in settling disputes	Global Competitiveness Index	20%
Intellectual property protection	**Global Competitiveness Index**	**25%**
Integrity of the legal system		**17%**
Strength of minority investor protection	WB Doing Business	53%
Legal rights index (financial)	WB Doing Business	32%
Judicial independence	Global Competitiveness Index	15%
Enforcing contracts		**15%**
Enforcing contracts (cost)	WB Doing Business	60%
Registering property (cost)	WB Doing Business	20%
Enforcing contracts (time)	WB Doing Business	15%
Registering property (time)	WB Doing Business	5%
Resolving insolvency		**13%**

Outcome (0 as piecemeal sale and 1 as going concern)	WB Doing Business	59%
Time (years)	WB Doing Business	17%
Cost (% of estate)	WB Doing Business	14%
Recovery rate (cents on dollar)	WB Doing Business	10%

- Efficiency of legal framework in challenging regulations is a score based on responses to the survey question on the ease for private businesses to challenge government actions and/or regulations through the legal system (1 = extremely difficult; 7 = extremely easy). This is sourced from the World Economic Forum, Executive Opinion Survey.
- Efficiency of legal framework in settling disputes is a score based on responses to the survey question on how efficient are the legal and judicial systems for companies in settling disputes (1 = extremely inefficient; 7 = extremely efficient). This is sourced from the World Economic Forum, Executive Opinion Survey.
- Intellectual property protection is a score based on the response to the survey question "In your country, to what extent is intellectual property protected?" (1 = not at all; 7 = to a great extent). This is sourced from the World Economic Forum, Executive Opinion Survey.
- Strength of minority investor protection measures the strength of minority shareholder protections against misuse of corporate assets by directors for their personal gain as well as shareholder rights, governance safeguards and corporate transparency requirements that reduce the risk of abuse.
- The strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending.

- Judicial independence is a score based on responses to the survey question on how independent is the judicial system from influences of the government, individuals, or companies (1 = not independent at all; 7 = entirely independent). This is sourced from the World Economic Forum, Executive Opinion Survey
- The Enforcing Contracts indicators measure the time and cost for resolving a commercial dispute through a local first-instance court
- The Registering Property indicators examine the steps, time, and cost involved in registering a property, assuming a standardized case of an entrepreneur who wanted to purchase land and a building that was already registered and free of title dispute
- The Resolving Insolvency indicators measure the time, cost and outcome of insolvency proceedings involving domestic legal entities.

Expected Years of Schooling

Expected years of schooling will proxy human capital. Human capital is emphasised to varying degrees by different strands of economic growth literature as a determinant of a country's income. We control for it as we suspect it is systematically related to our indices of interest and would hence bias any estimate. This data is taken from the World Bank.

Population (log)

The growth literature has also raised the possibility of 'scale' effects in determining a country's income. To avoid bias through the mechanism detailed above we will control for the size of the economy in terms of population. Source: IMF World Economic Outlook

Fiscal Expenditure as a Percentage of GDP

Fiscal stimulus may contemporaneously impact GDP and be systematically related to our index of choice. This variable is therefore introduced to eliminate this possible bias in estimation. This data is taken from the IMF fiscal monitor.

Other Controls Tested

The findings presented herein are robust to a range of different controls not included in the main model. These include natural resources rent, life expectancy and percentage of population of working age.

Time and Country Dummies

There are likely factors that impact a country's income that we have not included in our model. If they are systematically related to our index of interest this will bias our estimates. We can take steps to minimise this risk by introducing **time and country dummy variables**.

These will capture the time invariant country effects, λ_i, and country invariant time effects, ν_t, specified in equations (1-3). An example of a time invariant country effects might be omitted institutional factors, geographical factors or cultural factors that impact the level of income. An example of a country invariant time effect is a global trend such as oil prices. It is plausible that our indices are correlated with these factors. If this is the case, then our coefficient of interest will be biased by their omission. A country dummy variable eliminates this source of bias as we only attribute variance in income to varying factors inside a country that cannot be explained by global trends.

The drawback of this is that these dummy variables will 'soak up' large amounts of the variation in the sample which makes estimation harder. Hence estimation has been carried out without dummy variables, with just time dummy variables, with just country dummy variables and with both dummy variables. This lets us look at both sides of this trade off bias/variance trade off in estimation. "[63]

We included final refinements to the model as below.

"SRB-γ Model Final Refinements

To test the hypotheses, we employ the Ordinary Least Squares estimation method. In the econometric model, the dependent variables are the natural logarithm of country annual per capital income. These models test the hypotheses that property rights, domestic

[63] Shanker A. Singham, *International Trade, Regulation and the Global Economy: The Impact of Anti-Competitive Market Distortions* (Routledge, 2026), 41–47.

competition, and international competition are positively related to national per capita income. Depending on the regression model specifications, as controls we are including country fixed effects, year fixed effects, and within-country time-varying variables. In all regression models we cluster the standard errors by country.[64]

The results for property rights, international competition and domestic competition are reported in tables 1, 2 and 3 below, respectively. The results indicate that an increase in property rights is positively associated with GDP per capita (table 1). As is the case for all three tables, the first column does not control for government or education, the second column controls for government, the third column controls for education, and the last column controls for government and education. The coefficients on government and education however are not statistically significant and our preferred specification is column 1. Specifically, a one unit increase in the property rights index is associated with approximately 6.6% increase in GDP per capita and the results are highly significant. The R-squared given in the table is based on the within transformation, that is, the model accounts for approximately 51 percent of the variance within the panel units (the countries.

The results for the international competition index and domestic competition index are reported in table 2 and 3, respectively. Our preferred specification is the first column for these models as well. Specifically, a one unit increase in the international competition index is associated with a 2.6 percent increase in GDP per capita, although the results are not statistically significant (table 2). Finally, a one unit increase in the domestic competition index is associated with an 11.4 percent increase in GDP per capita and the results are highly significant (table 3).

The variables and subvariables used are available at 65534d5cc6f65dfbfcca6752_FINAL-Growth-Budget-2023-DIGITAL-SPREAD-1.pdf (growth-commission.com) at pp72=83. The datasets derived from the analysis of variables is set out in the attached excel spreadsheets.

Table 1. Models for Property Rights Index				
	lngdppc	lngdppc	lngdppc	lngdppc

[64] The SRB- γ results section was contributed by our collaborators on this work, Christine McDaniel and Tom Stratmann, of the Mercatus Centre, and George Mason University respectively.

Property rights	0.066	**	0.057	**	0.068	**	0.058	**
	(0.019)		(0.020)		(0.019)		(0.020)	
year								
2011	0.025	**	0.023	**	0.023	**	0.020	**
	(0.004)		(0.005)		(0.005)		(0.005)	
2012	0.042	**	0.039	**	0.039	**	0.036	**
	(0.006)		(0.006)		(0.006)		(0.006)	
2013	0.062	**	0.058	**	0.056	**	0.052	**
	(0.008)		(0.008)		(0.009)		(0.008)	
2014	0.085	**	0.080	**	0.078	**	0.073	**
	(0.009)		(0.009)		(0.010)		(0.009)	
2015	0.101	**	0.097	**	0.093	**	0.089	**
	(0.010)		(0.010)		(0.012)		(0.011)	
2016	0.113	**	0.110	**	0.104	**	0.101	**
	(0.011)		(0.012)		(0.013)		(0.012)	
2017	0.139	**	0.135	**	0.129	**	0.125	**
	(0.013)		(0.013)		(0.015)		(0.014)	
2018	0.161	**	0.157	**	0.150	**	0.146	**
	(0.014)		(0.014)		(0.016)		(0.015)	
2019	0.174	**	0.172	**	0.162	**	0.160	**
	(0.015)		(0.015)		(0.018)		(0.017)	
Gov expenditure (% of GDP)			-0.003				-0.003	
			(0.002)				(0.002)	
Expected Years of Schooling					0.012		0.012	
					(0.010)		(0.010)	
Intercept	8.477	**	8.604	**	8.296	**	8.433	**
	(0.079)		(0.120)		(0.155)		(0.171)	
R-squared	0.5082		0.5233		0.5091		0.5239	

Prob > F	0.0000		0.0000		0.0000		0.0000	
Number of observations	1219		1116		1209		1106	
** p<.01, * p<.05.								

Table 2. Models for International Competition Index								
	lngdppc		lngdppc		lngdppc		lngdppc	
International Competition	0.026		0.016		0.026		0.016	
	(0.022)		(0.022)		(0.022)		(0.022)	
year								
2011	0.021	**	0.018	**	0.020	**	0.017	**
	(0.005)		(0.005)		(0.005)		(0.005)	
2012	0.039	**	0.035	**	0.037	**	0.033	**
	(0.007)		(0.006)		(0.007)		(0.007)	
2013	0.059	**	0.055	**	0.055	**	0.050	**
	(0.008)		(0.008)		(0.009)		(0.008)	
2014	0.075	**	0.071	**	0.070	**	0.066	**
	(0.010)		(0.009)		(0.011)		(0.010)	
2015	0.091	**	0.087	**	0.085	**	0.081	**
	(0.011)		(0.010)		(0.013)		(0.011)	
2016	0.111	**	0.108	**	0.104	**	0.101	**
	(0.012)		(0.011)		(0.014)		(0.012)	
2017	0.135	**	0.132	**	0.128	**	0.124	**
	(0.014)		(0.013)		(0.016)		(0.014)	
2018	0.159	**	0.155	**	0.151	**	0.146	**
	(0.015)		(0.014)		(0.017)		(0.015)	
2019	0.174	**	0.171	**	0.165	**	0.162	**
	(0.016)		(0.015)		(0.018)		(0.017)	
Gov expenditure (% of GDP)			-0.003				-0.003	

			(0.003)				(0.003)	
Expected Years of Schooling					0.010		0.010	
					(0.011)		(0.011)	
Intercept	8.674	**	8.811	**	8.532	**	8.670	**
	(0.096)		(0.146)		(0.180)		(0.195)	
R-squared	0.4889		0.5047		0.4882		0.5038	
Prob > F	0.0000		0.0000		0.000		0.000	
Number of observations	1154		1057		1144		1047	
** p<.01, * p<.05								

Table 3. Models for Domestic Competition Index								
	lngdppc		lngdppc		lngdppc		lngdppc	
Domestic Competition	0.114	**	0.099	**	0.112	**	0.097	**
	(0.030)		(0.029)		(0.030)		(0.030)	
year								
2011	0.025	**	0.022	**	0.023	**	0.021	**
	(0.005)		(0.005)		(0.005)		(0.005)	
2012	0.040	**	0.038	**	0.038	**	0.035	**
	(0.006)		(0.006)		(0.006)		(0.006)	
2013	0.063	**	0.059	**	0.060	**	0.055	**
	(0.008)		(0.007)		(0.008)		(0.008)	
2014	0.080	**	0.076	**	0.076	**	0.070	**
	(0.009)		(0.008)		(0.010)		(0.009)	
2015	0.093	**	0.089	**	0.087	**	0.083	**
	(0.010)		(0.009)		(0.012)		(0.010)	
2016	0.114	**	0.110	**	0.108	**	0.103	**

	(0.011)		(0.010)		(0.013)		(0.012)	
2017	0.141	**	0.136	**	0.134	**	0.129	**
	(0.012)		(0.012)		(0.014)		(0.013)	
2018	0.166	**	0.161	**	0.159	**	0.153	**
	(0.013)		(0.013)		(0.016)		(0.015)	
2019	0.178	**	0.174	**	0.169	**	0.165	**
	(0.014)		(0.014)		(0.017)		(0.016)	
Gov expenditure (% of GDP)			-0.003				-0.003	
			(0.002)				(0.002)	
Expected Years of Schooling					0.009		0.009	
					(0.010)		(0.010)	
Intercept	8.241	**	8.409	**	8.121	**	8.288	**
	(0.134)		(0.150)		(0.188)		(0.187)	
R-squared	0.5213		0.5339		0.5205		0.5330	
Prob > F	0.0000		0.0000		0.0000		0.0000	
Number of observations	1219		1116		1209		1106	
** p<.01, * p<.05								

Correlation with GDP per capita minus government spending

To stimulate economic growth, policy must stimulate private economic activity. To more closely correlate changes in the IC, DC and PR fields with this stimulation of private economic activity, we have stripped out government spending from the GDP per capita numbers.

We have also applied the model stripping out the government spending element of GDP per capita. This is appropriate as we are trying to ascertain the impact of changing the field scores of IC, DC and PR on the generation of actual private sector economic activity. We acknowledge that as private sector economic activity increases, so does tax revenue and

the potential for increased government spending. For the SRB-γ model we see the following results.

Results

The summary statistics in Table 1 show that the logarithm of GDP per capita is 8.84, which translates into about $6,900 real 2017 dollars when using a purchasing price parity deflator. When government spending is removed from GDP per capita, the logarithm falls to 8.45, or about $4,675 in real 2017 dollars. Looking at the non-government share of GDP per capita can be useful in this context because it focuses on the economic activity driven by private businesses rather than government spending. The means of the domestic competition, international competition index and the property rights indices range between 4.1 and 4.5, while the theoretical maximum for each index is 7.

Table 2 shows the regression results from estimating the effects of each of the three indices. All specifications in Table 2 include country effects (indicators) and year effects (indicators). Formally, the regression equation estimated is $y_{it} = \beta_{it} X_{it} + \mu_i + \lambda_t + \varepsilon_{it}$ where the subscript *i* indicates the country, *t* the year, *y* stands for GDP per capita, X is one of our three indexes, μ represents the indicator variable included for each country, λ the indicators included for each year, and ε is the error term.

In this regression model, year indicators adjust the estimates to take account of common annual shocks hitting all countries, such as a global financial crisis. Country indicators adjust our estimates for the differences in national institutions, political regimes, and cultures, for example, that are constant and thus do not change between 2010 and 2019. Therefore, any country-level time-constant variables are accounted for in our model, and the estimated coefficients on our three indices cannot be explained by underlying country characteristics, such as their institutions, political regimes, or cultures that did not change between 2010 and 2019, which is our period of analysis. The fact that we are studying a relatively short period of 10 years makes the country indicators quite powerful in this modeling approach, as the concern about omitted time-varying country-level variables becomes less prominent for a shorter period, enhancing our confidence that we are estimating causal effects.

In Table 2, the first three columns show the regression estimates on the indices when the natural logarithm of the country's GDP per capita is the dependent variable. The last three columns show their effect on GDP per capita when government spending is removed from the GDP per capita measure.

Overall, the estimated coefficients on all three indices are positive. The domestic competition and property rights index are statistically significant in the first three columns of Table 2. In columns 4 to 5, all three estimates are statistically significant when filtering out government spending from the GDP per capita measure.

In Table 2, column (4), the estimate for the domestic competition variable is 0.112, indicating that a one-point increase in the domestic competition index is associated with an 11 percent increase in GDP per capita. The estimates on international competition in column 5 indicate that a one-point increase in the international competition index is associated with a 4.4 percent increase in GDP per capita; and a one-point increase in the property rights index is associated with a 7.3 percent increase.

Interestingly, the estimated coefficients on international competition and the property rights index are larger in magnitude when filtering out government spending from the GDP per capita measure, as done in the last three columns of Table 2. The correlation between GDP per capita minus government spending and the IC pillar is more robust than GDP per capita inclusive of government spending. We acknowledge that government spending and private sector growth are somewhat correlatable as the more tax receipts are collected from this enhanced private activity the more governments can spend, but we do not think this is problematic because there is also an argument that especially in developed countries government spending and private tax receipts are somewhat decoupled due to fiscal distortions (the fiat money system itself being a primary one).

Overall, the findings are consistent with the hypothesis that greater competition—both domestic and international—and more robust property rights facilitate higher GDP per capita because they increase citizens' incentive to engage in productive activities.

To examine how sensitive our results are to alternative regression model specifications, Table 3 includes the time-varying control variable, which measures the annual country's educational attainment and population size. Due to missing values for educational

achievement and country population size, the number of observations and countries used in Table 3 differ from those in Table 2.

Table 3 shows that the size and statistical significance of the estimates across specifications are similar to those in Table 2, including the estimates that adjust for government spending. All point estimates on the indices have a positive sign. As in Table 2, the estimates in Table 3 for the international competition index and the property rights index are larger when government spending is removed from GDP per capita.

Table 1: Summary Statistics

	Mean	Standard Deviation	Minimum Value	Maximum Value	Sample Size
Log of GDP per Capita	8.84	1.43	5.60	11.59	1,219
Log of GDP per Capita without Government Spending	8.45	1.33	5.24	11.08	1,219
Domestic Competition Index	4.48	0.80	2.62	6.52	1,227
International Competition Index	4.47	0.69	2.80	6.10	1,159
Property Rights Index	4.14	0.80	2.70	6.20	1,227
Average Country Educational Attainment in Years	13.88	2.89	6.62	23.09	1,217
Log of the Country Working Age Population	4.88	1.58	1.10	9.55	1,224

Notes: Summary statistics for data used in the regressions. The unit of observation is a country's annual statistic between 2010 to 2019. The sample size for variables varies due to data availability. Depending on the regression specification and data availability, the maximum number of countries included in the regression models is 132.

Table 2: Effects of Domestic and International Competition and Property Rights on Country GDP per Capita: Controlling for County and Year Effects

	GDP Per Capita			GDP Per Capita without Government Spending		
	(1)	(2)	(3)	(4)	(5)	(6)
Domestic Competition Index	0.114*** (0.030)			0.112*** (0.033)		
International Competition Index		0.024 (0.022)			0.044* (0.023)	
Property Rights Index			0.066***			0.073***
			(0.019)			(0.025)
Observations	1,219	1,154	1,219	1,219	1,154	1,219
R-squared	0.521	0.489	0.508	0.456	0.431	0.449
Number of countries	132	123	132	132	123	132

Notes: Estimated standard errors are in parentheses, below the point estimates. In Columns (1) to (3), the dependent variable is the annual 2010 to 2019 GDP per capita, and in Columns (4) to (6), the dependent variable is the annual 2010 to 2019 GDP per capita minus government spending per capita. Regressions include country and year fixed effects,

*educational attainment, and the natural log of the country's population. The number of observations across specifications differs due to missing observations for some index values. Standard errors are clustered by country. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

Table 3: Effects of Domestic and International Competition and Property Rights on Country GDP per Capita: Controlling for County and Year Effects, and Educational Attainment and Working Age Population

	GDP Per Capita			GDP Per Capita without Government Spending		
	(1)	(2)	(3)	(4)	(5)	(6)
Domestic Competition Index	0.109***			0.108***		
	(0.029)			(0.031)		
International Competition Index		0.023 (0.020)			0.044** (0.022)	
Property Rights Index			0.065***			0.070***
			(0.019)			(0.023)
Observations	1,206	1,141	1,206	1,206	1,141	1,206
R-squared	0.559	0.530	0.549	0.524	0.504	0.517
Number of countries	130	121	130	130	121	130

Notes: Estimated standard errors are in parentheses, below the point estimates. In Columns (1) to (3), the dependent variable is the annual 2010 to 2019 GDP per capita, and in Columns (4) to (6), the dependent variable is the annual 2010 to 2019 GDP per capita minus government spending per capita. Regressions include country and year fixed effects,

*educational attainment, and the natural log of the country's working-age population. The number of observations across specifications differs due to missing observations for some index values or missing values for educational attainment, as well as the natural log of the country's working-age population. Standard errors are clustered by country. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*

We note that without government spending a unit increase in IC leads to an increase in 4.4% GDP per capita. A unit increase in DC score leads to a 11.2% increase in GDP per capita. A unit increase in PR pillar score leads to an increase of 7.3% GDP per capita.

The IC and PR scores have increased when government spending is removed, and the DC score impact has remained similar. It is still clear that the DC score is the biggest mover of the GDP per capita result.

This is certainly counter intuitive to policymaking where there has been significant emphasis on international trade policy, and little focus on making domestic regulatory frameworks more pro-competitive. Policymakers should make efforts to improve all three pillar scores, as this can unleash significant wealth into their economies.

It is also important to note that these are effects which consider countries in isolation and do not account for their interactive effects on each other. We will look at other tools to develop these. "[65]

[65] Shanker A. Singham, *International Trade, Regulation and the Global Economy: The Impact of Anti-Competitive Market Distortions* (Routledge, 2026), 47–56.