# Aff Card Doc---DRR---Round 5

## Lobbying DA

### Aff Solves AI Innovation---2AC

#### Schedule F chills AI innovation---government controls the internal link to modernization efforts.

Nihil 25 [Caroline Nihill; BA in Media Arts from UNC, reporter for FedScoop, 1-27-2025, "Government won’t ‘get the same quality of folks’ for tech work under Trump policy, experts say", FedScoop, https://fedscoop.com/opm-guidance-schedule-policy-career-schedule-f-trump-order/]

The Trump administration’s move to resurrect the federal worker classification formerly known as Schedule F is raising alarm bells among sources familiar with the inner workings of the Office of Personnel Management, particularly with regard to the chilling effect it could have on the recruitment of tech talent.

In an executive order issued last week and guidance from OPM released Monday, the Trump administration outlined a revitalization of Schedule F, now referred to as Schedule Policy/Career, which turns civil servants who are in policy-influencing decisions into “at-will” employees. Monday’s guidance echoes President Donald Trump’s executive order by establishing that OPM will provide additional categories of positions that executive departments and agencies should “consider recommending for Schedule Policy/Career.”

An OPM final rule in April that looked to reinforce protections and merit system principles for career civil servants was partially nullified in the new guidance. Additionally, the guidance made clear that the executive order “broadly directs OPM to rescind these regulatory amendments.”

One source familiar with the inner workings of OPM said in an interview with FedScoop that it’s possible that the “stability” of government work and “the mission” drive that comes with it all “could be impacted.”

“It’d be a position that pays less without all these benefits,” the source continued. “I think there’s a clear potential connection between this policy and a reduction in appeal for a job like that.”

For workers with IT, cybersecurity, artificial intelligence, or other technology-related backgrounds, the impact could be especially pronounced.

“As we’ve seen, the tech world has been quite interested in the federal government over the past few weeks and months,” the source said. “Unclear how these jobs will develop, whether they’re going to be retained or whether they’re going to be contracted out.”

Recruitment

Without a mission drive or the stability of a federal job, the source said it’s likely that it will be more challenging for the federal government to recruit the best talent into agency work.

“The types of people who will be coming in may not be the best of the pool, because you’re going to have to compromise by saying … ‘jump into this for lower pay,’” the source said. “You’re not going to get the same quality of folks if you don’t have … the mission drive or the sense of a nonpartisan, stable workplace.”

A different source familiar with the inner workings of OPM stated clearly that the Schedule Policy/Career directive is another avenue where the Trump administration could take the broadest view of flexibilities and authorities.

The source directed attention to the federal government’s recent efforts to hire chief artificial intelligence officers under the Biden administration’s AI executive order. That could fit into the new schedule determination for civil servants.

Jenny Mattingley, Partnership for Public Service’s vice president of government affairs, said the language in Trump’s executive order makes it unclear to whom the classification directly applies. But the creation of Schedule Policy/Career, she said, is clearly a way to create more politically appointed workers.

“We pointed out a number of times that when you start removing protections, you’re basically creating another category of political appointees who come and go at the pleasure of the president,” Mattingley said.

She continued: “It makes it really hard to focus on long term. When you think about modernization efforts, when you think about trying to scale and use AI, those are long term, [and] they need longer-term investments. … Creating more of a swirl with people turning over does impact, I think, technologists in the work they’re trying to do, because it’s not a one-year project, necessarily.”

### AI Innovation !---1NC

#### U.S. AI lead prevents decisive Chinese military dominance. Extinction.

Aschenbrenner 24 – Research Affiliate at the Global Priorities Institute at Oxford University, Emergent Ventures Grantee at the Mercatus Center at George Mason University.  
Leopold Aschenbrenner, “IIId. The Free World Must Prevail”, June 2024, Situational Awareness: The Decade Ahead, https://situational-awareness.ai/the-free-world-must-prevail/#Whoever\_leads\_on\_superintelligence\_will\_have\_a\_decisive\_military\_advantage

Superintelligence will be the most powerful technology—and most powerful weapon—mankind has ever developed. It will give a decisive military advantage, perhaps comparable only with nuclear weapons. Authoritarians could use superintelligence for world conquest, and to enforce total control internally. Rogue states could use it to threaten annihilation. And though many count them out, once the CCP wakes up to AGI it has a clear path to being competitive (at least until and unless we drastically improve US AI lab security).

Every month of lead will matter for safety too. We face the greatest risks if we are locked in a tight race, democratic allies and authoritarian competitors each racing through the already-precarious intelligence explosion at breakneck pace—forced to throw any caution by the wayside, fearing the other getting superintelligence first. Only if we preserve a healthy lead of democratic allies will we have the margin of error for navigating the extraordinarily volatile and dangerous period around the emergence of superintelligence. And only American leadership is a realistic path to developing a nonproliferation regime to avert the risks of self-destruction superintelligence will unfold.

Our generation too easily takes for granted that we live in peace and freedom. And those who herald the age of AGI in SF too often ignore the elephant in the room: superintelligence is a matter of national security, and the United States must win.

Whoever leads on superintelligence will have a decisive military advantage

Superintelligence is not just any other technology—hypersonic missiles, stealth, and so on—where US and liberal democracies’ leadership is highly desirable, but not strictly necessary. The military balance of power can be kept if the US falls behind on one or a couple such technologies; these technologies matter a great deal, but can be outweighed by advantages in other areas.

The advent of superintelligence will put us in a situation unseen since the advent of the atomic era: those who have it will wield complete dominance over those who don’t.

I’ve previously discussed the vast power of superintelligence. It’ll mean having billions of automated scientists and engineers and technicians, each much smarter than the smartest human scientists, furiously inventing new technologies, day and night. The acceleration in scientific and technological development will be extraordinary. As superintelligence is applied to R&D in military technology, we could quickly go through decades of military technological progress.

The Gulf War, or: What a few-decades-worth of technological lead implies for military power

The Gulf War provides a helpful illustration of how a 20-30 year lead in military technology can be decisive. At the time, Iraq commanded the fourth-largest army in the world. In terms of numbers (troops, tanks, artillery), the US-led coalition barely matched (or was outmatched) by the Iraqis, all while the Iraqis had had ample time to entrench their defenses (a situation that would normally require a 3:1, or 5:1, advantage in military manpower to dislocate).

But the US-led coalition obliterated the Iraqi army in a merely 100-hour ground war. Coalition dead numbered a mere 292, compared to 20k-50k Iraqi dead and hundreds of thousands of others wounded or captured. The Coalition lost a mere 31 tanks, compared to the destruction of over 3,000 Iraqi tanks.

The difference in technology wasn’t godlike or unfathomable, but it was utterly and completely decisive: guided and smart munitions, early versions of stealth, better sensors, better tank scopes (to see farther in the night and in dust storms), better fighter jets, an advantage in reconnaissance, and so on.

(For a more recent example, recall Iran launching a massive attack of 300 missiles at Israel, “99%” of which were intercepted by superior Israel, US, and allied missile defense.)

A lead of a year or two or three on superintelligence could mean as utterly decisive a military advantage as the US coalition had against Iraq in the Gulf War. A complete reshaping of the military balance of power will be on the line.

Imagine if we had gone through the military technological developments of the 20th century in less than a decade. We’d have gone from horses and rifles and trenches, to modern tank armies, in a couple years; to armadas of supersonic fighter planes and nuclear weapons and ICBMs a couple years after that; to stealth and precision that can knock out an enemy before they even know you’re there another couple years after that.

That is the situation we will face with the advent of superintelligence: the military technological advances of a century compressed to less than a decade. We’ll see superhuman hacking that can cripple much of an adversary’s military force, roboarmies and autonomous drone swarms, but more importantly completely new paradigms we can’t yet begin to imagine, and the inventions of new WMDs with thousandfold increases in destructive power (and new WMD defenses too, like impenetrable missile defense, that rapidly and repeatedly upend deterrence equilibria).

And it wouldn’t just be technological progress. As we solve robotics, labor will become fully automated, enabling a broader industrial and economic explosion, too. It is plausible growth rates could go into the 10s of percent a year; within at most a decade, the GDP of those with the lead would trounce those behind. Rapidly multiplying robot factories would mean not only a drastic technological edge, but also production capacity to dominate in pure materiel. Think millions of missile interceptors; billions of drones; and so on.

Of course, we don’t know the limits of science and the many frictions that could slow things down. But no godlike advances are necessary for a decisive military advantage. And a billion superintelligent scientists will be able to do a lot. It seems clear that within a matter of years, pre-superintelligence militaries would become hopelessly outclassed.

The military advantage would be decisive even against nuclear deterrents

To be even clearer: it seems likely the advantage conferred by superintelligence would be decisive enough even to preemptively take out an adversary’s nuclear deterrent. Improved sensor networks and analysis could locate even the quietest current nuclear submarines (similarly for mobile missile launchers). Millions or billions of mouse-sized autonomous drones, with advances in stealth, could infiltrate behind enemy lines and then surreptitiously locate, sabotage, and decapitate the adversary’s nuclear forces. Improved sensors, targeting, and so on could dramatically improve missile defense (similar to, say, the Iran vs. Israel example above); moreover, if there is an industrial explosion, robot factories could churn out thousands of interceptors for each opposing missile. And all of this is without even considering completely new scientific and technological paradigms (e.g., remotely deactivating all the nukes).

It would simply be no contest. And not just no contest in the nuclear sense of “we could mutually destroy each other,” but no contest in terms of being able to obliterate the military power of a rival without taking significant casualties. A couple years of lead on superintelligence would mean complete dominance.

If there is a rapid intelligence explosion, it’s plausible a lead of mere months could be decisive: months could mean the difference between roughly human-level AI systems and substantially superhuman AI systems. Perhaps possessing those initial superintelligences alone, even before being broadly deployed, would be enough for a decisive advantage, e.g. via superhuman hacking abilities that could shut down pre-superintelligence militaries, more limited drone swarms that threaten instant death for every opposing leader, official, and their families, and advanced bioweapons developed with AlphaFold-style simulation that could target specific ethnic groups, e.g. anybody but Han Chinese (or simply withhold the cure from the adversary).

China can be competitive

Many seem complacent about China and AGI. The chip export controls have neutered them, and the leading AI labs are in the US and the UK—so we don’t have much to worry about, right? Chinese LLMs are fine—they are definitely capable of training large models!—but they are at best comparable to the second tier of US labs. And even Chinese models are often mere ripoffs of American open source releases (for example, the Yi-34B architecture seems to have essentially the Llama2 architecture, with merely a few lines of code changed). Chinese deep learning used to be more important than it is today (for example Baidu published one of the first modern scaling law papers), and while China publishes more papers in AI than the US, they don’t seem to have driven any of the key breakthroughs in recent years.

That’s all merely a prelude, however. If and when the CCP wakes up to AGI, we should expect extraordinary efforts on the part of the CCP to compete. And I think there’s a pretty clear path for China to be in the game: outbuild the US and steal the algorithms.

1. Compute

1a. Chips: China now seems to have demonstrated the ability to manufacture 7nm chips. While going beyond 7nm will be difficult (requiring EUV), 7nm is enough! For reference, 7nm is what Nvidia A100s used. The indigenous Huawei Ascend 910B, based on the SMIC 7nm platform, seems to only be ~2-3x worse on performance/$ than an equivalent Nvidia chip would be.

The yield of SMIC’s 7nm production and the general maturity of Chinese abilities here is debated, and a critical open question is in what quantities they could produce these 7nm chips. Still, it seems like there’s at least a very reasonable chance they’ll be able to do this at large scale in a few years.

Most of the gains in AI chips have come from improved chip design adapting them for AI use cases (and China likely already steals Nvidia chip designs from the Taiwan supply chain). 7nm vs. 3nm or 2nm, and their general fab immaturity, probably makes things more expensive for China. But that seems by no means fatal; you can make very good AI chips on top of a 7nm process. I wouldn’t have high confidence by this point, for example, that they couldn’t just spend a bit more and get ample compute for the $100B+ and trillion-dollar training clusters in a few years.

1b. Outbuilding the US: The binding constraint on the largest training clusters won’t be chips, but industrial mobilization—perhaps most of all the 100GW of power for the trillion-dollar cluster. But if there’s one thing China can do better than the US it’s building stuff.

In the last decade, China has roughly built as much new electricity capacity as the entire US capacity (while US capacity has remained basically flat). In the US, these things get stuck in environmental review, permitting, and regulation for a decade first. It thus seems quite plausible that China will be able to simply outbuild the US on the largest training clusters.

2. Algorithms

As discussed extensively in Counting the OOMs, scaling compute is only part of the story: algorithmic advances probably contribute at least half of AI progress. We’re developing the key algorithmic breakthroughs for AGI right now (essentially the EUV of algorithms because of the data wall).

By default, I expect Western labs to be well ahead; they have much of the key talent, and in recent years have developed all of the key breakthroughs. The size of the advantage may well be equivalent to a 10x (or even 100x) bigger cluster in a few years; this would provide the United States with a reasonably comfortable lead.

And yet, on the current course, we will completely surrender this advantage: as discussed extensively in the security section, the current state of security essentially makes it trivial for China to infiltrate American labs. And so, unless we lock down the labs very soon, I expect China to be able to simply steal the key algorithmic ingredients for AGI, and match US capabilities.

(Even worse, if we don’t improve security, there’s an even more salient path for China to compete. They won’t even need to train their own AGI: they’ll just be able to steal the AGI weights directly. Once they’ve stolen a copy of the automated AI researcher, they’ll be off to the races, and can launch their own intelligence explosion. If they’re willing to apply less caution—both good caution, and unreasonable regulation and delay—than the US, they could race through the intelligence explosion more quickly, outrunning us to superintelligence.)

To date, US tech companies have made a much bigger bet on AI and scaling than any Chinese efforts; consequently, we are well ahead. But counting out China now is a bit like counting out Google in the AI race when ChatGPT came out in late 2022. Google hadn’t yet focused their efforts in an intense AI bet, and it looked as though OpenAI was far ahead—but once Google woke up, a year and half later, they are putting up a very serious fight. China, too, has a clear path to putting up a very serious fight. If and when the CCP mobilizes in the race to AGI, the picture could start looking very different.

Perhaps the Chinese government will be incompetent; perhaps they decide AI threatens the CCP and impose stifling regulation. But I wouldn’t count on it.

I, for one, think we need to operate under the assumption that we will face a full-throated Chinese AGI effort. As every year we get dramatic leaps in AI capability, as we start seeing early automation of software engineers, as AI revenue explodes and we start seeing $10T valuations and trillion-dollar cluster buildouts, as a broader consensus starts to form that we are on the cusp of AGI—the CCP will take note. Much as I expect these leaps to wake up the USG to AGI, I would expect it to wake up the CCP to AGI—and to wake up to what being behind on AGI would mean for their national power.

They will be a formidable adversary.

The authoritarian peril

A dictator who wields the power of superintelligence would command concentrated power unlike any we’ve ever seen. In addition to being able to impose their will on other countries, they could enshrine their rule internally. Millions of AI-controlled robotic law enforcement agents could police their populace; mass surveillance would be hypercharged; dictator-loyal AIs could individually assess every citizen for dissent, with advanced near-perfect lie detection rooting out any disloyalty.

Most importantly, the robotic military and police force could be wholly controlled by a single political leader, and programmed to be perfectly obedient—no more risk of coups or popular rebellions.

Whereas past dictatorships were never permanent, superintelligence could eliminate basically all historical threats to a dictator’s rule and lock in their power (cf value lock-in). If the CCP gets this power, they could enforce the Party’s conception of “truth” totally and completely.

To be clear, I don’t just worry about dictators getting superintelligence because “our values are better.” I believe in freedom and democracy, strongly, because I don’t know what the right values are. In the long arc of history, “time has upset many fighting faiths.” I believe we should place our faith in mechanisms of error correction, experimentation, competition, and adaption.

Superintelligence will give those who wield it the power to crush opposition, dissent, and lock in their grand plan for humanity. It will be difficult for anyone to resist the terrible temptation to use this power. I hope, dearly, that we can instead rely on the wisdom of the Framers—letting radically different values flourish, and preserving the raucous plurality that has defined the American experiment.

At stake in the AGI race will not just be the advantage in some far-flung proxy war, but whether freedom and democracy can survive for the next century and beyond. The course of human history is as brutal as it is clear. Twice in the 20th century tyranny threatened the globe; we must be under no delusion that this threat is banished forever. For many of my young friends, freedom and democracy feel like a given—but they are not. By far the most common political system in history is authoritarianism.

I genuinely do not know the intentions of the CCP and their authoritarian allies. But, as a reminder: the CCP is a regime founded on the continued worship of perhaps the greatest totalitarian mass-murderer in human history (“with estimates ranging from 40 to 80 million victims due to starvation, persecution, prison labor, and mass executions”); a regime that recently put a million Uyghurs in concentration camps and crushed a free Hong Kong; a regime that systematically practices mass surveillance for social control, both of the new-fangled (tracking phones, DNA databases, facial recognition, and so on) and the old-fangled (recruiting an army of citizens to report on their neighbors) kind; a regime that ensures all text messages passes through a censor, and that goes so far to repress dissent as to pull families into police stations when their child overseas attends a protest; a regime that has cemented Xi Jinping as dictator-for-life; a regime that touts its aims to militarily crush and “reeducate” a free neighboring nation; a regime that explicitly seeks a China-centric world order.

The free world must prevail over the authoritarian powers in this race. We owe our peace and freedom to American economic and military preeminence. Perhaps even empowered with superintelligence, the CCP will behave responsibly on the international stage, leaving each to their own. But the history of dictators of their ilk is not pretty. If America and her allies fail to win this race, we risk it all.

Maintaining a healthy lead will be decisive for safety

It is the cursed history of science and technology that as they have unfolded their wonders, they have also expanded the means of destruction: from sticks and stones, to swords and spears, rifles and cannons, machine guns and tanks, bombers and missiles, nuclear weapons. The “destruction/$” curve has consistently gone down as technology has advanced. We should expect the rapid technological progress post-superintelligence to follow this trend.

Perhaps dramatic advances in biology will yield extraordinary new bioweapons, ones that spread silently, swiftly, before killing with perfect lethality on command (and that can be made extraordinarily cheaply, affordable even for terrorist groups). Perhaps new kinds of nuclear weapons enable the size of nuclear arsenals to increase by orders of magnitude, with new delivery mechanisms that are undetectable. Perhaps mosquito-sized drones, each carrying a deadly poison, could be targeted to kill every member of an opposing nation. It’s hard to know what a century’s worth of technological progress would yield—but I am confident it would unfold appalling possibilities.

Humanity barely evaded self-destruction during the Cold War. On the historical view, the greatest existential risk posed by AGI is that it will enable us to develop extraordinary new means of mass death. This time, these means could even proliferate to become accessible to rogue actors or terrorists (especially if, as on the current course, the superintelligence weights aren’t sufficiently protected, and can be directly stolen by North Korea, Iran, and co.).

North Korea already has a concerted bioweapons program: the US assesses that “North Korea has a dedicated, national level offensive program” to develop and produce bioweapons. It seems plausible that their primary constraint is how far their small circle of top scientists has been able to push the limits of (synthetic) biology. What happens when that constraint is removed, when they can use millions of superintelligences to accelerate their bioweapons R&D? For example, the US assesses that North Korea currently has “limited ability” to genetically engineer biological products—what happens when that becomes unlimited? With what unholy new concoctions will they hold us hostage?

Moreover, as discussed in the superalignment section, there will be extreme safety risks around and during the intelligence explosion—we will be faced with novel technical challenges to ensure we can reliably trust and control superhuman AI systems. This very well may require us to slow down at some critical moments, say, delaying by 6 months in the middle of the intelligence explosion to get additional assurances on safety, or using a large fraction of compute on alignment research rather than capabilities progress.

Some hope for some sort of international treaty on safety. This seems fanciful to me. The world where both the CCP and USG are AGI-pilled enough to take safety risk seriously is also the world in which both realize that international economic and military predominance is at stake, that being months behind on AGI could mean being permanently left behind. If the race is tight, any arms control equilibrium, at least in the early phase around superintelligence, seems extremely unstable. In short, ”breakout” is too easy: the incentive (and the fear that others will act on this incentive) to race ahead with an intelligence explosion, to reach superintelligence and the decisive advantage, too great. At the very least, the odds we get something good-enough here seem slim. (How have those climate treaties gone? That seems like a dramatically easier problem compared to this.)

The main—perhaps the only—hope we have is that an alliance of democracies has a healthy lead over adversarial powers. The United States must lead, and use that lead to enforce safety norms on the rest of the world. That’s the path we took with nukes, offering assistance on the peaceful uses of nuclear technology in exchange for an international nonproliferation regime (ultimately underwritten by American military power)—and it’s the only path that’s been shown to work.

Perhaps most importantly, a healthy lead gives us room to maneuver: the ability to “cash in” parts of the lead, if necessary, to get safety right, for example by devoting extra work to alignment during the intelligence explosion.

The safety challenges of superintelligence would become extremely difficult to manage if you are in a neck-and-neck arms race. A 2 year vs. a 2 month lead could easily make all the difference. If we have only a 2 month lead, we have no margin at all for safety. In fear of the CCP’s intelligence we’d almost certainly race, no holds barred, through our own intelligence explosion—barreling towards AI systems vastly smarter than humans in months explosion, , without any ability to slow down to get key decisions right, with all the risks of superintelligence going awry that implies. We’d face an extremely volatile situation, as we and the CCP rapidly developed extraordinary new military technology that repeatedly destabilized deterrence. If our secrets and weights aren’t locked down, it might even mean a range of other rogue states are close as well, each of them using superintelligence to furnish their own new arsenal of super-WMDs. Even if we barely managed to inch out ahead, it would likely be a pyrrhic victory; the existential struggle would have brought the world to the brink of total self-destruction.

Superintelligence looks very different if the democratic allies have a healthy lead, say 2 years. That buys us the time necessary to navigate the unprecedented series of challenges we’ll face around and after superintelligence, and to stabilize the situation.

If and when it becomes clear that the US will decisively win, that’s when we offer a deal to China and other adversaries. They’ll know they won’t win, and so they’ll know their only option is to come to the table; and we’d rather avoid a feverish standoff or last-ditch military attempts on their part to sabotage Western efforts. In exchange for guaranteeing noninterference in their affairs, and sharing the peaceful benefits of superintelligence, a regime of nonproliferation, safety norms, and a semblance of stability post-superintelligence can be born.

In any case, as we go deeper into this struggle, we must not forget the threat of self-destruction. That we made it through the Cold War in one piece involved too much luck—and the destruction could be a thousandfold more potent than what we faced then. A healthy lead by an American-led coalition of democracies—and a solemn exercise of this leadership to stabilize whatever volatile situation we find ourselves in—is probably the safest path to navigating past this precipice. But in the heat of the AGI race, we better not screw it up.

Superintelligence is a matter of national security

It is clear: AGI is an existential challenge for the national security of the United States. It’s time to start treating it as such.

## Geoeconomics ADV

### Geoeconomics UQ + ILs---1AC

#### Contention 2 is Geoeconomics:

#### Application of a maximal interpretation of unitary executive theory to civil servants’ labor rights is what determines institutional ability to resist and recover from Trump appointees.

Moynihan 25 [Don Moynihan, Professor of Public Policy in the Ford School of Public Policy at the University of Michigan, former President of the Association of Public Policy and Management and the Public Management Research Association, PhD/MPA public administration, Maxwell School of Citizenship and Public Affairs at Syracuse University, “Why the Supreme Court decision on firing independent agency heads is a big deal,” Can We Still Govern? Substack, 5-22-2025, https://donmoynihan.substack.com/p/why-the-supreme-court-decision-on]

A question I’ve gotten from reporters is how long it will take the public sector to recover from the damage Trump has done. There is no easy answer to this, but I highlight one variable that will matter a lot: how much the Supreme Court embraces unitary executive theory (i.e., the idea that the President has king-like powers).

Why does this matter? A maximalist interpretation of the unitary executive theory holds that almost any Congressional (or judicial) constraints on presidential power are unconstitutional. In more specific terms, it would hold that the civil service system itself is unconstitutional. If the court adopts that reasoning, then it becomes very hard to rebuild state capacity.

Because with unitary executive theory, there is no actor that can make credible long-term commitments to public servants.

With unitary executive theory, Congress cannot write robust new legislation that modernizes the civil service and stops politicization. A President could just ignore it. Even if Trump leaves office, and a new President looks to restore nonpartisan competence, their promises are only good for four or eight years before another President can come in and rip up the terms of their employment. And over time, why would even a good government President invest effort in restoring capacity if their successor can undermine it?

With unitary executive theory, the public sector becomes permanently viewed as an unstable and chaotic workplace that we are seeing now. The most capable potential employees decide its not worth the bother, and the workforce becomes a mix of people who cannot get a job elsewhere, and short term political appointees. (The irony here is that advocates of unitary executive theory say it is not just constitutional, but will improve the performance of the public sector, notwithstanding the omnishambles we are witnessing now).

So it matters, a lot, how courts decide on questions of presidential power over personnel issues right now. We do not have many tea leaves to read, but this SCOTUS is certainly more on board with any unitary executive theory than any prior version. Decisions like the one on presidential immunity last year suggests a court willing to imbue the President with unprecedented powers.

SCOTUS gave us another hint yesterday. They decided to allow Trump to remove Democratic members of the Merit Systems Protection Board, and the National Labor Relations Board. The decision was 6-3. The court says that the President can move forward with the firing until they rule on the merits of the case, which is unlikely to happen until the next Supreme Court term. It is very hard to see the court deciding that the firings are fine now, if there is a real prospect that they will change their mind in the future. It’s like telling an arsonist to go ahead, that we can figure out if it is legal or not after your house is a charred shell.

This is a big deal, a de facto overturning of Humphrey’s Executor - the precedent that Congress can constrain the President’s removal power. This standard, which held for 90 years, now appears to be on the chopping block. Congress might say that an official can only be removed for cause like poor performance, but the President can ignore them, removing independent agency heads for any reason he deems fit.

Unitary executive theory is relatively novel, nurtured by the Federalist Society and Republican lawyers who worked in government and were frustrated by Congressional oversight. Five of the nine judges were Republican lawyers who worked in government, and all six Republican appointees have ties to the Federalist Society.

Enacting unitary executive theory means, effectively, that current executive branch officials and past executive branch officials who are now on the Supreme Court would conspire to strip Congress of its powers. In constitutional terms, it is a resetting of the separation of powers to fit the beliefs of the contemporary Republican Party.

In writing the dissent, Justice Kagan rightfully asked why things are different now, beyond the fact that conservative majority wants to get on with getting rid of Humphrey’s Executor.

Between Humphrey’s and now, 14 different Presidents have lived with Congress’s restrictions on firing members of independent agencies. No doubt many would have preferred it otherwise. But can it really be said, after all this time, that the President has a crying need to discharge independent agency members right away—before this Court (surely next Term) decides the fate of Humphrey’s on the merits? The impatience to get on with things— to now hand the President the most unitary, meaning also the most subservient, administration since Herbert Hoover (and maybe ever)—must reveal how that eventual decision will go. In valuing so highly—in an emergency posture— the President’s ability to fire without cause Wilcox and Harris and everyone like them, the majority all but declares Humphrey’s itself the emergency.

Kagan also pointed out the blazing hypocrisy of one aspect of the decision. Ending Humphrey’s Executor effectively means we will no longer have truly independent agencies. Except one. The majority rushed to make clear that their decision did not hold for the Federal Reserve!

The majority closes today’s order by stating, out of the blue, that it has no bearing on “the constitutionality of for-cause removal protections” for members of the Federal Reserve Board or Open Market Committee. I am glad to hear it, and do not doubt the majority’s intention to avoid imperiling the Fed. But then, today’s order poses a puzzle. For the Federal Reserve’s independence rests on the same constitutional and analytic foundations as that of the NLRB, MSPB, FTC, FCC, and so on—which is to say it rests largely on Humphrey’s. So the majority has to offer a different story: The Federal Reserve, it submits, is a “uniquely structured” entity with a “distinct historical tradition”…

Kagan justifiably mocks the “bespoke Federal Reserve exception” saying that a simpler way not to spook the markets would just be to not give Trump new powers by overturning precedent. The Federal Reserve carve out is not based on any real legal rationale beyond it’s “distinct historical tradition.” If that phrase rings a bell, it is because it echoes the wording that Alito used ("deeply rooted in [our] history and tradition") to justify overturning precedent with the Dobb’s decision. Anytime SCOTUS starts citing historic traditions, be worried about a court abandoning judicial reasoning and precedent.

In reality, the courts know that undermining Federal Reserve would be a disaster for the economy, but their respect for independent expertise does not seem to flow to any other part of the administrative state. The decision is based on generating headlines like this:

Axios

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NEW: Supreme Court says the Federal Reserve is protected from Trump removals

www.axios.com

Supreme Court says Federal Reserve protected from Trump removals

The ruling will come as a significant relief to markets that were concerned about the Fed's independence.

May 22, 2025 at 5:32 PM

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For public employees, the removal of MSPB head is especially troubling, since this allows any President to neutralize the body that is supposed to monitor personnel abuses such as politicization. Federal workers unfairly treated by Trump’s appointees have little reason to believe they will get a fair appeal from other Trump appointees.

More broadly, it shows us a SCOTUS more likely to sign with Trump on other issues of executive power. Will they stop at Schedule F, the executive order allowing Trump to turn career officials into appointees? Will it allow Trump to impound funds or dismantle agencies? We cannot say for sure, but the odds of such momentous decisions have risen.

The Supreme Court has again, and after watching Trump in action, decided that he deserves unprecedented power unchecked by Congress. That does not augur well for the public institutions he is bent on destroying.

#### That unbridles state capitalism as loyalists bypass restraints on arbitrary market interventions.

Tracinski 25 [Robert Tracinski, writer, lecturer, and commentator for more than 25 years, author of *Dictator From Day One: How Donald Trump Is Overthrowing the Constitution and How to Fight Back*, editor of Symposium, former editor at RealClearFuture and senior writer at The Federalist, BA philosophy, University of Chicago, “When Strongmen Own the Store,” Persuasion, 9-24-2025, https://www.persuasion.community/p/when-strongmen-own-the-store]

We habitually divide our political parties along the old lines that applied for many decades—but no longer apply now.

We think of the Democratic Party as a party of the American “left” that is hostile to the free market. They favor taxes, heavy-handed regulation, and centralized power over the economy. We still think of the Republican Party, the party of the “right,” as defenders of free markets. They want less regulation, lower taxes, and less power over the economy exerted from Washington, D.C.

This old way of thinking still accounts for a great deal of Donald Trump’s political support. It is how he maintained the support of the Republican establishment and its big donors. In the popular imagination, Trump is a successful businessman who wants the “pro-business” policies of lower taxes and less regulation, and he and his supporters continue to use the threat of “socialism” as an all-purpose bogeyman.

Even Trump’s authoritarianism seems like a selling point to some of these supporters, who are tempted by the idea that he can impose free-market policies that lack sufficient public support to get through Congress. This is one of the great illusions of authoritarianism. The supporters of a strongman see him as the battering ram to push through their long-stymied ideological agenda. They give him unchecked power so he can do the things they want him to do. But once he has that power, he does the things he wants to do.

There is an inexorable logic in authoritarianism that always turns strongmen against economic freedom and free markets. They fear competing centers of power, which includes independent sources of wealth and resources, particularly in the media industry, that might be used by their political opponents.

Donald Trump is no different, and he has already succeeded to a surprising degree in making himself the single point around which America’s economy revolves. His quest for economic control begins with an area where Congress has already given presidents wide authority: trade and tariffs.

Article I, Section 8 of the Constitution gives Congress the power “to lay and collect taxes, duties, imposts, and excises” and to “regulate commerce with foreign nations.” The Founders gave Congress the power to impose import duties because tariffs are a tax on trade and a form of revenue for the federal government. Congress controls tariffs because they have the power of the purse. As the most direct representatives of the people, the House of Representatives was given special power to originate any bill that raises revenue from the people.

Yet the last major bill in which Congress directly and specifically dictated tariff levels was nearly a century ago: the Smoot-Hawley Tariff Act of 1930. This was such a disaster, setting off a spiral of retaliatory tariffs that shut down international trade and deepened the Great Depression, that Congress largely divested itself of this authority. Beginning in 1934, it passed laws giving discretion to the president to negotiate tariffs.

This authority was not unlimited, and it was intended to support the reduction of tariffs. This was especially true after World War II, when America’s leaders regarded the restoration of trade as vital to rebuilding a stable international order. But as a concession to the advocates of protectionism, Congress frequently gave the president authority to increase tariffs on an “emergency” basis or on the grounds of national security. This power has been abused intermittently, but on a limited scale—until Trump.

Trump’s love for tariffs is partly ideological. One of his few fixed beliefs, going back decades, is that trade is bad for America and low tariffs allow other countries to take some kind of unfair advantage of us. The irony is that this is combined with nostalgia for the industrial economy of the mid-20th century—an era when the United States was leading the charge for free trade.

But Trump’s interest in tariffs is also personal. There is perhaps no other area of the government in which he so clearly exhibits the sheer joy of seeing his slightest whim instantly made into policy. He has set tariffs for the entire world, on a country-by-country basis, based on a nonsensical formula adopted literally hours before the announcement. This is how, in April, he ended up in a trade war with penguins, announcing 10% tariffs on the Heard and McDonald Islands, uninhabited except for flightless Antarctic birds.

Trump then delighted in doubling and tripling these tariffs, removing them one day and slapping them back on the next. As one Trump aide boasted to Politico, “It’s the greatest show on Earth. We’ll put tariffs on tonight, but tomorrow we’ll tell you we may negotiate and take them off. But stay tuned, because you never know what tomorrow’s gonna bring.”

More to the point, Trump now has American businessmen trooping to the White House or to Mar-a-Lago to ask for special carve-outs and exemptions for their businesses and industries. A typical example is Apple CEO Tim Cook supplicating Trump in the Oval Office and presenting him with a glass trophy with a 24-karat gold base—Cook made sure to mention the gold—after Trump granted Apple exemptions from tariffs on electronics imported from China.

Granting special exemptions from tariffs for specific products and industries—thousands of them so far—allows Trump to assert arbitrary power over a large portion of our economy. The only reason this is not recognized as “socialism” is because he maintains the fiction of private ownership. Vladimir Putin imposes a similar system in Russia, and so, for the most part, does Xi Jinping, even in supposedly communist China. The contemporary strongman recognizes that it is unnecessary and counterproductive to nationalize industries, so long as he retains the power to make or break individual businesses—and so long as the businessmen know it.

Yet occasionally Trump can’t help letting the mask slip. In an interview with Time Magazine, he explained his tariffs by comparing the U.S. economy to a department store:

We’re a department store, a giant department store, the biggest department store in history.... It’s a giant, beautiful store, and everybody wants to go shopping there. And on behalf of the American people, I own the store, and I set prices, and I’ll say, if you want to shop here, this is what you have to pay.

This is where Trump’s attempt to assert control over the economy begins, but it’s not where it ends.

In seizing the power of the purse from Congress, Trump has asserted an autocratic theory of the “unitary executive” that gives him direct control over agencies like the Federal Communications Commission and the Federal Trade Commission. He has denied the power of Congress to give agencies specific tasks to perform in a way that is insulated from his direct, day-to-day control. To exert this control, he has claimed the power to fire and replace the heads of these agencies, ensuring they will be dependent on him.

The most important of these agencies, from an economic standpoint, is the Federal Reserve, which sets interest rates and monetary policy. The stability and professionalism of the Fed is a key assurance to American businessmen and investors that they can predict the future and that their capital will not be eroded by runaway inflation.

Yet this is precisely what Trump is now threatening. He has floated the idea of firing Federal Reserve chairman Jerome Powell, one year before his term expires, and Trump has declared that he would do a much better job of setting interest rates: “I made a lot of money. I was very successful. And I think I have a better instinct than, in many cases, people that would be on the Federal Reserve—or the chairman.”

This is a typical pattern for an authoritarian strongman. Having seized power, he claims that he will deliver a golden age of growth and prosperity. To make good on that claim, he demands a “loose money” policy, lowering interest rates and increasing the supply of money to get a short-term boost in growth. Then the bill comes due in the form of high inflation.

This pattern was enacted most recently in Turkey under Recep Tayyip Erdoğan. In 2018, he complained that “the central bank can’t take this independence and set aside the signals given by the president” and thundered that its refusal to lower interest rates was the “mother and father of all evil”—essentially the same complaints Donald Trump is making now. The result of Erdoğan’s takeover of monetary policy was an immediate doubling of the inflation rate in Turkey, from about 11% to nearly 25%. Inflation has gotten even worse recently, hitting a high of 85% in 2022.

This is what happens when a strongman sets interest rates according to his “instinct” and for the purpose of consolidating power.

Trump is attempting to exert a similar level of power against big corporations and their CEOs. He has demanded that the CEO of Goldman Sachs fire the investment bank’s chief economist because he predicted—as virtually every economist would do—that Trump’s tariffs will raise the prices of goods. He targeted the CEO of Intel, Lip-Bu Tan, demanding he resign because Tan’s personal investments in China supposedly make him “conflicted.” Tan did not resign, but the threats had their intended effect. Intel agreed to sell the U.S. government a 10% share in the microchip manufacturer at a discounted price.

Then there is the agreement the Trump administration made last month with chipmaker Nvidia, which promised to pay the U.S. government 15% of all AI chip sales to China “as a prerequisite to obtaining export licenses for China.” There is, needless to say, no legal or constitutional authority for this arrangement. Export licenses are supposed to be granted when the government certifies that objective conditions have been met—not when it gets a kickback.

Partial state ownership is a hallmark of the so-called “state capitalism” model of the Chinese government. To make our transition to the Chinese model complete, all we need is state ownership of military contractors—and this is, in fact, the very next step. When he announced the 10% buyout of Intel, Trump indicated that he was interested in more such deals, and the next day his Secretary of Commerce floated the idea of the government taking ownership stakes in the big defense contractors.

We are used to thinking of free markets and capitalism as the established economic system, the status quo protected by conservatives and vested interests. But it is worth remembering that capitalism was once a radical new system that swept away the vested interests that came before it, replacing feudalism and aristocracy. Those are the older and more primitive economic systems Trump is attempting to revive.

Trump’s conservatism is not an ideological conservatism, but rather a reactionary rejection of the entire modern world. In its place, he wants to return to a pre-modern system centered around a king or chieftain, where anyone who wants to start a business or trade goods has to show the local boss their obedience—and pay him a bribe. The most extreme version of this system is patrimonialism, in which an entire country, and everyone in it, is regarded as the personal property of the ruler. He literally owns the store.

Donald Trump is pushing us back, one step at a time, toward that kind of system.

#### No alt causes. Control of the civil service is determinative.

Cohen 25 [Jean L. Cohen, Professor of Political Theory and Contemporary Civilization in the Department of Political Science at Columbia University, PhD New School for Social Research, “Eviscerating the State: The New Oligarchic and Authoritarian Project to Undermine American Constitutional Democracy,” Emancipations: A Journal of Critical Social Analysis, 4(2), 2025, DOI 10.55533/2765-8414.1136]

That capitalist class interests and the oligarchic power of the very rich at the founding was secured by the Constitution and prevailed again after the upheavals of the civil war has been a charge asserted not only during the founding but repeatedly ever since Charles Beard’s Economic Interpretation of the Constitution, written at a time (1913) when corporate capital had gained enormous economic power, political influence, and constitutional rights (of legal personhood).23 This enabled them to use private law and Supreme Court rulings to overturn state level regulations of the economy (wages, hours, rules for workers and restrictions on the power and mobility of corporate capital generally). They were able to generate such extremes of concentrated wealth and monopoly power at one end and poverty at the other that the epoch was dubbed the gilded age.24 In short, what is now happening is not entirely new, and I fully agree that democracy and capitalism have always been in tension in the U.S. as elsewhere, and the oligarchic dynamics within capitalism is one of the main culprits. By this I mean the tendency of capital to accumulate in ever fewer hands, (what Marx called the centralization and concentration of capital), generating monopolistic market positions, and inequality of wealth and (economic) power. This tension and the frequent failure to control for the rise of oligarchic power not only in the economic system but also its influence in the political system, is antithetical to the egalitarian principles undergirding democracy and thereby perforce restricts democratic quality. But to jump to the conclusion that the essence of the political form of a representative liberal constitutional republic is essentially oligarchic, or that liberal constitutional democracy despite severing the link between citizenship and property only ends the formal and overt but not the real rule of oligarchic power is triply misleading.25 First, because it underestimates the successes of anti-oligarchic and democratizing struggles not only in the U.S. but elsewhere; second because it diverts us from examining how (through which mechanisms) capitalist oligarchs manage to influence or gain real political power, how this changes, and why capitalist oligarchs periodically turn away from liberal constitutional democracy to endorse authoritarian rule. Third, by depriving democrats and anti-oligarchs of key concepts such as ruling in the public good, or in the common interest, concepts denounced as rhetorical smokescreens deployed by oligarchs to conceal the occupation of Lefort’s famous ‘empty place of power’ by wealth, this approach loses the tools needed to denounce political corruption which I define here as the use of public power for private particular class purposes. 26 Supposedly such ‘depoliticized’ concepts are deployed by oligarchs to distract from the class nature of their de facto rule in liberal constitutional democracies (republics). But concepts like the use of public power for public purposes, tied to accountability mechanisms, are indispensable for countering rule in the interest of a particular class or group.

It is not my task here to retrace the dynamics of oligarchic and antioligarchic struggles in the U.S. or to defend existing liberal constitutional democracies against the charge of oligarchy. Indeed, I argue that the U.S. political institutions are and have always been deeply flawed from the dual perspective of the dynamics and inordinate influence of capitalist forces (and powerful oligarchs emerging within that system), and from the perspective of institutionalized constitutional mechanisms that have never been democratic enough, inclusive enough or sufficiently committed to political equality so as to block autocratic rule, related to but not identical with capitalist or oligarchic power. I thus also disagree with the recent claims by Sinanoglu, Way, and Levitsky that capitalism can “save democracy” insofar as private capital and free markets foster the liberal pluralism and political competition (a variety of veto points and countervailing powers) that democracy needs to thrive. For them, in short, autonomous private power – i.e. a free capitalist economy independent of political interference – is crucial not only to a free plural civil society but also to political democracy. Accordingly, it is state capture of business rather than business capture of the state that represents the most direct threat to democracy.27 To be sure, the alternative they present and rightly reject: corrupt state control of capital, finance and investment exemplified today by Putin’s Russia, Orban’s Hungary, and Erdogan’s Turkey, are decidedly not compatible with democracy or social justice – and lead to a shift from flawed democratic to competitive authoritarian regimes. But that is hardly the only alternative to libertarian models of capitalism or the only threat to democracy. The threat posed by oligarchic economic and political influence to liberal democracy is real and should be analyzed, not ignored.28 Indeed, unless we also grasp the dangers that unaccountable private economic power poses to democracy (state and popular sovereignty and justice) we will be hard put to understand the resentments, rage and risks the most recent neo-liberal version of deregulated and deeply inegalitarian and oligarchic capitalism has generated that fuels the mass movements behind authoritarian populist projects sweeping long established western democracies today. Nor will we be able to see what is distinctive about the ways in which unaccountable private power (of capital/oligarchs) challenges constitutional democracy today and how this intersects with the projects of aspiring autocrats seeking unaccountable public political power. Clearly both dynamics--business or capitalist capture of the state and state capture of business--pose serious threats to democracy and the principles of political equality undergirding it, especially when these projects merge.

Indeed, the issue facing us now is how to ward off the contemporary dual threat of autocracy and a new form of oligarchy emerging within (but not only there) the quintessential liberal democracy—the U.S.— in which a key and powerful oligarchic faction has explicitly abandoned democracy in favor of strong man rule. What prompts capitalist oligarchs to rhetorically and de facto support Trump’s authoritarian project and what is new with respect to the old model of oligarchic capture of policy making in liberal constitutional democracy? (I will address what is distinctive in the autocratic project of the pretend populist president in the next section.)

For there is something new going on today. It is not just that autonomous oligarchs with enormous global private economic power radically undermine equality, push the ever-greater concentration of capital in ever fewer monopolistic hands and subtly capture key governmental regulatory agencies, seeking privatization of public services while attacking labor organizations. Rather, according to Kuttner and Stone we are witnessing a ‘‘re-feudalization’’ of the commons: whereby a new privatization of jurisprudence overlaps with, but is more sinister than, the earlier privatization of public services such as prisons, schools etc.29 At issue is the bypassing of public common law and the evisceration especially of ‘pre-distributive’ labor and consumer rights through a wholesale shift of key areas of rule-making and ‘adjudication’ to private law and decision making involving such mechanisms as compulsory arbitration instead of use of the courts.30 They cite the emergence of entire fiefdoms of private law in, e.g. Silicon Valley. As they put it: Western democracies today do not simply deregulate the economy in reaction to ‘overregulation’ and the liberal consensus that prevailed from the New Deal to 1980. In addition, corporate elites are now pursuing a project in which entire realms of public law, public property, due process, and citizen rights revert to unaccountable control by private business. This is tantamount to a direct attack on the democratic commons i.e. on the democratic state’s ability to serve as a counterweight to the concentrated power that flowed to concentrated wealth in the capitalist economy and to use public power for public purposes. They pinpoint what is distinctive in the current oligarchic project quite succinctly:

The age-old elements of private law, such as contracts and torts, have long coexisted with public law and regulation. Contention between public law and private power is a very old story. What is new and alarming is the displacement of entire areas of public law by private commercial interests and the resurrection of abusive forms of private law. This is a reaction against earlier developments of the commons. Not only did the 20th-century state expand democratic public law. Acting through the courts, the state intervened to police private contracts and protect weaker parties from abuse by the powerful…20th-century judicial interpretation and enforcement of contracts emphasized fairness between the parties…courts in the 20th century refused to enforce contracts between parties with vastly unequal resources, knowledge, or bargaining power when they found agreements to be oppressive, coercive, grossly one-sided, misleading, or blatantly unfair.31

Accordingly, the carving up of public law and property into proprietary domains is the new tragedy of the commons. Thus, the capture of public law and the reversion to one-sided private law reinforce each other, creating vast pools of proprietary power. Indeed, one of the startling trends of recent decades has been the success of the giant tech monopolies at creating their own proprietary systems of law and insulating themselves from public regulation. Companies such as Google, Apple, and Amazon have invented their own jurisprudence, hidden in obscure terms of service, to govern the consent of users to the commercial use of personal data. Amazon requires all its independent sellers to sign the now-familiar arbitration clause, requiring submission of disputes to an arbitrator selected by Amazon.32 Most of this ought to be illegal, but it isn’t. Accordingly, the authors note that American democracy is under assault on multiple fronts. While the autocratic incursions of the Trump administration are only the most urgent and immediate, they maintain that the private capture of public regulatory law is more long-term and more insidious.

Another distinctive feature of today’s new oligarchs (in tech, finance) is that they have come out into the open and accepted appointments as heads of key governmental agencies and departments or created and steered powerful unofficial ones like DOGE, (the ‘department’ of Government Efficiency) gaining public state power, their anarchotechnocratic impulses notwithstanding. 33 We seem to be witnessing a partial shift from indirect to direct oligarchic political power (especially if we count Trump among the oligarchs)—a form that is increasingly incompatible with formal democracy and the rule of law despite the appearance of working within the law and reliance on the democratic legitimacy of the elected populist president. But the project isn’t simply state capture. It is to eviscerate depth in the state (what they, like Trump, call the deep state) – i.e. the autonomy, expertise, and authority of the civil service and of independent agencies--so as to escape regulation, taxation, oversight, and to use public power unhindered, for private purposes. Today’s American tech, finance and some other types of super rich actors and managers fit the concept of oligarch if by that we understand monopoly market power; excessive media influence; fortunes greater than a million times the living wage, and now rather open participation in political life.34 Oligarchs in the U.S. are autonomous of the state unlike in the USSR, or China and many post-communist regimes, and they involve new forms of capital (tech, crypto, finance) but also some old ones (oil, pharmaceuticals).

### Geoeconomics---Globalization IL---1AC

#### Flipping the U.S. model to state capitalism catalyzes global emulation, fragments value chains, and escalates cold trade wars into hot great power wars.

Ozturk 25 [Ibrahim Ozturk, PhD, Director and Resident Senior Research Fellow at the European Center for Populism Studies, visiting fellow at the University of Duisburg-Essen, “Trump and The New Capitalism: Old Wine in New Bottle,” European Center for Populism Studies, 2-21-2025, https://www.populismstudies.org/trump-and-the-new-capitalism-old-wine-in-new-bottle/]

Introduction

Despite its apparent economic, political, and social challenges, the US remains a global powerhouse that can profoundly impact the world with even the slightest changes, whether progressive or regressive. Therefore, it is essential to understand and analyze the unpredictability and uncertainties upcoming with Trump’s (dis)order.

To grasp what Trump is trying to achieve, one should step back and take a bird’s-eye view to avoid the chaos and noise generated by him and his team. What do the iconic skyscrapers of Manhattan, such as the Empire State Building and the Chrysler Building, towering above the clouds, tell us?

When one listens to the sounds beneath the clouds, the shining progress emanating from Silicon Valley in northern California—the focal point of American entrepreneurship—whispers of groundbreaking discoveries and a bright future for the US and humanity in general. In Schumpeterian terminology, America’s "creative destruction" is ongoing. The share of the US GDP has reached 27% of global GDP. Although this is just below the 30% recorded in 2000, it is significant compared to the 23% in 2023, marking the United States’ rebound from its trough, driven by the forces of creative destruction. This pace of change in the structure of the US economy also transforms the financial architecture of the powerhouses on Wall Street, including the New York Stock Exchange.

However, the ongoing global competition indicates that this alone is not enough for America to maintain its competitiveness and status as a global empire. China’s rapid advancements in strategic high-tech industries—such as artificial intelligence (AI), quantum computing, semiconductors, 5G, and renewable energy technologies—along with heavy investments in R&D and talent acquisition to close the gap with the US, have reached a critical stage with far-reaching implications.

Moreover, the competition extends beyond the US and China, as Europe, Japan, and South Korea also play vital roles in niche technologies such as EV batteries, advanced robotics, and biotech. The outcome of this race will shape global supply chains, security policies, and economic leadership, ultimately defining the nature of the ongoing global power transition in the coming decades.

Trump Is Emulating Xi Jinping

As Graham Allison has analyzed in historical cases, the key concern now is how the US will respond to this precarious situation. Signals from Trump’s first term and early indications from his newly started second term suggest that the US political economy may be shifting toward a model resembling China under Xi Jinping. In other words, despite its significant economic superiority, America appears to be emulating its rival to defend its interests and contain China’s rise.

This shift toward unilateralism disregards international norms and values, undermines the post-World War II order it once championed, and abandons the institutions and stakeholders that upheld this system. As a result, the US is embarking on a perilous path that extends far beyond China. Increasingly, it is drifting away from the principles of law, rules, and values, instead embracing arbitrariness and raw power—posing a global threat that contradicts its raison d’être.

Meanwhile, the Statue of Liberty, a powerful symbol of American ideals such as freedom, democracy, and opportunity, is slowly disappearing beneath the clouds. As it fades into the distance, so does the American Dream—the long-standing promise of opportunity, prosperity, and success—becoming an increasingly unattainable illusion.These symbols, once synonymous with American greatness, now represent the triumphs of a bygone era.

Accordingly, the country’s status as a world leader in finance, technology, and industry is being redefined, and the old certainties are giving way to a new, uncertain reality.

Having sought to maintain its position by rejecting its past hegemonic sacrifices or leadership and putting a unilateral emphasis on the rhetoric of “America First,” “Making America Great Again” (MAGA) to protect its "greatness" will also reshape the nature of capitalism and globalization. Several questions need to be addressed and examined in this context. This commentary focuses on the new capitalism the United States has adopted to respond to ongoing global power pressures, changing competitive conditions, and potential consequences.

Three Models of Capitalism

Economic systems (such as capitalism, socialism, and mixed economies) are compared based on several key pillars. These include the right for ownership, the role of government, central planning vs competition, the workings of prices and the production mechanism, income distribution, equity, efficiency, and productivity, economic stability and growth, innovation and entrepreneurship, social welfare and public goods, flexibility and adaptability, approach to free trade vs. protectionism or autarky. There are also various hybrid models combining different system elements at different doses. Each economic system has strengths and weaknesses, depending on societal goals such as growth, equity, efficiency, and stability.

In addition to these differences between economic systems, as J. H. Dunning, D. Rodrik, and J. E. Stiglitz published terrific works on, the world economy has also been characterized by different stages of globalization or deglobalization. These range from mercantilism, a potent form of protectionism, to the extreme form of neoliberal globalization, which went beyond control with severe negative repercussions, and now to new protectionism and civilizational nationalism, along with rising multipolarity and power shift.

[Box 1 OMITTED]

Several questions need to be addressed and examined in this context. This commentary focuses on the "new capitalism" that the United States appears to have adopted to respond to ongoing global power shifts, changing competitive conditions, and potential consequences. Whatever form capitalism takes, the debate will always revolve around the market economy, capitalists, big corporations, property rights, and how the state controls and regulates all of this.

Two eminent thinkers, economic historian Fernand Braudel, who focused on long-term structures, and Karl Polanyi, a political economist, who analyzed economic transformations, and anthropologist, provided fundamental critiques of capitalism concerning the state, power, and institutions. Braudel and Polanyi view capitalism as an evolving historical system rather than a static or natural economic order. Through his longue durée approach, Braudel analyzes how capitalism has developed over centuries within specific historical contexts, while Polanyi’s “Great Transformation” illustrates the shift from embedded economies to market-driven societies.

Both scholars differentiate between market economies based on local trade and reciprocity and capitalism, which operates on a larger scale and inherently tends toward monopolization. Braudel views capitalism as an upper layer of economic activity that never functions under pure free-market conditions, exploiting markets rather than being synonymous with them. Capitalism always seeks privileged access to resources, political power, and monopolies. Thus, Braudel and Polanyi converge in their critiques, exposing capitalism’s reliance on state power and monopolistic control and its disruptive effects on society. Braudel emphasizes capitalism’s exploitative nature, whereas Polanyi underscores the commodification of key economic factors, particularly labor.

In short, both view capitalism as a threat to market economies and open societies when left unchecked. Capitalism often operates at the expense of broader societal well-being, benefiting elites while fostering instability and social resistance. Most notably, when the economy becomes "dis-embedded" from society and socially disruptive, the adverse effects of non-market processes, such as externalities and monopolization, become apparent. These circumstances call for state intervention to sustain markets.

However, these two scholars not only explored the state’s crucial role in developing and shaping markets, as D. North demonstrated as an instituted process, but they also showed how state intervention is a double-edged sword and a hazardous process. Given the different allocations of power dynamics, the state’s role cannot be taken for granted.

As shown historically by M. Olson, in the context of development theory by Theda Skocpol, and more recently by C. Jonson during Japan’s rapid post-war development, effective state intervention depends on several restrictive conditions, such as state autonomy and capacity, free from the influence of interest-seeking coalitions. Most notably, Olson explores how special interest groups and coalitions gradually capture state power, leading to economic stagnation. This is also relevant in relatively stable societies, where entrenched interest groups gain influence, creating rigidities that slow economic growth and hinder necessary reforms.

To explore these developments further, I will delineate three evolving variants of capitalism based on ownership structures and governance mechanisms.

State-Controlled Oligarchic Capitalism (Turkey – Erdogan Model)

👉🏿 The private sector’s independence diminishes as the government integrates strategic industries into political control.

👉🏿 State-backed business elites thrive through public contracts, incentives, and preferential credit.

👉🏿 Bureaucrats and politicians hold executive roles in private firms, aligning private enterprise with state agendas.

👉🏿 This model merges authoritarian populism with capitalist oligarchy.

State Capitalism with Strategic Planning (China – Xi Model)

👉🏿 State ownership dominates, yet specific industries operate with market-driven efficiency.

👉🏿 Despite their semi-independent façade, companies like Huawei and Alibaba align with national economic strategies.

👉🏿 The government employs market forces for efficiency while maintaining overarching economic control.

👉🏿 This hybrid model blends centralized planning with capitalist dynamics.

Techno-Feudal and Oligopolistic Capitalism (US–Trump Model)

👉🏿 Traditional neoliberalism is evolving into a state-elite partnership.

👉🏿 Billionaire elites increasingly influence governance, making the state an agent of corporate interests.

Tech giants like Tesla, SpaceX, Facebook-Meta, and major media conglomerates serve as political tools for mass influence. For instance, in a clear transactional or win-win approach, President Trump appointed Elon Musk to lead the Department of Government Efficiency (DOGE). However, the court blocked his attempt to intervene in the US Treasury and access private data, a case that fueled Trump’s anti-law aggression. Stephen Schwarzman, the chairman and CEO of Blackstone, Ana Botín, the executive chair of Banco Santander, Patrick Pouyanné, chairman and CEO of Total Energies, and Brian Moynihan, chair of the board and CEO of Bank of America, participated in a public dialogue with President Trump at the World Economic Forum‘s 2025 Annual Meeting, indicating a collaborative relationship. Additionally, US business leaders have significantly increased their financial support for President Trump’s second inaugural fund, with contributions expected to surpass previous records. Major corporations such as BP, Chevron, Shell, Google, Microsoft, and Apple have adopted the term "Gulf of America" in their communications following President Trump’s executive order renaming the Gulf of Mexico. This move signifies corporate alignment with the administration’s directives.

Whatever hybrid forms of capitalist models evolve, they underline the rise of Strategic Capitalism, diminishing market competition, increasing state-business convergence, and greater government control over economic participants. In other words, "state capture by entrenched interest-seeking coalitions" is becoming increasingly widespread and pervasive. Most notably, when capital infiltrates the state—through so-called "legitimate lobbying," as seen in the US—and effectively merges with the government, a fundamental question arises: On whose behalf does the state intervene in the market? How can the criterion of rationality be upheld?

Besides such domestic political-economy implications of the evolving forms of capitalism, their various configurations are also catalysts for conflict when they attempt to externalize emerging problems and challenges. The main dimensions of problem externalization might take several forms:

Globalization’s Externalities and National-Level Risks: While globalization promotes economic interdependence, it has also resulted in significant negative externalities, such as income inequality, industrial decline, job displacement, and financial volatility. Traditional economic governance models suggest addressing these risks at the national level through various mechanisms:

👉🏿 Wealth redistribution via progressive taxation (such as wealth taxes) to fund social welfare and infrastructure.

👉🏿 Regulatory adjustments through stronger labor protections, improved financial oversight, and enhanced corporate accountability mechanisms.

👉🏿 Fair wage policies to ensure that productivity gains translate into equitable income distribution for the working class.

However, instead of internalizing these costs within their economies, some nations are now externalizing them—shifting economic grievances onto foreign entities, often framed within a civilizational nationalist discourse. This trend has been particularly evident under the Trump administration.

The Shift from National Economic Regulation to External Blame: Historically, economic nationalism has been used as a policy tool to protect domestic industries. However, the new wave of civilizational nationalism reframes economic struggles as existential conflicts between distinct cultural or civilizational blocs. This shift is evident in several key areas:

👉🏿 Trade protectionism and economic sanctions through tariffs and trade restrictions on perceived economic competitors (e.g., the U.S.-China trade war).

👉🏿 Industrial policy disguised as strategic autonomy, supporting vital domestic industries for national security purposes (e.g., the EU’s strategic autonomy, the U.S. CHIPS Act).

👉🏿 Resource and financial weaponization, using energy supplies, commodities, or economic systems as geopolitical leverage (e.g., U.S. dollar-based sanctions, Russia’s energy policy).

👉🏿 Anti-globalization narratives rooted in identity politics, portraying globalization as an elite conspiracy that threatens national sovereignty, thus justifying exclusionary economic policies.

The motivation behind these strategies is to "externalize" the burden of globalization’s side effects—shifting responsibility away from corporations and national policymakers onto foreign nations or civilizational "rivals"—ultimately deepening global fragmentation.

Civilizational Nationalism Increases the Likelihood of Conflict: Economic nationalism has historically led to trade wars and economic decoupling. However, civilizational nationalism extends beyond economics, intertwining identity, culture, and geopolitics into economic policy, making conflicts more intense and less negotiable.

In this context:

👉🏿 The West perceives China as both an economic competitor and a cultural and ideological challenger.

👉🏿 Russia is pivoting away from global capitalism, crafting its own "civilizational" economic model centered on Eurasianism.

👉🏿 The European Union, recognizing the limitations of globalization, is adopting industrial policies emphasizing strategic autonomy.

👉🏿 South Asia and the Middle East are developing distinct regional capitalist models.

👉🏿 Meanwhile, the US, under Trumpism, appears to oppose the "rest" of the world.

In conclusion, by replacing domestic policy reform agendas, such as corporate taxation and labor protections, with blame-driven economic nationalism, governments avoid addressing the root causes of economic discontent and fuel long-term geopolitical instability. If this ongoing trend persists, the world may experience an era of intensified trade wars, economic decoupling, and heightened geopolitical tensions, reminiscent of the 1930s, increasing the risk of large-scale conflicts.

Trump’s Presidency and the Shift Toward Authoritarian Capitalism

Obviously, Trump’s populist authoritarian and pragmatist rhetoric lacks a coherent theoretical foundation. It can be seen as a contradictory fusion of economic nationalism, protectionism, and populism, driven more by emotional appeal than analytical rigor. Unlike traditional neoliberalism, which has grown in the US and promotes minimal state intervention, Trump’s era witnessed the convergence of state power with elite economic interests. As Antara Haltar observes, Trump’s policies – tariffs, tax cuts, de/regulation, and re/industrialization- to “Make America Great” again (MAGAnomics) reject core tenets of neoclassical economics, notably free trade, and efficiency. As M. Mazzucato puts it, this aligns with techno-feudalism, in which large technology firms exert immense economic and social control.

What is idiosyncratic and hypocritical is that Trump rose to power by appealing to those experiencing poverty, feeling left behind, and abandoned. However, he has ultimately shaped his policies to further enrich giant capital owners. He not only serves the interests of capital but has gone a step further by directly placing capitalists in key government positions. Even though his protectionist trade wars were framed to protect American jobs and boost employment and income, there is broad consensus among economists that these policies may primarily benefit select corporations at the expense of consumers and citizens. As J. Stiglitz correctly noted, there is already a high degree of market concentration in the US.

While it remains unclear how he will deliver on his political promises amid the growing challenges of techno-feudalism, these features suggest that Trump’s evolving capitalism, which carries significant global implications, will emerge as a hybrid model combining the following aspects.

👉🏿 Nationalist Protectionism: A more aggressive form of protectionism where the government prioritizes domestic industries and restricts foreign competition. For instance, Trump’s decision to block the acquisition of United States Steel by the Japanese company Nippon Steel created tensions with Japan. Prime Minister Ishiba responded by saying that "the president blocking a takeover is a significant ‘political interference’ and difficult to understand." This could lead to a more insular, self-sufficient economy, with tariffs and trade barriers becoming more prevalent.

👉🏿 State capitalism: A blend of state control and private enterprise, where the government is more active in guiding the economy. This could involve increased government ownership of key industries like energy, finance, or infrastructure.

👉🏿 Authoritarian Capitalism: A system where the government exercises significant control over the economy, often through a combination of state-owned enterprises, regulations, and repression of dissent. This could lead to a more rigid, hierarchical economy with limited opportunities for entrepreneurship and innovation.

👉🏿 Neoliberalism 2.0: A revised version of the neoliberal ideology that dominated the 1980s and 1990s. This could involve a renewed emphasis on deregulation, privatization, and free trade but with a more aggressive approach to suppressing labor unions and social welfare programs.

👉🏿 Corporate-Friendly Populism: A system where the government prioritizes the interests of large corporations and wealthy elites while using populist rhetoric to appeal to working-class voters. This could lead to a more unequal economy, with greater concentrations of wealth and power.

👉🏿 Hybrid Capitalism: A system that combines elements of different economic models, such as state-led development, private enterprise, and social welfare programs. This could involve a more nuanced approach to monetary policy, focusing on balancing competing interests and promoting sustainable growth.

The actual outcome would depend on a complex interplay of factors, including policy decisions, economic conditions, and societal responses. The impact-response paradigm will also reflect the nature of (i) the state-corporate symbiosis, in which even if Trump does not formally integrate capitalist figures like Elon Musk or Mark Zuckerberg into the government, he might pursue policies favoring elite interests, such as corporate tax cuts. (ii) Media and technology manipulation. Trump weaponizes social media platforms like Twitter (now X) while simultaneously attacking tech giants that challenge his influence. (iii) Regulatory favoritism. Despite public criticism of Silicon Valley, Trump’s administration provided regulatory and tax advantages to major corporations. (iv) Preferential treatment for loyal capitalists. Trump’s government allocated state contracts, tax breaks, and industry protections to politically aligned business figures.

To the extent that corporate feudalism is costly to the economy and society’s well-being, the US will likely turn to asymmetric power, military force, and destructive nationalist and civilizational rhetoric to balance, conceal, legitimize, and make it acceptable to the public.

Strategic Implications of Trumpism Globally

As Nancy Quian emphasizes, while initially seen as just a "trade war" with China, it quickly became clear that Trump’s ambitions were far more extensive. He started imposing tariffs on Mexico, Canada, and the EU, which were promptly met with retaliatory actions. Although it’s still uncertain whether Trump’s actions will dissuade his "strategic competitors," they have already raised alarm among many European nations—long-standing strategic allies of the US since World War II and throughout the Cold War—along with NATO members and most OECD countries.

Had he pursued his policies under the banner of democracy, human rights, the rule of law, multiparty free elections, separation of powers, checks and balances, and transparent governance, most of the OECD nations—controlling nearly 50% of the global GDP—might have been more open to closer cooperation with the US. However, Trump’s broad and aggressive stance and his confrontational rhetoric extending beyond trade wars are likely to leave the US deprived mainly of the allies it seeks.

[Box 2 OMITTED]

One reason for this maximalist stance may be Trump’s realization that gaining an economic advantage over China solely through trade wars is impossible. As a result, he has sought to incorporate military, political, technological, and other strategic means to secure a stronger position for the US. However, in doing so, he may have overestimated America’s strength—much like an empire already losing its hegemonic power. Instead of consolidating US influence, this overreach could accelerate America’s decline on the global stage.

Additionally, should global resistance and retaliatory measures against Trump’s America gain momentum, two key consequences could emerge? First, competitors like China may grow even more potent. Trump’s disregard for international norms and values, his habit of barking orders at partners, and his use of political pressure like a small-town thug could alienate his allies and drive them closer to rising powers like China. Second, increasing costs for US consumers and damage to America’s strategic interests could weaken domestic support for Trump, potentially leading to a loss of the congressional majority in the 2026 midterm elections.

Conclusion

In our age of multipolarity, global capitalism is no longer a cohesive system under US hegemony. There are now competing forms of capitalism with different norms and values. There are three notable issues to underline here in terms of understanding the nature of rising capitalism under Trump 2.0.

First, despite its contradictions, Trumpism exposes fundamental flaws in post-WWII economic orthodoxy—particularly its failures to address inequality, identity, and the unintended consequences of globalization. Therefore, the strength of Trump’s approach lies in its emotional resonance with voters who feel marginalized by globalization. Trumpism thrives not on traditional economic logic but on perceptions of cultural and economic displacement.

Second, the fact that politicians come to power using right-wing populist rhetoric and then cede substantial control to capital rather than monitoring, directing, and engaging it in government for the benefit of the people underscores the volatile, elusive, and inherently dangerous nature of populist discourse. Trump’s apparent shift toward oligarchic capitalism (techno-feudalism) through his explicit favoritism toward specific billionaires signals a transition from "neutral" state capitalism to a system where the government actively serves dominant private entities. This shift undermines market competition, reduces economic democracy, and fosters monopolistic tendencies.

Third, rather than adhering to the principle of reforming the existing US system and global multilateral organizations, as Yuen Yuen Ang argues, Trump intends to export or externalize significant problems of the US economy, such as the ever-rising income inequality, chronic and systemic corruption caused by the rise of robber barons, and financial risks, to the “rest” of the world via “beggar thy neighbor policies.”

In this emerging conflict, the digital economy, technology wars, and financial sanctions have become key instruments. However, under Trump’s approach, the current global fragmentation and the new Cold War environment have evolved beyond a simple polarization between the West and the China-Russia axis. The struggle is no longer just between the center (West) and the periphery (Global South) but also within the Global South and the West.

That fragmentation might also lead to: (i) The breakdown of global supply chains as the West tries to reduce its dependence on China, shifting toward a "friendshoring" trade model. As a reaction, expanding BRICS nations are advancing de-dollarization and constructing alternatives to the Western financial system. (ii) A possible economic bloc formation against Western dominance reminiscent of the 1930s increases the risk of economic stagnation and geopolitical conflict. The US and the EU are implementing "Green Protectionism" via carbon tariffs. If these trends persist, the global economy may enter an era of trade wars, financial decoupling, and economic fragmentation.

### Geoeconomics---Globalization IL---1AC

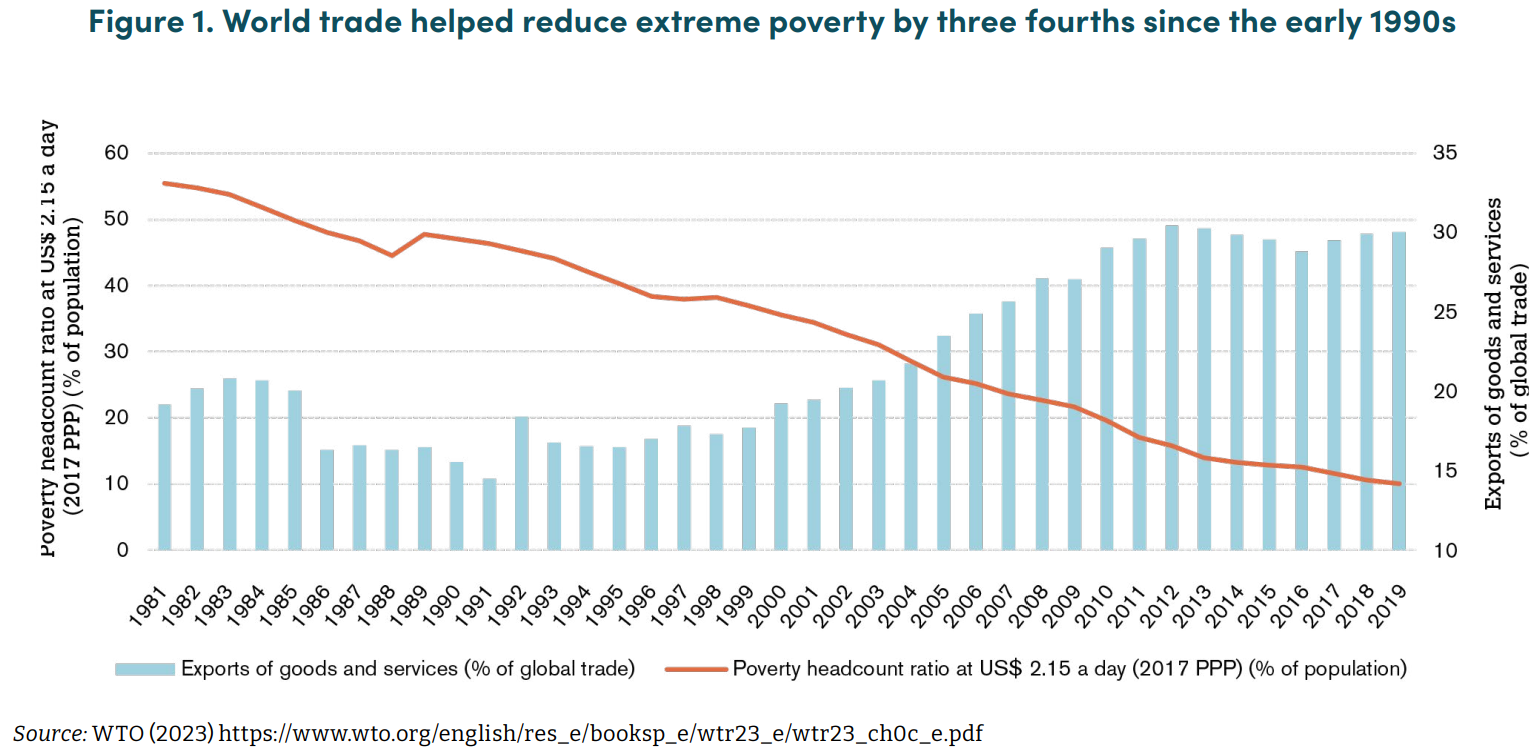
#### Globalization drove a century of gains across all indicators. Value chain fragmentation strips resilience to existential hazards, whether environmental, biological or political, and dooms collective action.

Yusuf 24 [Shahid Yusuf, Chief Economist of The Growth Dialogue at the George Washington University School of Business, Adjunct Professor at Johns Hopkins University School of Advanced International Studies, Non-Resident Fellow at the Center for Global Development, PhD Economics, Harvard University, “The Case for Globalization and Robust Global Value Chains Grows Stronger,” CGD Working Paper 680, February 2024, https://www.cgdev.org/sites/default/files/case-globalization-and-robust-global-value-chains-grows-stronger.pdf]

A new normal is coming into focus. A normal in which destructive extreme weather events will recur throughout the world with greater frequency, the likelihood of pandemics will increase, geopolitical tensions are causing policy uncertainty and could lead to periodic outbreaks of violence on a regional—or broader—scale,1 migration caused by climate change or a collapse of the socio-political order in societies, could prove to be highly stressful for countries especially those at the receiving end, misinformation and deepfakes (with AI serving as an accelerator) could exacerbate political polarization and a snowballing of the “democratic recession,”2 and the upward trend in private and public debt, which was 238 percent of global GDP in 2023,3 will hamstring macroeconomic and development policies.4 Rising populations in some of the most climatically vulnerable regions, depletion of natural capital and the ongoing environmental degradation, will compound the pressures on the global system (Dasgupta 2021; Helm 2023). The 10-year forecast by the Global Risks Report for 2024 (WEF 2024) spells out these risks and it shows how they can become intertwined triggering potentially devastating polycrises.5

1. Globalization: Rumors of its impending demise have been exaggerated but survival requires collective effort

In this dire new normal, maintaining or improving the material welfare of people worldwide will demand the efficient and sustainable harnessing of resources from across the globe. Countries will need to hang together, or they will hang separately. Moreover, for most countries, welfare enhancing GDP growth6 will depend in part on export performance and openness to trade.7 Between 1950 and 2022, gains from trade for the US amounted to $2.6 trillion a 10 percent increase in GDP (Hufbauer and Hogan 2023). For developing economies, trade has had a large hand in reducing poverty since the early 1980s (Figure 1). In fact, no country has scaled the income ladder without policy actions promoting trade.8 Moreover, growth that is export-led remains the only viable option for smaller economies.9 Looking ahead, a retreat from globalization, which has promoted trade and FDI would be counterproductive for all. No country however large, will benefit from the pursuit of greater autarky and for the majority, even a moderate degree of self-sufficiency would entail sacrificing decades of material progress.10 A fracturing of the trading system and a turning inward, would also redound against efforts to mitigate and/or adapt to climate change (Figure 2).11 As the grip of the new normal tightens, it will be to the advantage of all to work towards a more closely integrated global economy.12



[Figure 2 OMITTED]

[Figure 3 OMITTED]

The slowdown in the growth of the value of trade and its ratio to GDP following the Financial Crisis of 2009, led observers to believe that the period of the so-called hyper globalization was ending (Figure 3).13 Ever since, the determinants of globalization have been obsessively scrutinized to identify the emergence of a trend.14 Historians worry that the current globalization wave might suffer the fate of earlier episodes and precipitate a prolonged global economic downturn. Although the value of world trade as a percent of total GDP peaked in 2008 (61 percent) and has oscillated between 52 percent and 57 percent since, other indicators suggest that globalization albeit slowing,15 recovered from the Financial Crisis and has weathered the buffeting inflicted by the Covid 19 pandemic. The DHL Connectedness Index (2022)16 based on 4 million data points tracking the movement of trade, capital, information, and people, experienced a slight decline in 2020, but then rebounded strongly in 2021 and is projected to continue rising—barring the appearance of a highly disruptive event (Figure 4).

The DHL Index is rendered more credible by the findings of a recent study by Ganapati and Wong (2023). They show that when global trade is measured by tonnage—rather than by value—and by the distance goods are transported, globalization according to this metric has risen steadily. The tonnage shipped has remained close to 0.24 to 0.26 shipped tons per $1,000 of real-world GDP but the distances the goods travel has increased. In other words, growth in the normalized weight measure of trade continues to rise steadily from the turn of the century through 2020 (Figure 5). These findings suggest that trade globalization could continue albeit more slowly and in the process buoy global growth prospects.

[Figure 4 OMITTED]

[Figure 5 OMITTED]

The sinews of globalization: GVCs

Global value chains (GVCs) have become the machinery of globalization.18 They have proliferated since the 1980s and are largely responsible for many of the benefits bestowed by globalization. They have generated most of the 13 billion supply links that connect 300 million firms that participate in international trade (Pichler et al 2023).19 Initiated by the liberalization of trade,20 and accelerated by the declining cost of telecommunications and transport, globalization widened in the 1990s to encompass not just trade of intermediate and final products but also international flows of capital, technology, ideas, and people more fully (PIIE 2022). In this context, leading MNCs found it increasingly profitable to disintegrate the production process and to outsource some stages to other firms thereby reaping efficiency and productivity gains. As of 2021, GVCs intermediated up to 70 percent of trade-based movement of goods and services.21 They have served as conduits for FDI, innovation and the transfer of managerial and technical skills and tacit knowledge to their widely dispersed partners (Hauge 2019). By facilitating exports, GVCs have enabled developing countries to industrialize, achieve higher growth rates and to substantially reduce poverty. Undoubtedly, globalization has been disadvantageous for some in developed and developing countries alike. Arguably, the gainers outnumber the losers but the outcry from the losers is affecting the political calculus and must be reckoned with for global integration to be sustained (Bordo 2002; Ulgen and Inan 2022a).

The Covid 19 pandemic highlighted the key role of GVCs in expediting the production and dissemination of vaccines by marshaling scientific knowledge, intermediate inputs, production facilities, and logistics. But with economic policies taking a more nationalistic and protectionist turn over the past decade, trade conflicts between major economies sharpening, income inequality a rising concern, and sociocultural opposition to immigration becoming more acute, there is a perception in some quarters that going forward, ‘slowbalization’ if not deglobalization is in the cards (Walters 2021). This is evidenced by slackening rates of GVC participation rates and fragmentation of value chains.22

In this paper, I argue that a retreat from globalization broadly defined, and disruption of the GVC machinery would have negative sum outcomes for all participants. In the troubling new normal that is currently unfolding, global integration aided by more streamlined GVCs will safeguard the gains to date and allow the global system to adequately cope with both the known challenges and others that remain unknown—including through the provision of global public goods.23 Thus, the imperative for the leading economic powers is to minimize the threats to globalization and check the unraveling of GVCs. In this endeavor, the economic advantages of globalization will be pitted against strong political currents breeding distrust among nations and making it harder to agree on policies necessary for economic flourishing in a planetary environment the viability of which is no longer assured.

### Geoeconomics---Carbon Nationalism !---1AC

#### Regulatory autonomy directs the profitability of state investment toward global decarbonization. Otherwise, state capitalism’s vulnerability to economic nationalism entrenches carbon competition and extinction.

---NOCs = national oil companies

Babić 23 [Milan Babić, Associate Professor of Political Economy at the Political Science Department and the Amsterdam Institute for Social Science Research at the University of Amsterdam, Principal Investigator of the DECARB project, co-founder and organizer of the Geoeconomics Network at the Society for the Advancement of Socio-Economics, PhD University of Amsterdam, “Consequences: Covid-19, geoeconomics and climate change,” Chapter 6, *The Rise of State Capital: Transforming Markets and International Politics*, Agenda Publishing, 2023, ISBN 978-1-78821-572-5, p.118-131] \*[language modifications in brackets]

Global rivalries, but different this time

If my analysis of the coming geoeconomic decade is, at least in its broad lines, accurate, the question remains what this means for the future of the competing state and its possible demise. As I argue throughout this book, the rise of state capital is not so much a counter-movement to neoliberal globalization, but rather neoliberalism’s own creation. As such, it might very well be that the various maladies and the slow but final demise of neoliberal globalization also means writing the requiem for the competing state of the early twenty-first century. However, as Chapter 2 has demonstrated, different historical state forms transform rather than vanish entirely. The emergence of new state forms is closely tied to historical developments that either have an effect on state transformations or are themselves the product of these transformations. Either way, an entire replacement of the competing state is unlikely, given basic economic interdependencies and existing cross-border ties that will not disappear overnight.

One possible scenario of framing the future of the competing state could be the upcoming “new Cold War” between China and the USA. The fact that the various state-led geoeconomic dynamics involve more actors than those two superpowers does not mean that such a framing is entirely obsolete. From recent research into the emerging “infrastructure scramble” that accompanies the new Cold War, we know that many sites of competition and conflict are located outside of China and the USA, from Africa to Latin America and from Europe to Asia.15 By mobilizing state power through investment, regulation, diplomacy and other foreign policy and economic tools, the USA and China aim to position themselves in a “geopolitical-economic competition to integrate value chains anchored by their domestic lead firms through the financing and construction of transnational infrastructure” (Schindler et al. 2021: 1). The geoeconomic aspects of this infrastructure scramble are clear: the new global rivalries are not fought out in a classical geopolitical security sense, but by competing for transnational infrastructures. This new territorial logic also produces new forms and instruments of geoeconomic competition, of which one is state-led investment.

If we follow this analysis of the new Cold War, the competing state would not come to an abrupt end, but rather be instrumentalized in the course of the coming decade. The integration of state capital into existing structures of globalized capitalism during the neoliberal period could enable its weaponization in a geoeconomic world. This is especially the case for competition-prone sectors like global infrastructures that Schindler and colleagues identify as a crucial battleground of the new Cold War. We have seen in the above analysis that, next to manufacturing and energy production and distribution, infrastructures for logistics and transport are sectors where global state capital is highly concentrated. The global competition for the control of these physical as well as digital infrastructures is hence a major hotspot defining world politics for the 2020s. The involvement of states via direct investment and ownership in these sectors is an important asset and calculus for geoeconomic strategies. As with Covid-19, the consequences of a possible weaponization of state capital for geoeconomic ends differ per competing state strategy. Those at the financial end of the spectrum will be less involved in strategic disputes than more controlling strategies.

With all this being said, it is important to note that the “new” Cold War will indeed be new. The rise of the USA–China global rivalry out of the rubble of neoliberal globalization is in many ways hard to compare to the USA–Soviet standoff of the twentieth century. One difference is the varying territorial logics (geopolitical versus transnational). Another important distinction is that the globalized economy of the twenty-first century represents a profoundly different agency space from the twentieth-century world economy that was still mostly organized according to national borders. Within this space, different instruments and strategies are being employed rather than a simple geopolitical projection of state power abroad. Instead, as we have seen, geoeconomic instruments and strategies prevail, from capturing important global assets to controlling value chains across multiple states and jurisdictions. This different international or transnational environment in which the new global rivalries are being conducted also becomes a potential and real source of instability. While the “old” Cold War at times only avoided nuclear catastrophe by sheer chance, it was for the most part a geopolitical standoff between two relatively stable blocks of nation states with fairly predictable behaviour. The strategies and effects of geoeconomic competition in the new Cold War are, however, much less predictable. State capital is exemplary of this, as it first almost seamlessly integrated into global markets and corporate networks, only to be potentially weaponized within a few years of global turbulence. What seemed like a “good bargain” a few years ago might turn out to be problematic for many hosts of state capital as geoeconomic calculations change the rules of the game. Another at least as important source of potential instability going forward into the next decades is the interplay between states as owners and climate change, which is analysed in the remainder of this chapter.

The long game: state capital and climate change

For many developed economies, serious climate change mitigation policies have for a long time only played a role in so far as they were promises for the future. Targets like limiting global warming to 1.5°C in the Paris climate accords appeared to be concrete and quantifiable, but often turned out to not be followed by concrete steps to reach this goal. In recent years, partly because of the evident increase in catastrophic climate events, governments around the world are being pressured by civil society actors to finally take climate change seriously as the single overarching threat to human life on earth. Global climate movements like Fridays for Future or Extinction Rebellion gave this urgency a platform and voice, demanding immediate political action. States see themselves as confronted with two countercurrent forces. On the one side, decarbonization and getting to a low-or zero-carbon economy is in the objective interest of any government worldwide. The calculation here is simple: only an emissions-free world can create stable natural circumstances, which are the necessary conditions for the continued existence of socially organized forms like states. On the other side, a mixture of the psychological denial of the existence of an actual climate crisis, the short-termism of many domestic and international political horizons, vested “carbon interests” and capitalist path dependencies (e.g. in industrial organization) introduce obstacles and postponements to objectively necessary climate action. In order to realize an emissions-free world, a fundamental socio-economic transformation that reconciles the objectively necessary with the practically doable is the conditio sine qua non of avoiding climate catastrophe.

Research into the possibilities and limitations of such a fundamental transformation introduced the idea of the environmental state (Duit et al. 2016; Eckersley 2020). This is “a state that possesses a significant set of institutions and practices dedicated to the management of the environment and societal– environmental interactions” (Duit et al. 2016: 5). This state form is sometimes referred to as a normative goal of government action towards “greening” the state, society and the economy (Eckersley 2004). In other cases, the environmental state is used as a descriptive category to benchmark the ongoing transformation of states into “green” ones (Sommerer & Lim 2016). In both cases, however, the overarching motive is to better understand and enable green transitions by mobilizing statecraft. Within this discussion, scholars also importantly scrutinize the limitations and boundaries of the environmental state from a critical perspective. Studies about the “glass ceiling” (Hausknost 2020) of environmental states, or the discursive instrumentalization of the concept (Hatzisavvidou 2020), add important perspectives on how to critically engage with the problematic aspects of the environmental state.

From a state capital perspective, three questions arise regarding the role of the state in a global green transition. First, how can we conceptually think about the role of the state as an owner within the environmental state discussion? Second, what is the role and extent of state capital in global carbon and fossil fuel investment? Third, what are the pathways to decarbonize the state as an owner and how do competing states differ in this respect? The remainder of this chapter addresses these three questions. Despite the urgency of a global green transition, this aspect of state investment is the most long term as it concerns the fate of the global political economy until at least the end of this century.

Thinking differently about the environmental state

Following Andreas Duit, the environmental state perspective deals most explicitly with issues like regulating other (mostly corporate) actors, for example through law-making; redistributing environmental harm, for example through taxes; administrating environmental protection, for example through environmental agencies; and producing, supporting and distributing knowledge about environmental change, for example through university research funding (Duit 2016). These four aspects are a quite comprehensive description of the various tasks of the environmental state in the twenty-first century. At the same time, each of those aspects fall under a managerial understanding of the environmental state. This means that the state is portrayed as the prime actor coordinating, managing and if necessary intervening in the ongoing transformation processes in society and the economy.

This managerial understanding is useful, as it allows us to see [know] where states meet their obligations, for example regarding international agreements like the Paris goals. It also enables us to point out different areas where state action and regulation can go further and where civil society can press for more radical change. Finally, it also allows us to critique the potentials and limitations of state power in bringing about objectively necessary changes, as is already being done within the existing literature. From a state capital perspective, however, an important component is underrepresented in the discussions on the environmental state, namely the role of the state as carbon owner itself. While states do regulate other actors and manage socio-economic processes, they are in many cases themselves profiting from carbon-intensive business practices like fossil fuel extraction. In fact, today’s global oil and gas production is dominated strongly by NOCs, and states are still responsible for about 40 per cent of global investment in the fossil fuel sector.16 This is not much less than what NOCs produced and controlled almost a decade ago (Hults et al. 2012). This leads to a paradoxical situation: some of the very states that are supposed to manage the green transition are themselves carbon incumbents and profit from the production, sale and investment of and in fossil fuels. A prime example of this problematic dichotomy is Norway. While the Norwegian SWF pledges to continuously divest from fossil fuel-producing firms, the Norwegian government continues to expand its licensing for fossil fuel exploration in the Arctic (Arvin 2021a). The revenues from this business model are then partly used to fund its climate-conscious SWF investment strategy.

Such examples illustrate why it is important to consider both the managerial as well as the ownership aspects of the environmental state. Existing studies on the environmental state, however, pay less attention to how states as owners behave, what their investment strategies are and what meaningful decarbonization steps would look like. A state capital perspective can shed light on these questions by asking what states do, not as market regulators but as market participants. The benefit of introducing such a perspective is also a practical one. Changing environmental laws and aiming to induce behavioural changes through regulations and incentives is often a long-winded, steep process jeopardized by partisan divides, legal setbacks and uncertain implementation. Flanking these necessary societal negotiations with quick and effective measures like the disinvestment of state carbon capital is an important but often neglected aspect of environmental state discussions.

Conceptually, we can draw again on Gramscian state theory in order to think through the ownership or investment side of the environmental state. As proponents of the environmental state also emphasize, states are not unitary agents, but rather “fragmented, self-contradictory, and only partly coherent” (Duit et al. 2016: 4). Gramscian state theory finds the reasons for this fragmentation in the various state apparatuses and the respective contradictory logics, interests and power relations inscribed into them (Jessop 2007; Poulantzas 1969). Far from being unitary actors, state apparatuses hence often develop lives of their own, which can thus push forward or restrain state transformation.17 The vehicles and apparatuses that govern the state as an owner hence represent a specific aspect of the environmental state that needs to be analysed in different ways than its managerial counterparts. It is, for instance, relevant that SOE governance has, in most cases, a relative distance from other state apparatuses like environmental legislation. This is especially the case for transnational investment vehicles, which are often managed by professional elites and are not directly controlled by ministries, as they used to be in the twentieth century. Depending on the particular constellations of state and societal power inscribed into these apparatuses, this distance is greater or smaller and so is the relative autonomy of different apparatuses.

I argue that in order to understand the ownership role of the environmental state beyond its managerial aspects, we need to focus on how carbon state capital behaves in the global political economy. To provide a first step into this direction, I first scrutinize what we mean when we say “carbon state capital”, and then discuss the decarbonization potentials of different carbon state ownership strategies.

Oil, gas and other dirty assets: what is carbon state capital?

Speaking of carbon state capital necessitates a definition: if states are supposed to be carbon owners, what is “carbon” ownership exactly? One simple way of answering this is to look at fossil fuel industries exclusively. States that are directly invested in fossil fuels do not only receive profits from this investment, but often also directly control their invested firms. This gives them significant leverage over firm strategy, especially when it comes to decarbonization efforts. This approach is chosen by most studies on NOCs that aim to analyse the direct involvement of states into fossil fuel extraction and production. While fossil fuels represent the largest chunk of carbon state capital, they are not the only CO2 -intensive sector that is state-invested. Other industries like petrochemical production, pesticides and fertilizers, cement and steel production, air transport and mining are also relevant and represent investment targets for carbon state capital. In fact, each of those industries contributes a significant share to yearly total greenhouse gas emissions.18 If we take these investments on board, we get a more comprehensive picture of states as global carbon owners and investors.

Such a state capital perspective consequently takes not only particular vehicles (like NOCs) and their specific ties (into gas, oil and coal) seriously, but the state as an owner. This makes it possible to map the “real” carbon footprint of the environmental state by incorporating not only the investment ties of specific vehicles into specific industries, but of state ownership itself. This allows us also to critically scrutinize claims by states and state-owned investment vehicles of carbon “divestment”, especially when this type of divestment concerns only direct oil and gas exploration and production, but often not downstream businesses and other related industries like petrochemicals.

If we adopt such a state capital perspective, two questions emerge. First, what is the relation of the carbon footprint of cross-border state investment compared to domestic investment? Second, what is the scope of industries we should take into account to understand the carbon footprint of competing states? Both questions are relevant for understanding what state carbon capital is, and what the decarbonization potential of states as global carbon owners can be.

Regarding the first question, a comparison of the domestic and transnational volumes of carbon state investment shows that for most large owners the transnational dimension is less significant. As an estimate,19 direct ownership of carbon capital is, for owners like China, around less than 1 per cent of its total investment, while for the UAE or Russia it is below 3 per cent. While these numbers are fairly low, we need to take into account two caveats. The first is that the sample used here pertains only to the direct state ownership of carbon-producing firms and excludes subsidiaries that are not directly state owned. This automatically reduces the number of transnationally held carbon capital. Second, most carbon capital is naturally domestically owned, as large utility firms responsible for energy security have a long history of state ownership. The share of the competing state on national energy production is hence almost by definition lower.

However, despite its lower total share, transnationally owned carbon capital also contains a decarbonization advantage. States that own carbon capital outside their borders usually do not hold this for reasons of domestic energy security. Rather, they exploit the opportunities offered to them by the transnational agency space. This might in some cases – like the Gulf states – be a vital component for a competing state’s “business model”. It is, however, easier to divest from cross-border carbon assets and investments than to give up domestic energy security that is tied to fossil fuels in the most cases. On top of this, there are some competing states that indeed own a quite large share of their total carbon investment cross-border. Most prominent among them is Norway, which is estimated to own around three-quarters of its total carbon investment transnationally. Others like Singapore, Canada or Sweden also invest significant amounts of state carbon capital outside their own borders. This aspect increases the decarbonization potentials of some competing states compared to others that hold most of their carbon assets in domestic energy generation or other vital industries.

This leads us also to the second question regarding the scope of industries that should be taken into account when we speak of “carbon” state capital. A first criterion should be, as I argued above, a broadening of our understanding of this phenomenon beyond the direct extraction and production of fossil fuels. Related industries like cement production, petrochemicals or fertilizers are also carbon emitting and state ownership plays a significant role here. Second, we should introduce a caveat and not regard state ownership in industries like food production or infrastructure development as “carbon” state capital per the definition. Despite their significance for global emissions, food production and other vital industries should maybe even become more state-owned in an age of increasing climate change-induced food insecurity and global coordination and distribution problems. The strategy here would not be to seek to divest from these vital industries, but rather to transform them into green industries under public control. Third, and related to the first two points, we should take into account industries and sectors where decarbonization is straightforward and feasible from a state capital perspective. Not all sectors are as clearly and straightforwardly problematic as large national oil and gas producers. Take mobility and transportation as an example: while state ownership in airlines can be regarded as a sector which should be taken into account for decarbonizing state capital, national transportation and railway systems are less clear-cut. The transportation of vital goods like food and medicine are still dependent on fossil fuelled means like motorized trucks in most countries. Decarbonizing these sectors is difficult, not least because state capital is often interwoven with private investment, for example when states own roads and railways but the operators are private companies (see Liu & Dixon 2021). For an effective and rapid carbon state capital decarbonization and divestment, the more clear-cut cases of carbon state ownership should have priority.

By taking these differentiations seriously, I argue that we can develop a comprehensive and concrete approach to the decarbonization of states as owners. Such an approach echoes the recent call by Robyn Eckersley for a renewed critical strategy at decarbonization efforts which she describes as “critical problem-solving” (Eckersley 2020). Drawing on a critical Gramscian perspective enables us to disentangle the various aspects of the state as a carbon owner, while the (pragmatic) push for feasible and rapid transitions brings an important problem-solving angle to the issue at hand. This fusion of critical inquiry and pragmatic problem-solving aspects leads to the two differentiations made above. In sum, we need to distinguish competing state ownership from energy security and other domestically oriented ownership and acknowledge different decarbonization potentials in both spheres. In addition, we should be aware of the fact that “carbonized” industries are not all the same when it comes to state investment: there is more than fossil fuel ownership where states are involved in carbon-emitting industries; some industries and sectors are more vital for the functioning of economies and societies than others and should hence be treated differently; and some are more straightforward to disentangle and decarbonize than others.

With these provisions, I seek to add another crucial layer to the developed state capital perspective. So far, I have covered some of the general aspects that a state capital perspective can contribute to the study of environmental states and decarbonization potentials. However, one key topic of this book is the distinction between the ideal types of financial and controlling state strategies. This strategic distinction can add an important factor to the more general discussions of what state capital can and cannot achieve within the global energy transition.

Carbonized strategies

When referring to “decarbonization” in general, I mean the process of “getting rid” or eliminating a CO2 -producing asset (or the emitting parts of this asset). This can principally work in two ways: either the asset owner decides to redirect the investment in a carbon asset towards alternative, sustainable assets (divesting); or the owner lets the asset “strand”, meaning that the owner stops producing or exploiting the CO2 -emitting asset altogether. The first point does not mean that there will be an effective reduction of emissions, as other buyers can simply continue exploiting the sold asset (see, e.g., Christophers 2021). However, if states as the largest producers of fossil fuels decide to eliminate massive carbon assets from their ownership portfolio, they undoubtedly signal to global markets that CO2 -intensive assets will eventually be stranded and hence do not represent a viable long-term investment goal (Baron & Fischer 2015). A third option is to “green” the CO2 -emitting aspects of an asset, which is more a socio-technical question of making production processes and the like emissions-free. For states as owners, the first two options will be the most immediately relevant ones, and they reflect the different investment profiles (portfolio and majority) discussed below.

Decarbonizing states as owners requires us not only to think about the general aspects of carbon state capital, but also about the different decarbonization potentials of competing states. On the most basic level, this concerns the ability to rapidly divest from fossil fuels without running into either a devastating economic crisis or even bringing about serious political instability by this fast transformation. This dependence on state ownership of fossil fuels for economic and political stability, however, mainly concerns a group of states where political and economic power are intimately tied to the state (elite) control of the extraction, production and sale of fossil fuels like in many of today’s monarchies in the Gulf region. Large owners like Saudi Arabia or Kuwait have almost all (the former) or close to 90 per cent (the latter) of their carbon state capital invested in majority stakes. For most of the other competing states, the abandoning of carbon investment, beyond fossil fuels, will not lead to major crises, but will rather require a strategic reorientation of its investment. This is where a differentiation between more financialized and more controlling strategies becomes a useful guiding principle.

From a financialized strategy perspective, carbon investment is one among many asset classes that states as owners are involved in. Given the nature of these financial strategies, carbon capital is here on average invested via portfolio stakes. This means that states usually own small parts of firms that are counted as carbon intensive, for instance carbon multinationals like Shell or BP; or they are invested in global industrial emitters like cement or steel firms. The relevant point here is that most of this investment is usually not conducted because these are CO2 -intensive companies. States as the owners of vehicles with portfolios invested in carbonized assets usually do this as a means of gaining a return on investment [ROI]. Where this return on investment is being realized is most often a question of profits rather than of sector or industry. In other words, it is the profitability of these CO2 -intensive industries that decides about whether state capital is allocated there.20 With, for instance, rising carbon taxes or other regulatory moves that reduce the profitability of these sectors, an outflow of state capital is to be expected for most financial competing state strategies.

This circumstance is especially pertinent for owners with vehicles that “mimic” other private institutional investors, for example by closely aligning their investment strategy with well-known indices. Among the top clients of index provider firms like MSCI are state-owned vehicles like SWFs.21 By allocating a certain amount of their equity investment into the hands of major index providers, state-owned vehicles become partially passive surfers on global market dynamics. Although most SWFs still exert enough discretionary action when it comes to replicating indices, they in sum broadly follow global market trends.22 A future dwindling profitability and the lower market capitalization of carbon firms is hence likely to lead to disinvestment and to a shift of those funds into alternative assets. This almost “automatic” aspect of global financial investment dynamics also influences the investment decisions of states as owners with large pools of portfolio investment. In sum, the relative liquidity of portfolio investment increases the decarbonization potentials of this strategic profile drastically.

On the other side, more controlling strategies do not display similar levels of liquidity and flexibility. Competing states with a controlling strategy usually invest their capital in majority stakes of cross-border-owned firms. This means that on average they hold large and quite inflexible positions in these firms, which are often also direct subsidiaries of domestic SOEs. To divest from these assets would hence mean giving up on either large and expensive acquisitions or reducing the number of subsidiaries cross-border. This is a fundamentally different situation from that of financialized strategies: as I have argued, controlling strategies are often motivated by cross-border asset capture, the acquisition of specific know-how or the control of vital nodes of global value chains and infrastructures. This type of investment often targets particular firms and industries that help in realizing those goals. This means that it is not primarily the profitability of these investments that drives cross-border investment, but specific types of assets and industries. Consequently, controlling strategies are much less flexible in simply switching from carbon-intensive to low-carbon investment alternatives. Many of the controlling strategies even aim at controlling cross-border carbon capital, as is the case for the Russian or Gulf states’ strategies.

This lower flexibility and liquidity are thus potentially bad news for divestment and decarbonization efforts. Controlling strategies are from a theoretical standpoint much less likely to engage in rapid decarbonization if their investment strategy is not solely motivated by pure profitability aspects. In the worst case scenario, controlling strategies could even suffer disproportionally from falling profitability and shrinking market valuation of carbon assets in the future. Since these competing states are more or less “stuck” with their cross-border invested carbon capital, many of those investments could turn into so-called stranded assets. This asset type is broadly defined as an investment which is expected to stop returning a profit before the end of its life cycle. Stranded assets are thus leading to economic losses (see Caldecott 2017: 2). In the case of controlling strategies, these losses can amount to large sums. If states hold on to average majority positions in their (carbon) assets cross-border, the cumulative effect of a stranding in the future will be felt much more strongly than for financial strategies. Owners like Russia, India and Myanmar will have to rethink their strategic exposure to this issue. For another group of small countries where state carbon ownership makes up a significant share of their GDP (or total state assets), like Azerbaijan or Kuwait, these problems will be even more virulent in the coming years.

Decarbonizing through disinvestment? Towards concrete strategies

The debates about the potentials and “glass ceilings” of the environmental state show that it is necessary to flank these general discussions with a more granular look at different aspects of how the state relates to environmental degradation. Through a Gramscian state-theoretic lens, it is possible to focus on state ownership and state investment as being controlled by specific state apparatuses that are not always visible in more abstract discussions. The analysis above shows that such a perspective enables us to ask concrete questions that are crucial both for the future of competing states but also for the mitigation potential of environmental states: what is state carbon capital? How should we understand its transnational aspects? How does the divestment from carbonized state capital relate to economic and political stability? And which strategies are more or less likely to succeed with which possible reverberations? It is this series of analytical distinctions between various owners, strategies and decarbonization potentials that is crucial to building a good understanding of carbon state capital going forward.

As a bottom line, I argue that it is indeed possible to sketch ideal-typical decarbonization strategies for states as owners. These strategies then have to be implemented concretely on the ground and aligned with different local circumstances. This means that the above-mentioned catalogue of questions about industrial specificity, extent of transnational carbon investment, political stability, varying investment strategies and other issues can be put to work in case studies. Climate change and its mitigation attempts will be the single most existential political issue for the next decades, and the role of the state in these mitigation efforts is becoming more virulent again. Beyond the important general groundwork conducted in the environmental state literature, we also need to be able to grasp the socio-economic foundations and variation of carbon state investment as one major obstacle and potential for greening the state.

With these analytical provisions, the crucial question for the competing state is which role it will play in a “green” global political economy of the future. Two broad alternatives are thinkable: either competing states divest from their carbonized capital and reinvest this capital elsewhere (probably for financial strategies) or they withdraw, and in the worst case amortize this capital in the long run (probably for controlling strategies). Or these competing states find a way of decarbonizing large parts of their carbon investment without necessarily having to divest. While this scenario also depends on the type of investment – oil assets are harder to “decarbonize” than investment in transportation and logistics – it also involves the existence (or lack) of a long-term strategic vision. As we saw in Chapter 4, heavily carbonized owners like Russia and Saudi Arabia can have quite different views on the long-term viability of fossil fuel and carbon investment. While the latter is already engaging in longterm diversification of its investment, in order to avoid having to deal with a large amount of stranded assets among other things, the former seems to be more engaged in tactical rather than strategic thinking so far (Bradshaw et al. 2019). For competing state elites that do not engage in this sort of strategic thinking, decarbonization could happen involuntarily through global market shifts and stranded assets. Whether states as owners pick one of the other strategies of (conscious) divestment or decarbonization will also be determined by the various analytical questions formulated and explained in this section.

## Expenditure K

### Geoeconomics DA---2AC

#### 2---geoeconomics---state capitalism and the ALT are two faces of the same coin: the state picking economic winners---and they have the same Achilles heel: cooption by populist economic nationalism---that:

#### A---only escalates trade wars and xenophobic security dilemmas, triggering deterrence failures and nuclear conflict---that’s Ozturk…

< FOR REFERENCE, 1AC Ozturk >

Both scholars differentiate between market economies based on local trade and reciprocity and capitalism, which operates on a larger scale and inherently tends toward monopolization. Braudel views capitalism as an upper layer of economic activity that never functions under pure free-market conditions, exploiting markets rather than being synonymous with them. Capitalism always seeks privileged access to resources, political power, and monopolies. Thus, Braudel and Polanyi converge in their critiques, exposing capitalism’s reliance on state power and monopolistic control and its disruptive effects on society. Braudel emphasizes capitalism’s exploitative nature, whereas Polanyi underscores the commodification of key economic factors, particularly labor.

…

Besides such domestic political-economy implications of the evolving forms of capitalism, their various configurations are also catalysts for conflict when they attempt to externalize emerging problems and challenges. The main dimensions of problem externalization might take several forms:

…

In conclusion, by replacing domestic policy reform agendas, such as corporate taxation and labor protections, with blame-driven economic nationalism, governments avoid addressing the root causes of economic discontent and fuel long-term geopolitical instability. If this ongoing trend persists, the world may experience an era of intensified trade wars, economic decoupling, and heightened geopolitical tensions, reminiscent of the 1930s, increasing the risk of large-scale conflicts.

#### …AND

---“more desirable forms” and “The above sketch” are references to “The world-system pathways (WSPs)” diagram in Albert 24 on FW

Albert 24 [Michael J. Albert, Lecturer in Global Environmental Politics in the School of Social and Political Science at the University of Edinburgh, former Lecturer in International Relations at SOAS University of London, PhD Johns Hopkins University, “Futures of Geopolitics, Security, and the Planetary Problematic,” Chapter 5, *Navigating the Polycrisis: Mapping the Futures of Capitalism and the Earth*, MIT Press, 2024, ISBN 9780262378260, p.177-223]

The above sketch provides a sense of how ecosocialist degrowth in the overdeveloped world and abolitionist strategies can mutually complement and reinforce each other. But we must also consider how ecosocialist regimes might respond to lingering and emerging threats from other states and nonstate actors. Even in a best-case scenario in which the US, China, the EU, and others collaboratively embark on ecosocialist trajectories, other powerful states would likely resist. Russia, as we’ve seen, would likely pose a threat to ecosocialisms-in-transition because of its reliance on plummeting oil and gas rents, simmering vengefulness, and powerful nuclear, cyber, and info-war capabilities. Thus nascent ecosocialist regimes in Europe and North America may need to sustain military and nuclear force structures while reducing them to the minimum needed to deter aggression, while also committing to clear no-first- use policies, taking nuclear missiles off hair-trigger alert, ending nuclear modernization and hypersonic missile programs, and working with other states to move toward deeper nuclear disarmament and institutionalized mutual constraints over time.155 Things would of course be far more challenging if the US undergoes Trumpian backlash and remains a resistant outlier to a China-EU- centered ecosocialist bloc. In this case, a global ecosocialist transition may still be possible, but only if US military and geopolitical power declines precipitously. This is possible, since a mass sell-off of US treasuries by China and other states—along with declining demand for US dollars as the global economy transitions beyond oil (thereby undermining the “petro-dollar” nexus, historically foundational to US financial hegemony)—could erode its capacity to sustain its bloated military budget. 156 But the obvious danger is that a US dollar crisis would inflame nationalist passions and bring a Trump-like figure to power promising a return to “greatness” on the back of US military might. Thus it is plausible that great-power war could break out during the course of ecosocialist transitions—particularly if the world splits into competing fossil nationalist and ecosocialist blocs—and it is unlikely that ecosocialisms could survive such a conflagration (at least in their more desirable forms).

#### B---it fragments supply chains, and deglobalizes the planet---reversing decades of gains in life expectancy, poverty, cultural exchange, and global resilience to existential risks through things like tech diffusion, vaccine sharing, and food aid---that’s Yusuf

### Carbon Nationalism DA---2AC

#### 3---carbon nationalism---preserving the profit motive means regulating markets causes divestment even if it’s NOT in our geopolitical interests---BUT deleting markets deletes the only reason states don’t normally try to capture and extract ALL the fossil fuel so their ideological enemies can’t access it (see: Venezuela)---only accelerates warming---that’s Babić…

#### …AND

Bernstein 24 [Alyssa R. Bernstein, Department of Philosophy, Ohio University, “Global Climate Change: Political Realism and the Case for a World Climate Bank,” *The Palgrave Handbook of International Political Theory*, vol.2, Palgrave Macmillan, 2024, ISBN 978-3-031-52242-0, pp.71-93]

Broome asserts that governments will have to nationalize many of the fossil fuel resources (Broome et al. 2022). This raises political, moral, and legal questions. For example, should a WCB provide funds to each and every government for the purpose of nationalizing resources in its own territory? Should a WCB buy and own fossil fuel resources? How might it be possible to prevent or control later use of them, regardless of who owns them (during at least several upcoming centuries)? A further concern is neoliberal nationalization, which aims, according to a recent study, “to protect corporate actors from the effects of their own irresponsible business practices, maintaining ‘business as usual’ by pre-emptively socializing the foreseeable risks of rapid capital asset devaluation” (Tienhaara and Walker 2021, 120). Should this be facilitated by a WCB?

Nationalization was once anathema to neoliberals and the hydrocarbon-based corporations long closely integrated with the neoliberal project. Indeed, the origins of neoliberal advocacy for global economic liberalisation can be traced, at least in part, to the resistance of oil multinationals to nationalist governments attempting to assert ownership and control over natural resources. It is therefore striking that calls are now mounting from this quarter for the nationalization of fossil fuel infrastructures, to keep them operating as climate policy, loss of public legitimacy and changing market conditions increasingly make investments in them unprofitable, uninsurable, or uncompetitive. (Tienhaara and Walker 2021, 120)

Any proposal for nationalizing fossil fuel assets must be scrutinized in this light.

### Sustainability---Aff Solves

#### The plan’s key to sustainability

Handoyo 24 [Sofik Handoyo, Professor of Strategic Management Accounting and Faculty of Economics and Business at Universitas Padjadjaran, “Public governance and national environmental performance nexus: Evidence from cross-country studies,” Heliyon, 10(23), 11-22-2024, p.e40637, DOI 10.1016/j.heliyon.2024.e40637]

3.2. Political stability and national environmental performance

Political stability is commonly understood as the absence of systemic threats to the current political system, encompassing both the peaceful transfer of power and the government's capacity to manage public affairs effectively. Theoretical discussions often start with the premise that stable governance structures are better positioned to formulate and implement long-term environmental strategies [[71](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib71)]. The argument is that political stability allows for the continuity of policies, accumulation of institutional knowledge, and consistent enforcement of regulations [[72](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib72)]. Conversely, political instability can lead to short-termism in policy orientation, corruption, and a lack of enforcement [[73](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib73)]. Political stability and the absence of violence are signs of a society's freedom from conflict, political turmoil, and violence, which can significantly affect environmental sustainability. A stable political environment often provides the necessary institutional support to establish and enforce robust environmental policies. The ground-breaking study by Li and Reuveny [[74](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib74)] demonstrates that political stability considerably enhances environmental performance, mainly by reducing [deforestation](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/deforestation) and carbon emissions. Stable political conditions enable long-term planning and the allocation of resources to environmental projects. However, the effect of such conditions may not yield immediate results [[71](https://www.sciencedirect.com/science/article/pii/S2405844024166686#bib71)].

H2

political stability is positively associated with national environmental performance

3.3. Government effectiveness and national environmental performance

Government effectiveness reflects the quality of public services, the [civil service](https://www.sciencedirect.com/topics/social-sciences/civil-service) and its independence from political pressures, the quality of policy formulation, and the credibility of the government's commitment to its stated policies [[75](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib75)]. The underlying premise is that effective governments are better equipped to design, implement, and enforce environmental regulations, manage natural resources sustainably, and respond to environmental challenges. Effective governments can mobilize resources for environmental protection, enact and enforce comprehensive environmental legislation, and foster cooperation among various stakeholders. Furthermore, effective governments are also seen as more capable of long-term planning, necessary for addressing [environmental issues](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/environmental-issue) that often extend beyond electoral cycles. Research findings suggest that well-functioning governments tend to achieve better environmental outcomes [[76](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib76)]. Congleton [[77](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib77)] argues that governance effectiveness is essential for successfully implementing policies aimed at public goods such as environmental sustainability. Similarly, Bättig and Bernauer [[78](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib78)] suggests that effective governance structures can successfully implement strict environmental regulations that are adhered to, leading to better national environmental performance. Governance effectiveness is not only evident in policy formulation but also in enforcement capabilities. Fredriksson and Wollscheid [[79](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib79)] emphasize that an effective governance system can implement and maintain surveillance over environmental regulations.

H3

government effectiveness is positively associated with national environmental performance

3.4. Regulatory quality and national environmental performance

Regulatory quality refers to the government's ability to create and enforce sound policies that facilitate [private sector](https://www.sciencedirect.com/topics/social-sciences/private-sector) growth [[23](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib23)]. High-quality regulation is characterized by clarity, coherence, and transparency, as well as the ability to adapt to new environmental challenges such as emissions standards, [waste management](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/waste-management) protocols, and conservation efforts. Theoretically, the link between regulatory quality and environmental performance is anchored in the belief that well-designed regulations can effectively [control pollution](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/pollution-control), protect natural resources, and incentivize the private sector to innovate toward sustainability [[80](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib80)]. The regulatory quality also influences the behavior of economic actors and the public's participation in environmental stewardship [[81](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib81)]. Studies have shown a positive correlation between regulatory quality and environmental performance, suggesting that countries with better regulatory frameworks have higher environmental performance. Several empirical studies, including those conducted by Neumayer [[31](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib31)], Fredriksson, Vollebergh [[82](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib82)], highlight the connection between strong environmental regulations and positive environmental outcomes. For instance, countries with well-established regulatory agencies tend to perform better in metrics assessing water quality, air pollution, and biodiversity conservation [[83](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib83)]. Regulatory quality also promotes the uptake of environmental technologies and encourages corporate environmental responsibility [[84](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib84)].

H4

regulatory quality is positively associated with national environmental performance

3.5. Rule of law and national environmental performance

The rule of law, defined as the principle that law should govern a nation, as opposed to being governed by arbitrary decisions of individual government officials, plays a crucial role in shaping environmental outcomes at the national level. The rule of law assesses the level of trust in and adherence to societal rules, which includes the quality of contract enforcement, property rights, and the judiciary [[23](https://www.sciencedirect.com/science/article/pii/S2405844024166686#bib23)]. In environmental governance, the rule of law ensures that environmental policies are consistently applied and enforced and that legal frameworks support sustainable practices. A well-functioning rule of law typically fosters better environmental outcomes by consistently applying and enforcing environmental laws and policies. The rule of law is posited to influence environmental performance by providing the legal structures necessary for effective environmental governance. It is theorized that robust legal frameworks underpin the creation and enforcement of environmental regulations, protect property rights, and facilitate the resolution of environmental disputes. The rule of law also strengthens transparency and accountability, providing legal avenues for civil society and environmental organizations to challenge environmentally harmful practices [[85](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib85)]. Studies have found positive correlations between strong rule of law and high environmental performance scores, indicating that countries with well-established legal systems tend to manage their environments better [[86](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib86)].

H5

the rule of law is positively associated with national environmental performance

3.6. Control of corruption and national environmental performance

Corruption control refers to the extent to which public power is exercised for private gain, including petty and grand forms of corruption and "capture" of the state by elites and private interests [[23](https://www.sciencedirect.com/science/article/pii/S2405844024166686#bib23)]. Corruption is often cited as a major barrier to effective environmental management, as it can distort policy-making processes, reduce compliance with regulations, and limit the capacity of states to protect natural resources. Theoretically, corruption is seen as a detriment to environmental performance because it undermines regulatory frameworks, decreases the efficiency of public expenditures in environmental projects, and reduces the effectiveness of environmental agencies [[87](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib87)]. Research generally indicates a negative correlation between corruption levels and environmental performance, with higher corruption associated with poorer environmental outcomes [[88](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib88)]. Corruption significantly damages a country's environmental performance by eroding the enforcement of environmental laws and facilitating the illegal exploitation of natural resources [[89](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib89)]. Corruption can adversely affect biodiversity, increasing deforestation rates and species extinction [[90](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib90)]. However, it is essential to note that the relationship between corruption and environmental performance is complex and depends on various contextual factors. This complex relationship can vary based on factors such as the strength of institutions, the level [of economic development](https://www.sciencedirect.com/topics/economics-econometrics-and-finance/development-of-economics), and public awareness of environmental issues.

H6

control of corruption is positively associated with national environmental performance

3.7. The moderating role of country economic prosperity

The relationship between the quality of governance and environmental performance has been well documented in the literature. However, the impact of economic prosperity as a moderator on this relationship is not yet fully explored. Gross national income (GNI) per capita is frequently used to measure economic prosperity. It could play a significant role in determining the success of governance in achieving environmental objectives. Economic prosperity can provide the financial resources and technological capabilities necessary for implementing and sustaining environmental policies, potentially enhancing the effect of good governance on environmental performance. Conversely, it is hypothesized that in less prosperous countries, even well-structured governance may struggle to achieve desired environmental outcomes due to resource constraints [[30](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib30)]. Empirical research has demonstrated a positive relationship between governance indicators (such as those provided by the worldwide governance indicators) and environmental performance indices (like the epi). These studies indicate that better governance is associated with better environmental outcomes [[24](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib24)].

The correlation between public governance and national environmental performance has long been a topic of academic interest. As measured using GNI, the country's economic prosperity is a crucial moderating variable in this relationship. According to the environmental Kuznets curve (EKC) theory, a higher GNI per capita is often linked to a shift from industrialization to a service-based economy, generally accompanied by more sustainable practices and increased environmental regulations. This, in turn, can positively impact the environment [[91](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib91)]. Strong public governance can enhance favorable environmental outcomes in such economic contexts by providing the necessary resources and political will to enforce and sustain environmentally beneficial policies [[92](https://www.sciencedirect.com/science/article/pii/S2405844024166686" \l "bib92)]. However, in countries with lower GNI per capita, the correlation between governance and environmental performance may be less pronounced or negative. In these situations, even well-designed governance structures may struggle to make a significant impact due to resource constraints and other pressing social needs [[30](https://www.sciencedirect.com/science/article/pii/S2405844024166686#bib30)]. Hence, a country's economic prosperity plays a crucial role as a moderating factor, potentially amplifying the positive effects of effective governance in wealthier countries while attenuating or neutralizing them in less affluent nations.

### Sustainability---Wrong

#### Studies of 208 countries over the last 30 years prove decoupling is possible---and EKC is true

-EKC being true means alt causes their impacts

-Condensed portion are explaining methodology and intent of the study

Tariq et al. 24 [Muhammad Tariq, PhD researcher at Southeast University, PhD Applied Economics, Southeast University; Yingzhi **Xu**, Professor in the School of Economics and Management at Southeast University; Kifayat **Ullah**, Professor in the Department of Economics at Karakoram International University; and Biying **Dong**, Professor in the School of Economics and Management at Southeast University; “Toward low‐carbon emissions and green growth for sustainable development in emerging economies: Do green trade openness, eco‐innovation, and carbon price matter?” Sustainable Development, 32(1), February 2024, pp.959-978, DOI 10.1002/sd.2711]

[Tables Omitted]

Due to substantial development in emerging economies over the last three decades, climate complexities are increasing which have posed serious threats to environmental quality and sustainability. To this end, eco-innovation, green trade openness (GTO), and carbon price have been recognized as effective tools for environmental mitigation and promotion of green growth (GG) in the core of COP 26, Sustainable Development Goals 2030, and Carbon Neutrality by 2060. Considering this, the aim of this study is to investigate the influence of eco-innovation, GTO, and carbon price on GG [Green Growth] and low-carbon emissions in emerging economies over the period 1996–2021. The current study provides a standard green Solow growth model by introducing a new GG index using the entropy weight method. This index incorporates 30 indicators across five dimensions which emphasizes the essential roles of the investigated factor. Additionally, the current study provides a new index for GTO utilizing an extensive green trading basket of 255 commodities. Due to the cross-sectional dependency, and slope heterogeneity in the models, this study used dynamic heterogeneous panel data estimation techniques that is, cross-sectional based augmented nonlinear autoregressive distributed lag, and nonlinear augmented mean group to probe the asymmetric effects. The outcomes from the empirical analysis reveal that positive shocks in environmental innovation, GTO, carbon price, and green energy mitigate carbon emissions and promote green economic growth while the negative shocks in these variables cause environmental degradation and reduce GG in emerging economies. Finally, from policy insight, this study suggests that policy makers in emerging economies should invigorate GTO, stimulate environmental innovation and green energy, implement carbon price mechanisms, and establish a balance between environmental protection and economic growth.

[CONDENSED FOR READABILITY]

1 INTRODUCTION Considering the Paris COP26 Conference, environmental sustainability in major economies has remained a contentious topic in policy discussions. Undoubtedly, economic growth is a necessary condition for every nation's social and economic development since it increases income levels, improves health and educational outcomes, and raises its population's living standards. Similarly, brown economic growth poses serious threats to ecological sustainability as economies compromise their natural resource deposits during the growing phase. Brown growth produces significant solid and manufacturing waste and other soil, water, and air issues, ultimately leading to environmental deterioration which has recently witnessed in emerging economies (Danish Ulucak & Khan, [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0022)). Emerging market economies (EMEs) have enjoyed remarkable growth in recent decades however, this over growth in population and output in most of these economies have raised strains within environment and natural resources (Balsalobre-Lorente, Driha, et al., [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0010)). Due to the decreasing quality and quantity of natural ecosystems, the world has started to recognize the need to switch from the conventional economic growth perspective to a sustainable development glimpse (Fatai Adedoyin et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0029)). Green growth (GG) is a concept which is intimately associated to sustainable development in which economies delve and encourage economic progress without vitiate the environment, yet rather by preserving it OCED. Considering the consequences of climate change and the deterioration of the environment, there has been a significant emphasis on environment friendly growth. Several organizations and institutions, namely, the Organization for Economic Cooperation and Development (OECD), the World Bank (WB), the United Nations Department of Economics and Social Affairs for Sustainable Development, and the United Nations Economic and Social Commission for Asia and the Pacific, are concerned about the green economic growth. Current study appraises influences by eco-innovations, green trade openness (GTO), carbon price, and green energy on GG and low-carbon emissions in emerging countries. One of the decisive factors affecting greenhouse gas emissions is international trade, which is a substantial economic action, because it increases economic growth and the exchange of goods and services. In contrast, increase in trade leads to significant increase in energy consumption and other resources utilization, which put tremendous strain on the ecosystem resilience. Considering the injurious impacts of trade, it might be claimed that creating a green economy could support reducing environmental deterioration and achieving carbon neutrality (Can et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0016)). Though, green trade is an essential factor for rapid green economic growth by boosting the country's economic progress, reducing greenhouse gas emissions, expanding industrial production processes, improving the effectiveness of energy sources, and increasing trade volume via trade liberalization and global integration (Ahmed et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0001); Alam & Sumon, [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0006)). Nonetheless, the global proliferation of a green economy is difficult to achieve without the world trade of eco-friendly goods. It is expected that the usage of these goods would significantly improve environmental trait. On the other hand, green technological innovations may also play a supportive role in green development. Without green technological improvements, the faster GG is impervious (Umar et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0072)). These advancements not only instigate cheaper and eco-friendly technology besides lower the cost of ecological sustainability. It also increases production efficiency and encourages the preservation of natural resources by reducing CO2 emissions. The main forces behind green economic growth, the green energy sources also maintain ecological sustainability and macroeconomic efficiency (Li et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0049)). Along with advancements in green energy, and wastewater treatment, eco-innovation processes also include clean and sustainable food production and other areas that are thought to be major drivers of economic growth and environmental sustainability (Chen et al., [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0017)). In similar lines, technological investment and acceleration of research and development of energy saving technologies promote sustainable development (Li, Dong, & Dong, [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0047)). Moreover, green innovations reduce the strain on the country's balance of payments and minimize dependency on imported fossil resources (Sohag et al., [2019](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0064); Usman & Hammar, [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0074)). Besides, this research also evaluates the importance of carbon price/tax for green economic growth and low-carbon emissions in EMEs. There is widespread agreement among major nations, environmentalists, and policymakers on the need to establish new policy guidelines to address the ecological challenges posed by environmental degradation. A rising amount of the present literature has centered empirical study on carbon pricing in order to create the most recent environmental policy recommendations (Doğan et al., [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0024)). Based on the percentage of emissions in a polluting fuel, governments across the globe levy carbon taxes (one of the most effective prices to decrease carbon dioxide emissions) on those fuels (Ojha et al., [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0055)). Researchers advocated recycling carbon price income (i.e., transferring the cash earned from carbon price/tax on fossil fuel-based energy to renewable projects as subsidized) to encourage green economic growth and environmental sustainability (Hao et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0033); Ojha et al., [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0055)). Thus, we can conclude from the above debates that the concerns about the environment and sustainable development are receiving a lot of attention worldwide (Jiang et al., [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0043)). Global efforts are being made to change economic and industrial structures to promote green economic growth that is ecologically adjusted and green in nature. For a while, studies on the major forces behind GG have captivated the attention of academics and policymakers. GG strategies can achieve economic development and environmental sustainability rather than mutually exclusive therefore, it is need of the day to adopt certain approaches that ensure and safeguard environmental sustainability during the long-term growth process in emerging economies. The current research concentrates on EMEs because, during the past few decades, these economies have witnessed exceptional growth. However, present economic and population growth trends in most of these economies have raised strains on the environment and natural resources. The present study has focused on the need to move towards a development path that avoids enslaving ecologically destructive infrastructure and leaving a legacy of costly environmental damage and resource depletion. The current study has fundamental objectives in terms of practical relevance to the literature, theory, and policy implications for EMEs e.g., (1) To examine the nonlinear impacts of GTO, eco-innovation, and carbon price on GG in EMEs. (2) To examine the nonlinear impacts of these factors on CEs in EMEs. (3) To test the validation of the EKC hypothesis in EMEs. The main contributions of the current study in the literature are as follows: i. This study attempts to discover the dynamic 4G (GG, trade, energy, and innovation) nexus for emerging countries since the 4G nexus is essential for emerging economies to attain socioeconomic and environmental sustainability. ii. This study provides a systematic framework of a classical Green Solow growth model that highlights the essential role of green innovation, green energy, and green trade in driving GG. Even though the concept of GG has been widely discussed for some time, the development of a GG index is still in its initial stages. The current study contributes to the construction of a new GG index with the combination of 30 indicators from five dimensions (i.e., environmental and resources based, natural asset base, environmental quality of life, economic opportunities and policy responses, and the socioeconomic context and characteristics of growth) proposed by OCED and (GGGI, [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0031)). These are the best possible and most reliable indicators that are capable of monitoring key features of GG while also being representative of a wider set of GG challenges. iii. To the greatest of the authors' knowledge, this research will be the first to use an indicator to measure the influence of GTO on GG and low-carbon emissions in a holistic approach across a group of emerging economies. Most of the previous studies used conventional environmental goods for the green trade index. While some studies used individual green traded products to capture green trade indicator, but the GTO index generated in this study is based on both traditional environmental goods and eco-friendly products. This research expands the on study of Can et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0016)) to construct a new green openness index using 255 green goods of EMEs. As a result, policymakers in emerging economies may take advantage of developing policies to boost local GG and rationally adjust the international trade structure. iv. The current study fills the gap in the current body of knowledge by incorporating asymmetric short and long run links of the selected explanatory variables to capture their positive and negative effects on the achievements of GG and low-carbon emissions for the sample countries. To this end, we employed newly developed cross-sectional augmented nonlinear ARDL (CS-NARDL) and nonlinear augmented mean group (NAMG) techniques to supplement the literature on GG and low-carbon emissions. The remaining sections of the paper are carried out as follows. Part 2 provides some useful insights from the existing research. In part 3, we address the analytical and theoretical framework, data, and methods. In Section [4](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-sec-0013), we analyze and explain the empirical findings of the study. Finally, the study's conclusion and policy consequences are presented in Section [5](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-sec-0014). 2 LITERATURE REVIEW To provide an in-depth assessment of the current study, we divided this review into subsections that examine GG, environmental quality, GTO, eco-innovation, and carbon price. 2.1 Research on GTO, GG, and CEs In the recent past, nations and economies have become increasingly interested in expanding their international interactions. consequently, human activities linked to the consumption of energy and extraction of natural assets have become more prevalent and detrimental to environmental quality (Rafei et al., [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0060)). Several studies have examined the association among trade, economic growth, and ecological sustainability. In light of this, Ahmed et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0001)) investigated the connotation between green energy generation, technical advancements, trade, and economic growth for South Asian economies (SAE). Based on the research results, the researchers concluded that green trade had made significant contributions to SAE's green economic growth. Likewise, Li et al., ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0048)) found a positive long-run association between green trade and green economic growth for China and proposed long-term global integration of the nations to strengthen the production of green goods. Similarly, Liu et al. ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0051)) utilizes a Chinese city-level panel dataset to investigate how green good exports affect the green total factor productivity (GTFP). The results suggest that green products export hamper China's sustainable growth. Conventional green goods for resolving environmental problems considerably reduce GTFP. Furthermore, Alam and Sumon ([2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0006)), and Keho ([2017](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0044)) discovered that international trade had a favorable impact on economic growth. Similarly, Li et al., ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0050)) concluded that substitution of renewable energy sources in the production process and trade openness contribute to the reduction of global CEs and promote economic growth. The authors also investigated how GTO influences CEs. To this backdrop, Ali et al. ([2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0007)) studied how different types of trade impact greenhouse gas emissions for OIC countries. The study discovered that green trade substantially cuts greenhouse gas emissions. For the top 10 green future economies Wei et al. ([2023](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0084)) considered the impact of green trade on environmental quality and findings showed that green trade boost quality of the environment. Research related to the impact of international trade on CEs yielded contradictory findings. Some scholars, for example, Rehman et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0062)) and Ullah et al. ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0071)) using ARDL findings in the Pakistan economy context, found positive and fruitful relationships exist between globalization, energy consumption, and international trade, and ecological footprint. Concerning South African economies, Udeagha and Ngepah ([2019](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0070)) explored the link between trade openness and discovered a positive short-run relationship but a negative correlation in the long run. Mensah et al. ([2018](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0052)) showed that international trade, urbanization, and energy use are the primary contributors to environmental deterioration in China. Duan and Jiang ([2017](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0026)) discovered similar sorts of findings in their analysis for the Chinese economy. Another study analyzed the impact of international trade on CEs. It was concluded that international trade boosts economic activity by accelerating the movement of goods and services. But, as a consequence of globalization, nations now require greater resources. Also, trade openness encourages nations to relocate industries with high-pollution levels, which has a significant negative impact on the environment (Wang et al., [2023](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0080)). 2.2 Eco-innovation, GG, and CEs Several empirical research Ahmed et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0001)); Hao et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0033)) and Sohag et al. ([2019](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0064)), demonstrated a positive and substantial relationship among eco-innovations and green economic growth. Sohag et al. ([2019](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0064)) highlighted financial sector reforms to support green technologies and sustainable development. Eco-innovations are the most appropriate mechanism for boosting living standards and ensuring social sustainability. They achieve this by effectively and efficiently using limited resources (Klewitz & Hansen, [2014](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0046)). Ahmed et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0001)) examined the connection between advancements in technology and green economic growth from the perspective of South Asian countries and found that green technological advances contribute to green economic growth by acknowledging several environmental issues like the reduction of carbon dioxide emissions. Similar findings were made by Padilla-Pérez and Gaudin ([2014](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0056)), who found a significant and positive correlation among technology, science inventions and the rate of green economic growth in Central American nations. Green technological advancements improve the energy sector and reduce CEs, which promote long-term growth (Chen et al., [2016](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0018); Guo et al., [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0032)). Contradictory findings were found in the literature on how technological innovation affects CEs. In the case of the Middle East and West Asian economies, Kihombo et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0045)) investigated that how technological advancements decrease environmental impact and accelerate economic growth? The authors concluded that green innovations reduce CEs. Similarly, Ahmed et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0001)) proposed that although the expansion of energy resources and economic growth increase the ecological footprint, technological advancement is crucial in the long run to maintain environmental sustainability. Their research findings in emerging economies supported this assertion. Usman and Hammar ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0074)), on the other hand, for Asia Pacific Economic Cooperation (APEC) countries discovered that technological innovations enhance the ecological footprints. Furthermore, Destek and Manga ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0023)) found that technological advancements have greatly reduced CEs but were ineffectual in falling ecological footprint for the large emerging market economies. Bekun ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0012)) suggested for Indian policymakers that they must provide incentives for reducing CEs, tax breaks, and other forms of financial support to companies that produce appropriate green energy technologies. 2.3 Research on the carbon price, GG, and CEs In recent decades, most of the world's economies have adopted a low carbon inclusive growth policy, with carbon taxes serving as the most direct mean of reducing CEs. Although a carbon price is an efficient instrument for reducing CEs, it also slows economic growth. Hence, a trade-off exists between the carbon price and GDP growth (Ojha et al., [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0055)). Bi et al. ([2019](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0013)) discovered that, in the short term, carbon taxes significantly impacted China's economic growth while reducing carbon mitigation; however, both impacts were mitigated in the long run. A plethora of empirical studies Pal et al. ([2015](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0057)) and Ojha ([2009](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0054)) suggested that while carbon pricing is an effective mechanism for reducing CEs, it also decreases the country's economic progress. Researchers proposed carbon price revenue recycling (transferring income generated by carbon price/tax on fossil energy fuels such as coal, gas, and crude oil to green energy projects such as hydro, solar, wind, geothermal, and biomass, among others, as a subsidy) to enhance inclusive green economic growth (Gerlagh & Van der Zwaan, [2006](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0030)). The main purpose of levying a carbon tax/price on fossil fuels based on their carbon level is to assure ecological safety and sustainability. Tariq and Xu ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0068)), and Hao et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0033)) examined the crucial role of carbon pricing on CO2 emissions in G-7 countries and discovered that carbon price is significantly reduced CO2 emissions; thus, these economies must concentrate on ecological pricing policies through taxation as well as green economic growth at the same time. Although most of the research reviewed in the literature showed the negative impact of carbon prices on pollutant emissions and the positive impact on environmental quality. Few studies, such as Wier et al. ([2005](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0086)) discovered evidence suggesting carbon prices slightly stimulate CO2 emissions. 2.4 Literature gaps Summarizing the current research literature, the results related to the GG and environmental impacts of green openness, eco-innovation, carbon price, and green energy were found to be sensitive to different research approaches, and there are still several shortcomings in the previous research studies. As we know from the literature, few studies focused on the relationship between green energy and GG. Although, few scholars have investigated the relationship between sustainable economic development and green innovations for the sample countries under investigation. To the best of our knowledge, no research has looked at the 4G (GG, trade, energy, and innovation) nexus for emerging countries since the 4G nexus is essential for emerging economies to attain socioeconomic and environmental sustainability. Although “GG” has been debated for some decades, an actual “GG index” has yet to be developed for emerging economies. In the academic literature, there is no generally agreed-upon single aggregate index of GG. However, in the present study, we have tried to develop a GG index that included the best and most reliable indicators from the five dimensions of GG. Furthermore, the majority of earlier studies relied on proxies to measure the worth of eco-friendly goods in a certain region, including applications for patents, and technical advancements, while some studies used individual green traded products to capture green trade indicators. However, the current study is relied on both traditional environmental goods and eco-friendly products, using 255 products in total from OECD combined list of environmental goods (CLEG) list, which is the largest basket of green products. Additionally, the results of the available studies are inconsistent and contradictory for a number of reasons, one of which could be the analytical methods. The studies mostly ignore the asymmetrical dynamic long and short-term links among the selected variables and assume symmetric relationships between green openness, eco-innovations, carbon price, GG, and CEs. Whereas, asymmetric empirical findings solve the shortcomings of responsiveness and interpretations of linear estimated approaches and can offset spurious impacts of independently targeted determinants on outcome indicators. 3 THEORETICAL FRAMEWORK, DATA, AND METHODOLOGY 3.1 Theoretical framework In literature, few studies have tried to appraise the connections between low-carbon emissions, GG, carbon price, and GTO. This section describes how “eco-innovations, green openness, carbon price, and green energy contribute to green economic growth”. From the limited literature we conclude that, in order to promote economic growth while addressing environmental issues, green economic growth is recognized as an effective strategy. To study the basic analytical pathway of the influence of green openness, green technological innovations, carbon price, and green energy consumption on green economic growth and low-carbon emissions, the present study designed neoclassical Green Solow growth model in accordance with (Brock & Taylor, [2010](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0015)). Though our emissions function has differed from the formulation of Brock and Taylor, we believe that our approach is conceptually much more straightforward and esthetically better. The cobb–Douglas production function is supposed to provide the functional form followed by (Huang & Quibria, [2013](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0037)): 𝑄=AK𝛼⁢𝐿1−𝛼,(1) where in the above equation, Q is output, K is capital, L is labor, and A represents the total factor productivity that represents the percentage change in output due to changes other than labor and capital. Equation ([1](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0001)) can also be written in an intense form as: 𝑞=Ak𝛼,(2) here q = Q/L represents gross productivity per worker and 𝑘 = K/L represents capital per worker. Since it is commonly recognized, (0<𝛼<1), suggests that the production per worker has diminishing returns. Given by, the (net) output is: γ𝑦=𝑞⁢(1−γ),(3) where y = Y/L is denoted by per worker net output; and γαγ=α symbolized a set fraction of the domestic (gross) product that is committed to emission control. We may write down the equation for capital accumulation as: γ𝜕𝑘𝜕𝑡=sAk𝛼⁢(1−γ)−(𝜎+𝑛).(4) Capital per worker productivity change is 𝜕𝑘𝜕𝑡. An amount of the net product is expected to be set aside for future investment. On the independent side, γsAk𝛼⁢(1−γ) stands for gross investment, whereas (𝜎+𝑛) is the combination of the depreciation rate of capital and the population size of the labor force. Assuming the following emission function regarding pollution, we have followed (Eriksson, [2013](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0028); Huang & Quibria, [2013](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0037)); ℇ𝓅ℇℇ𝑖,𝑡=pℇ𝑖,𝑡⁢𝑞𝑖,𝑡𝐴⁢𝐹,(5) on the left-hand side of the above equations, it is presumed that cumulative pollution from all economic sectors indicated by, ℇℇ𝑖,𝑡, with the share of emissions attributed to economic activity denoted by, 𝓅ℇpℇ𝑖,𝑡, whereas, 𝑞𝑖,𝑡, represents the output of that economy. In addition, we presume that emission reduction correlates negatively with technological progress. As suggested by (Huang & Quibria, [2013](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0037)), the greater amount of technology, 𝐴, denotes green technologies. Moreover, we presume that technology advances at a rate of 𝜗 due to exogenous factors, alternatively expressed by 𝐴̂=𝜗. Lastly, it is expected that emissions will be reduced when resources are dedicated to mitigation. We have presumed that a constant fraction of economic output, 𝐹, is allocated to abatement. Following is the abatement mechanism: γ𝐹=(γ⁢𝑞)𝜇,𝜇>0<1.(6) Equation ([6](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0006)) indicates that spending on environmental protection measures has a positive but declining influence on abatement. The previous studies are compatible with this reasonable assumption. The capital accumulation Equation ([4](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0004)) suggests equaling zero.[1](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-note-0001_note_0) As a result, the steady-state equation 𝑘\* is as follows: γ𝑘\*=sA⁢(1−γ)(𝜎+𝑛)1/(1−𝑎),(7) the above Equation [7](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0007) shows that the steady-state 𝑘\* decreases as the fraction of output allocated to mitigation increases. The steady-state per capita income (y) declines as 𝑘\* declines. This does not affect the growth rate of the steady-state. Afterward, we will establish a relationship between the Solow steady-state and the EKC. But to perform so, take into consideration Equation ([5](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0005)). The following is derived by substituting γ𝐹=(γ⁢𝑞)𝜇 from Equation ([6](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0006)) into Equation ([5](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0005)) and simplifying: ℇ𝓅ℇγℇ𝑖,𝑡=pℇ𝑖,𝑡⁢𝑘(1−𝜇)/𝑎𝐴𝑖,𝑡𝜇⁢γ𝜇,(8) by differentiating and simplifying Equation ([8](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0008)) with respect to time, we obtain the equation given below. ℇ𝓅ℇγℇ~𝑖,𝑡=pℇ~𝑖,𝑡+(1−𝜇)⁢𝛼⁢𝑘~𝑖,𝑡−𝜇⁢𝐴~𝑖,𝑡−𝜇⁢γ~𝑖,𝑡.(9) This could also be modified as follows: ℇ𝓅ℇγℇ~𝑖,𝑡=pℇ~𝑖,𝑡+(1−𝜇)⁢𝛼⁢𝑘~𝑖,𝑡−𝜇⁢𝜗𝑖,𝑡−𝜇⁢γ~𝑖,𝑡.(10) Equation [10](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0010) shows that the emission growth (ℇℇ~𝑖,𝑡) is inversely connected to technical advancement (𝜇⁢𝜗𝑖,𝑡) in addition to a rise in the abatement expenditures rate. Meaning that if improve in environmentally friendly technological progress and increase expenditures on abetment (γ𝜇⁢γ~𝑖,𝑡) will lead to decrease in the growth rate of total emissions (Hao et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0033)). Ceteris paribus, the emission curve precisely replicates the basic equation of the Solow growth model and provides the Environmental Kuznets Curve. According to the Equation [10](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0010), the economy can only experience to long run GG in the situation that the following conditions occurred: First: ℇ𝓅ℇγℇ~𝑖,𝑡=−𝜇⁢𝜗𝑖,𝑡<0,if and only if𝑘~𝑖,𝑡=pℇ~𝑖,𝑡=γ~𝑖,𝑡=0.(11) This proposes that if eco-innovation occurs, the EKC will attain its negatively sloped section even before the model obtains the Solow steady-state equilibrium, Ceteris paribus. Therefore, when there is an increase in the expenditure on abatement, γγ~𝑖,𝑡, or if Eco-innovation improves, 𝜇⁢𝜗𝑖,𝑡, the turning point of the EKC will come quicker; Second: ℇℇ~𝑖,𝑡=(1−𝜇)⁢𝛼⁢𝑘~𝑖,𝑡−𝜇⁢𝜗𝑖,𝑡=0,if and only if𝑘~𝑖,𝑡=𝜇⁢𝜗𝑖,𝑡(1−𝜇)⁢𝛼>0.(12) This suggests that if the capital per worker growth rate or level of income falls below the appropriate Solow steady-state growth thresholds, the emissions growth rate becomes zero. It is evident from the theoretical background that green economic growth is possible if more resources are allocated to research and development initiatives to improve eco-innovation and in order to meet carbon neutrality goals, authorities should announce a long-term comprehensive approach for boosting the trading of environmentally friendly goods and also increase the environmental taxes it will encourage to that work to guarantee a healthy environment while also increasing economic growth. Based on the theoretical concept, this study provides the following appropriate functional forms, which will be empirically examined. CEit=𝑓⁡(EIit,GTOit,CPit,GEit,GDPit,GDPit2),(13) GGit=𝑓⁡(EIit,GTOit,CPit,GEit,GDPit,GDPit2),(14) where from Equations ([13](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0013)) and ([14](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0014)), (CE) denotes “carbon emissions,” “GG,” “GTO,” “carbon price (CP),” “eco-innovation (EI),” “green energy consumption (GE),” “per capita gross domestic product (GDP),” “per capita GDP square (GDP2).” We extend Equations [13](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0013) and [14](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0014) to the subsequent empirical equations. CEit=𝜆𝑖+𝜆1⁢EI𝑖⁢t+𝜆2⁢GTOit+𝜆3⁢CPit+𝜆4⁢GEit+𝜆5⁢GDPit+𝜆6⁢GDPit2+𝜀it,(15) GGit=𝜆𝑖+𝜆1⁢EIit+𝜆2⁢GTOit+𝜆3⁢CPit+𝜆4⁢GEit+𝜆5⁢GDPit+𝜆6⁢GDPit2+𝜀it,(16) where “⁢𝑖” represent a cross-section (e.g., emerging economies) and 𝜆 represents constant, “⁢𝜆1, 𝜆2, 𝜆3, 𝜆4,and𝜆5” denotes the slope coefficients of all independent variables, while “⁢𝑡” represents the timeframe of the study. 3.2 Variables and data The present study examines the role of green openness, eco-innovations, carbon price, and green energy for the low-carbon emissions and GG in top 12 EMEs, where BRIICS economies are also included.[2](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-note-0002_note_1) Based on the availability of data for all indicators, this study covers the period from 1996 to 2021. Following are the operational definitions of key variables. 3.2.1 GG index GG is the primary explained variable in our study. It is hard to measure GG using a single composite index. Given the availability of data at the country level, we decided to create a new GG index using 5 dimensions and 30 indicators. For this purpose, the authors combined the list of GG dimensions and indicators proposed by OCED and (GGGI, [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0031)) to offer the best feasible and most reliable indicators capable of monitoring important aspects of GG as well as reflective of a larger set of GG subjects. These suggested dimensions are divided into the following five categories: (i) natural asset basis, (ii) environmental and resource productivity, (iii) economic opportunities, (iv) socio-economic context and features of growth, and (v) the environmental quality of life. Detailed explanations of each indicator and dimensions for GG index are presented in Table [B1](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0007) in the Appendix [B](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-app-0002). To construct an index, we must figure out the weights of the variables using a certain approach. Consistent techniques are required to measure the comprehensive performance of GG, and the weighting for indicators is a challenge that every approach must solve. Thus, the current study opted for the entropy weight technique to allocate emphasis across several indicators. The entropy weight technique is a useful tool for describing both certainties and unknowns. In addition, entropy weight can increase the neutrality of the decision-making process and reduce the chance of errors (Du et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0025); Wang et al., [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0081)). The composite index we developed may represent GG levels from the perspective of all 30 indicators. Detailed methodology of the entropy weight method is presented in Appendix [A](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-app-0001). 3.2.2 GTO index Literature has no consensus on a typical green goods basket. Various organizations categorize several products as environment-friendly goods. Since some product lists include certain items, other product baskets may not contain the same items. However, all other green product baskets are covered under the OECD's CLEG. The “Friends List” issued by the World Trade Organization (WTO, [2009](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0088)) as well as the “plurilateral agreement on environmental goods and services” list made public by the OECD and APEC are both included in the CLEG basket (APEC, [2012](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0009)). The current study used 255 trading goods on the OECD CLEG list, the largest basket of green products. To construct a new GTO index for the top 12 emerging market economies the study used following formula, followed by (Can et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0016)). GTO𝑖,𝑡=(GIMP𝑖,𝑡+GEXP𝑖,𝑡GDP𝑖,𝑡)×100,(17) where GTO𝑖,𝑡, GIMP𝑖,𝑡, GEXP𝑖,𝑡, and GDP𝑖,𝑡 denote GTO, total environmentally friendly products imported, total environmentally friendly goods exported, and gross domestic product in the country respectively. The index is calculated from 1996 to 2021 based on the data availability from OECD database and the UN comtrade database. Appendix [C](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-app-0003), Table [C1](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0008) provided the detailed list of Hs number of each environment friendly good. Table [1](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0001) shows the data sources, acronyms, and measurement units. Except for indices of GG and GTO, all variables are converted into log form prior to performing the empirical analysis. TABLE 1. Variables, measurement, and sources [TABLE OMITTED] Figure [1](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-fig-0001) illustrates the average rates of GG and CEs for the countries under consideration from 1996 to 2021. China has the highest GG and CEs followed by other EMEs. India, on the other hand, ranks second in terms of CEs but has the lowest green economic growth, while Hungary, Greece, and the Czech Republic are the lowest polluters. This suggests that these two nations have made progress in decreasing the adverse impacts on the environment, as their CEs are lower than the other economies. It also indicates that environmental sustainability still remains an issue in most of EMEs. With the exception of Hungary, Greece, and the Czech Republic, these nations are experiencing deeply alarming situations that pose high consequences to the lives and health of their inhabitants. [GRAPH OMITTED] FIGURE 1 In-country Average green growth and, carbon emissions, 1996–2021. The right panel of the Figure [2](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-fig-0002) shows average GTO and eco-innovation, while the left panel shows carbon price and green energy for EMEs. Hungary is leading in terms of GTO followed by other economies. In contrast, economies including India, Brazil, Greece, South Africa, and Turkey have relatively lower GTO. Interestingly, the illustration shows that all the economies have higher eco-innovation capacity compared to GTO, indicating that they have progressed further in adopting innovative techniques and innovations for environmental sustainability. Besides, the majority of EMEs in the left panel have offered strong support for the transition to green energy, which can be attributed to both eco-innovation and the declining cost of green sources. The carbon price is relatively low (Figure [2](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-fig-0002)), which is important for sustainable development. Increase in carbon price may motivate industries to invest in developing low-carbon technology, which would boost productivity and promote environmental quality. [GRAPH OMITTED] FIGURE 2 In-country Average green trade openness, eco-innovation, carbon price, and green energy, 1996–2021. Summary of the box plot for the variables under consideration from 1996 to 2021 is illustrated in Figure [3](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-fig-0003). [GRAPH OMITTED] FIGURE 3 Summarize of the box plot for the variables under consideration: GG𝑖,𝑡,CE𝑖,𝑡,GTO𝑖,𝑡,EI𝑖,𝑡,CP𝑖,𝑡,andGEC𝑖,𝑡. 3.3 Empirical methodology While doing empirical estimations using panel data, it is crucial to determine cross-sectional dependency. Traditional panel data estimation methods are inconsistent due to cross-section dependency, caused by the growing interconnectivity of social and economic structures and by unexpected common shocks (Hao et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0033)). Thus, depending on methods that presume cross-sectional independence might lead to misguided results. The study under investigation employed LM test to check cross-sectional dependence (CD) with biased adjustment developed by (Breitung & Pesaran, [2008](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0014)) and the (Pesaran, [2015](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0059)) CSD test to confirm whether to apply first generation unit root or second-generation unit root tests for stationarity of the variables. In this context, we utilized the CADF, CIPS, and IPS unit root tests proposed by (Pesaran, [2007](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0058)). Prior to move further with empirical estimations, the present study also employed cross-country slope homogeneity test developed by (Swamy, [1970](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0066)) and (Hashem Pesaran & Yamagata, [2008](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0034)) to prevent the errors associated with erroneously assuming slope homogeneity. The long-run relationship between variables in both GG and CE models are investigated in this study using the (Westerlund, [2007](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0085)) co-integration test. Since it is effective with models exhibiting slope heterogeneity, this test is most relevant. In addition, this test also accounts for cross-sectional dependencies. 3.3.1 CS-NARDL model In this study, we developed an ingenious econometric technique called the CS-NARDL model based on CS-ARDL developed by (Chudik & Pesaran, [2015](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0020)) which is an improved variant of the pooled mean group-NARDL model. There are several advantages of using the CS-NARDL method instead of alternative approaches. To begin, this technique allows us to obtain both short-run and long-run estimates simultaneously. Second, we may include the variables that are integrated at different orders, in the analysis without having to do a preunit root test initially. Third, the cross-sectional dependency and slope heterogeneous issues are solved by using this technique. Furthermore, asymmetric empirical methodology resolves the shortcomings of responsiveness and interpretations of linear estimated approaches and can offset spurious impacts of independently targeted determinants on outcome indicators. Additionally, since the dynamic relationships between the specified series are impacted by a variety of factors, including political, social, and economic contexts, depending just on the symmetric correlation may result in poor policy decisions. Therefore, it is still crucial to separate the effects of negative and positive shocks in the dynamic series to identify their various effects on the performance of GG and CEs in EMEs. Finally, this estimation technique provides both long and short-run positive and negative shock coefficients. The assumption behind the CS-ARDL model is that the independent variables have symmetric influences on dependent variable. However, our prime objective is to modify the equation of CS-ARDL, so that we may examine the asymmetric impacts of independent variables on dependent variables. Accordingly, we need to generate new variables, as given below: GTO𝑖,𝑡+=∑𝑛=1𝑡∆GTO𝑖,𝑡+=∑𝑛=1𝑡max⁡(∆GTO𝑖,𝑡+,0)GTO𝑖,𝑡−=∑𝑛=1𝑡∆GTO𝑖,𝑡−=∑𝑛=1𝑡min⁡(∆GTO𝑖,𝑡−,0),(18) CP𝑖,𝑡+=∑𝑛=1𝑡∆CP𝑖,𝑡+=∑𝑛=1𝑡max⁡(∆CP𝑖,𝑡+,0)CP𝑖,𝑡−=∑𝑛=1𝑡∆CP𝑖,𝑡−=∑𝑛=1𝑡min⁡(∆CP𝑖,𝑡−,0),(19) EI𝑖,𝑡+=∑𝑛=1𝑡∆EI𝑖,𝑡+=∑𝑛=1𝑡max⁡(∆EI𝑖,𝑡+,0)EI𝑖,𝑡−=∑𝑛=1𝑡∆EI𝑖,𝑡−=∑𝑛=1𝑡min⁡(∆EI𝑖,𝑡−,0),(20) where GTO𝑖,𝑡+, GTO𝑖,𝑡−, CP𝑖,𝑡+, CP𝑖,𝑡−, EI𝑖,𝑡+, and EI𝑖,𝑡− are represents the positive and negative shocks of the variables. Following Sohail et al. ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0065)); Tariq et al. ([2019](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0069)) and Wang, Huang, et al. ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0078)), we Substitute the positive as well as negative variables in the Equations [21](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0021) and [22](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0022) CS-ARDL model yields the following revised equation. ∆CE𝑖,𝑡=𝛼it+𝜆𝑖⁢(CEit−1−𝜇𝑖⁢𝑋+it−1−𝜇𝑖⁢𝑋−it−1−𝜗𝑖⁢ln⁡CE¯𝑡−1−𝜗2⁢𝑖⁢𝑋¯𝑡−1)+∑𝑗=1𝜌−1𝜆ij∆CE𝑖,𝑡−𝑗+∑𝑗=0𝑞−1𝜃ij⁢𝑋+it−𝑗+∑𝑗=0𝑞−1𝜃ij⁢𝑋−it−𝑗+𝜂1⁢𝑖∆CE¯𝑡+𝜂2⁢𝑖∆𝑋¯+¯𝑡+∆𝑋¯−¯𝑡+𝜀it,(21) θ∆GG𝑖,𝑡=𝛼it+𝜆𝑖⁢(GGit−1−𝜇𝑖⁢𝑋+it−1−𝜇𝑖⁢𝑋−it−1−𝜗𝑖⁢ln⁡GG¯𝑡−1−𝜗2⁢𝑖⁢𝑋¯𝑡−1)+∑𝑗=1𝜌−1𝜆ij∆GG𝑖,𝑡−𝑗+∑𝑗=0𝑞−1𝜃ij⁢𝑋+it−𝑗+∑𝑗=0𝑞−1θij⁢𝑋−it−𝑗+𝜂1⁢𝑖∆CE¯𝑡+𝜂2⁢𝑖∆𝑋¯+¯𝑡+∆𝑋¯−¯𝑡+𝜀it,(22) After conducting a direct estimation of both models, the long-run coefficients can be calculated as follows: 𝜃̂CS−NARDL,𝑖=∑𝑗=0𝑞−1𝜃ij1−∑𝑗=1𝜌−1𝛾ij.(23) While CS-NARDL serves as the foundation for our investigation, we have also employed the AMG and NAMG regression models to verify the stability of our findings. The AMG estimator was first proposed by (Eberhardt & Bond, [2009](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0027)) to estimate the symmetric long-run parameters in heterogeneous panel data. Similar to the CS-ARDL estimator, the AMG estimator is resistant to both parameter heterogeneity and cross-sectional dependency. While NAMG estimator developed by authors with substituting the positive and negative variables based on Equations [18](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0018), [19](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0019), and [20](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-disp-0020) for nonlinear robustness estimation. 4 RESULTS AND DISCUSSION Results from testing the dependency in cross-sections are presented in Table [2](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0002). The outcomes of the CDpesaran and LMBiased adjusted tests indicate that all the variables under consideration are reliant on the outcome variables CE and GG. Not only this, CD also exists among these variables. Furthermore, the results of CD test in residuals also confirm the presence of CD problem. These results suggest that, during the study time period, EMEs are interdependent on each other in terms of GG, CEs, green trade, eco-innovations, and green energy. TABLE 2. Cross-sectional dependency and slope homogeneity test results [TABLE OMITTED] Source: Author's estimations. Additionally, Table [2](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0002) also provides the results of the slope homogeneity test. The findings supported alternative hypothesis and rejected null hypothesis of homogeneous slope coefficients for both the models at 1% level of significance. Thus we conclude that, the dataset has the problem of slope heterogeneity for emerging nations, where socioeconomic and demographic variables may predominantly cause this problem. The CD and slope homogeneity tests results confirmed that the null hypotheses are invalid; hence further empirical investigation can be carried out by employing second-generation panel data econometric methods. Given the presence of CD and slope heterogeneity, this study has been constrained to apply second-generation CIPS and CADF unit root tests, considering the possible challenges with panel data. The results of the CIPS and CADF unit root tests are shown in Table [3](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0003). On the basis of these results, it can be inferred that certain variables, such as GG, CE, GTO, CP, GDP, and GE, exhibit nonstationary at the level while EI is stationary at the level. However, CADF and CIPS indicate stationary at the first difference for most of the variables. Therefore, we conclude from the unit root tests results that our model has mixed order of integration. As there is a combination of the I(0) and I(1) stationary series, we may use the Westerlund co-integration technique to analyze the long-run associations among the study variables. TABLE 3. First and second-generation unit root test results [TABLE OMITTED] Note: \*\*\*, \*\*, \* denotes significant at 1%, 5%, and 10% respectively. Table [4](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0004) summarizes the results of Westerlund cointegration test and supports the presence of long-term co-integration connections among the variables. It implies that all variables move in tandem throughout time, leading to a long-term equilibrium. After confirming the co-integration among the study variables, we applied CS-NARDL technique to measure nonlinear coefficients for the variables under consideration. TABLE 4. Cointegration test results [TABLE OMITTED] Source: Author's estimations.

[CONDENSED FOR READABILITY]

Table [5](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0005) provided the long-run and short-run results for both GG and CE models. Results indicate that any positive shock in GTO leads to an increase in GG and decrease in CEs. According to the coefficient, it is evident that 1% increase in positive shock of GTO leads to 0.153% improvement in GG, for example, 𝜕GG𝑖,𝑡𝜕GTO𝑖,𝑡+>0 and it is associated with a 0.0453 percentage decrease in CE, as shown by the coefficient, for example, 𝜕CE𝑖,𝑡𝜕GTO𝑖,𝑡+<0. The estimated coefficient for the negative shock in GTO has negative effect on GG and statistically insignificant, while it has a positive and significant effect on CE for example, 𝜕GG𝑖,𝑡𝜕GTO𝑖,𝑡−=0, and 𝜕CE𝑖,𝑡𝜕GTO𝑖,𝑡−>0. This particular result of any negative shock in GTO suggests that any reduction in GTO has no significant long-term impact on GG in EMEs. This result is consistent with various international trade theories including comparative advantage, the Porter hypothesis, and ecological modernization. GTO in emerging nations can reduce CEs, improve energy efficiency, enlarge eco-friendly industries, and contribute to sustainable development. This evidence also supports earlier researches conducted by (Can et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0016); Huang & Zhao, [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0036)), which showed that Green trade encourages sustainable development and lowers greenhouse gas emissions, especially in developing nations. Similarly, these results are also consistent with Ahmed et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0001)), and Can et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0016)), who demonstrated that green trade could promote the adoption of environment friendly industrial techniques and benefits countries in achieving their climate targets. Likewise, Li, Wang, and Wang ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0050)), and Wei et al. ([2023](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0084)) also found similar results for positive long-run association between green trade and green economic growth for China and proposed long-term global integration of the nations to strengthen the production of green goods. International trade has made it possible for EMEs to produce and export green goods around the globe and import a wide range of green goods from other countries. Furthermore, positive shocks in carbon price (CP) have a considerable and favorable impact on GG and significant negative effect on CEs [Carbon Emissions], for example, 𝜕GG𝑖,𝑡𝜕CP𝑖,𝑡+>0, and 𝜕CE𝑖,𝑡𝜕CP𝑖,𝑡+<0. Specifically, it suggests that a 1% change in positive shocks of CP [Carbon Pricing] ultimately results in a 0.130% increase in GG and 0.163% decrease in CEs [Carbon Emissions]. However, any negative shock in carbon price has no significant effect on both GG and CE in EMEs. This finding is consistent with the economic theory that higher prices incentivize individuals and firms to adopt cleaner technologies and reduce emissions. These results are also consistent with the results of Chien et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0019)), and Hao et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0033)) who argued that environmental taxes could play a vital role in sustainable development via reduction in CEs. Similar types of results that is, increase in carbon prices or environmental taxes can reduce the amount of CO2 emissions in the environment and improve environmental sustainability were found by (Chien et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0019); Tao et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0067)). Carbon price as a policy instrument has been designed to discourage greenhouse gas emissions. Moreover, the carbon price mechanisms can encourage firms to invest in advancing low-carbon technologies, resulting in an increased productivity and environment friendly economic growth in EMEs.

TABLE 5. Long and short run results of cross-sectional augmented nonlinear autoregressive distributed lag

| Variables | Long run coefficients | | | | Short run coefficients | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Green growth model dependent variable (GG) | | Carbon emissions model dependent variable (CE) | | Green growth model dependent variable (GG) | | Carbon emissions model dependent variable (CE) | |
| Coefficients | 𝓏𝑧stats | Coefficients | 𝓏𝑧stats | Coefficients | 𝓏𝑧stats | Coefficients | 𝓏𝑧stats |
| GTO𝑖,𝑡+ | 0.1537\*\*\* | 4.7600 | −0.0453\*\*\* | −3.117 | 0.0193 | 1.260 | −0.0354\* | −1.8348 |
| GTO𝑖,𝑡− | −0.0827 | −1.0972 | 1.0272\*\* | 5.818 | .02210\*\* | −2.130 | 0.7694\*\* | 1.9769 |
| CP𝑖,𝑡+ | 0.1302\*\* | 1.9994 | −0.1635\*\* | −1.952 | 0.1502\*\*\* | 3.635 | −0.6839 | −1.3700 |
| CP𝑖,𝑡− | −0.0846 | −1.2991 | 0.0942 | 1.277 | −0.12931 | −1.06 | 0.0473 | 1.3806 |
| EI𝑖,𝑡+ | 0.0318\*\*\* | 2.885 | −0.0348\*\*\* | −2.636 | 0.0344\*\* | 2.157 | −0.3865\*\* | −1.9893 |
| EI𝑖,𝑡− | −0.0926\*\*\* | −8.4029 | 0.1528\* | 1.8498 | −0.0625\*\*\* | −2.932 | 0.0847 | 1.6198 |
| GE𝑖,𝑡 | 0.7561\*\*\* | 4.9868 | −1.6361\*\*\* | −4.269 | 1.0453\*\* | 2.100 | −0.7862\*\*\* | 5.1625 |
| Gdp𝑖,𝑡 | 0.352\*\* | 1.9498 | 0.758\*\*\* | 3.1167 | 0.327\* | 1.942 | 1.2851\*\* | 8.4385 |
| Gdp2𝑖,𝑡 | −0.361\*\*\* | −2.890 | −0.4952\*\*\* | −2.727 | −0.643\*\* | −2.107 | −0.8512\*\*\* | −3.9660 |
| GG−1 |  |  |  |  | −0.6985\*\*\* | −6.774 | −0.7125\*\*\* | −6.864 |

Abbreviations: CE, carbon emissions; GG, green growth.

Note: \*\*\*, \*\*, \* denotes significant at 1%, 5%, and 10% respectively.

Source: Author's estimations.

Further, the study results also demonstrate that positive shocks in eco-innovations have a growing impact on GG and reduce CEs in EMEs. According to the result, a 1% increase in positive shock in EI leads to a 0.031% increase in GG while the same increase in positive shock of EI reduces CEs by 0.026% in the long-run, for example, 𝜕GG𝑖,𝑡𝜕EI𝑖,𝑡+>0, and 𝜕CE𝑖,𝑡𝜕EI𝑖,𝑡+<0. Besides, the negative shock of EI has negative and significant impact on GG and positive effect on CEs [Carbon Emissions] with the coefficients respectively −0.092 and 0.1528 in the long-run for EMEs, for example, 𝜕GG𝑖,𝑡𝜕EI𝑖,𝑡−<0, and 𝜕CE𝑖,𝑡𝜕EI𝑖,𝑡−>0. Our findings about the favorable correlation between eco-innovations and GG are supported by earlier studies, such as Hussain et al. ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0038)), Wang, Umar, et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0077)), and Urbaniec et al. ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0073)) who claimed that eco-innovations assist in maintaining a sustainable environment by limiting the use of scarce resources and strengthening circular economy policies. Prior studies have shown that in order to transform the country from brown to green, ambitious green energy regulations and eco-innovation improvements are required (Akhtar et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0005); Wang, Umar, et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0077)). This result suggests that the usage of environment friendly technologies in the growth process may cause a direct reduction in the pollution. These outcomes also show that eco-innovations may have a remarkable influence while maintaining environmental sustainability and achieving the global objective of GG that is, they can reduce negative environmental consequences, increase agro-industrial production, protect natural resources, and promote capital accumulation in EMEs. Moreover, Green energy consumption has significant positive impact on GG while negative effect on CEs for example, 𝜕GG𝑖,𝑡𝜕GE𝑖,𝑡>0, and for example, 𝜕CE𝑖,𝑡𝜕GE𝑖,𝑡<0, 𝜕GG𝑖,𝑡𝜕GDP𝑖,𝑡>0. These results are in line with the findings of (Chien et al., [2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0019)), who concluded that green energy contributes to the environmental sustainability by reducing CEs. Li, Wang, and Wang ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0050)) also claimed that the green energy consumption improves environmental quality while promoting economic growth for 120 sample economies. Similarly, these results were also supported by a recent study conducted by Balsalobre-Lorente, Ibáñez-Luzón, et al. ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0011)), who claimed that environmental deterioration can be slowed down since renewable energy has a negative influence on CO2 emissions. Thus, we conclude that consumption of renewable energy sources like solar, hydro, wind, and geothermal etc. in the production process can reduce CEs and promote GG leading towards the accomplishment of global objective of sustainable development. GDP per capita have positive effects both on CEs for example, 𝜕CE𝑖,𝑡𝜕GDP𝑖,𝑡>0, and GG that is, 𝜕GE𝑖,𝑡𝜕GDP𝑖,𝑡>0. This result in line with the findings of Wang, Wang, and Li ([2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0079)) who concluded that economic development and environmental quality are nonlinear. As urbanization grows, the impact of economic growth on CEs is amplified.

Finally, any change from positive to negative in the coefficients of GDP to GDP-square denotes an inverted U-shaped link between economic growth and CEs in EMEs which is consistent with the EKC hypothesis. The coefficient of Gdp2𝑖,𝑡 for GG is also negative for example, 𝜕GG𝑖,𝑡𝜕Gdp2𝑖,𝑡<0, which shows the inverted U-shaped relationship between GG [Green Growth] and GDP for these economies. This outcome is consistent with the result of (Hussain et al., [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0038); Jahanger et al., [2022](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0042)) that the square of GDP negatively influences GG. In addition to this, this result was also supported by the outcome of (Wang et al., [2023](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0080)) for 208 world economies. In contrast, these results are inconsistent with the findings of Ahmed and Le ([2021](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0003)) and (Zafar et al., [2020](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-bib-0090)), who found U-shaped relationship between GDP per capita and CEs. These results suggest that emerging economies urgently need huge amounts of natural capital to flourish economically. If it happens, natural resources abundance is likely to contribute GG positively. But, when a certain threshold was reached, GG began to drop alongside rising GDP due to the increase in aggregate demand, which in return would reduce the availability of nature-based resources.

The robustness of the CS-NARDL results of both GG and CEs models for this study were re-examined by employing the AMG and NAMG methods in Table [6](https://onlinelibrary-wiley-com.proxy2.cl.msu.edu/doi/full/10.1002/sd.2711#sd2711-tbl-0006). It is noticeable that the results of long-run estimations produced by AMG, as well as NAMG and CS-NARDL estimators are quite similar. Although the magnitudes of the coefficients differ slightly in different estimators. If we compare the magnitudes of the coefficients of CS-NARDL with that of NAMG estimator, CS-NARDL estimator produces higher magnitudes of the coefficients than NAMG estimator. The results of both robustness estimators indicate that GDP, GTO, CP, EI, and GE have significant influences on GG and CEs in EMEs.