Joined at the hip: Why continued globalization offers us the best chance of addressing climate change[1]

Per Jacobsson was an internationalist, in every sense of the word. First with the League of Nations, then at the Bank of International Settlements, and finally as Managing Director of the International Monetary Fund, he saw trade shut down during the Great Depression, and reemerge after World War II. He played a vital role in strengthening the rules-based system that encouraged international cooperation and globalization, at a time when trust was in short supply. While climate change was not a burning issue in his time, the theme of my talk today, I believe, would be very much to his liking.

Most policymakers realize the urgency of combating the existential threat of climate change. Nature is sounding a drumbeat on our collective failure to act thus far, with heat waves, drought, floods, wind, and fire. Yet the same policymakers seem more sanguine about the ongoing de-globalization, which is occurring through a combination of old fashioned protectionism and emerging geo–political concerns. Political parties across the industrialized world believe that globalization has gone too far, leading to job losses, domestic economic inequality, and excessive dependence on unreliable countries. Some leaders in the emerging and developing world, traditionally suspicious of competitive markets and fond of dirigisme, are also joining the bandwagon.

Some believe we can compartmentalize action on the climate, shielding it from the hostility that increasingly characterizes economic relations between even friendly countries today. This is a pipe dream. Not just politically but also economically, continued growth of cross-border flows of trade, capital, technology, information, and people, which is what I mean by globalization, will be needed to tackle climate change. De-globalization will disarm us in the battle to save our planet, a fight we cannot afford to lose. Climate action and continued globalization are joined at the hip.

Joined at the Hip

There is one commonality to opposition to climate action or globalization; they are both seen by many in industrial countries as elite projects. The rising public mistrust of elites--including of mainstream parties, scientists, and the permanent bureaucracy--makes them harder to sell.

Policies with immediate, visible, and concentrated costs and more diffused longer-term benefits -- such as steady legal immigration or low tariffs -- have always been hard to explain. After all, the factory worker whose job is outsourced is easy to sympathize with, while the benefits to consumers of global competition are hard to quantify. Similarly, while the public can see the climate changing, the immediacy of the need for climate action, as well as the forms it should take, are not obvious; as a Gilet-Jaunes protester famously said, ”elites are talking about the end of the world, we are talking about the end of the month”.[i] Support for such policies requires the public to trust policymakers. That means that even when the public is not convinced of every last detail, it must still believe the elite-dominated government has its interests at heart and will get policies broadly right. That trust has broken down.

[1] The Per Jacobsson lecture delivered by Raghuram Rajan at the IMF/World Bank annual meetings on October 15 2022. Rajan thanks Gita Bhatt, Anne Krueger, Somik Lall, Radhika Puri, Akhil Rajan, and Rodney Ramcharan for very valuable comments.

So one way climate change and de-globalization are joined at the hip is that both are largely seen as elite concerns, at least until the consequences spread and can be linked to policy inaction. Given their diminished political capital then, many mainstream parties seem to have immunized themselves against accusations of caring more about the world than about struggling citizens by throwing globalization under the bus, allowing them to focus their energies on climate action. It would be pragmatic politics, were it not for the likelihood that climate action will become much more difficult without continued globalization.

Why Climate Action Needs Continued Globalization

Think of climate action as policies falling into three buckets; *mitigating* climate change by reducing emissions; *adapting* to changes in climate; and allowing *migration* to better climes. The sequence is important -- each bucket bears more of the burden of adjustment as less is done on previous buckets. For instance, if we do nothing at all on mitigation and adaptation, expect hundreds of millions of refugees to flee their unlivable tropical native lands for lands further away from the equator.[ii] Each of these buckets requires continued globalization.

Mitigating Climate Change –The Conditions for a Global Agreement

The 1992 UN Rio summit concluded that countries had a common but differentiated responsibility to tackle emissions – common in that climate change affects us all, and differentiated because countries have different responsibilities for creating the problem, as well as differing abilities to resolve it.

Unfortunately, there is no agreement on how to build constructively on the idea. A developing country like Tanzania, which emits 0.2 tons per capita of carbon per year (in 2019), has much less responsibility, both for the carbon that is already in our atmosphere and for what continues to be pumped out, than the US, which emits 16 tons per capita per year. At the same time, it would be politically hard for the US to close coal-fired utilities if US workers see such utilities being opened in Tanzania. Consensus is stymied by disputes over what action is necessary and what is fair.

Clearly, any serious commitment on emissions will be painful for all that undertake them. Geo-political rivalry makes everything yet more difficult. How do China and the United States agree to meaningful emission cuts without each sensing the other is securing an economic advantage?

Of course, the United States and the Soviet Union did negotiate meaningful arms reduction treaties even when they were fighting proxy wars across the world and traded little with each other. Without diminishing the achievement, negotiation was easier then because missiles were comparable, arms reduction saved on economic resources, and neither country was giving up its ability to blow up the other many times over.

In contrast, meaningful climate action will be costly for the country undertaking it, and will take away from investment elsewhere, say in economic or military might. Moreover, climate action is much more dispersed through an economy, and monitoring it will require outsiders to have a broader degree of access than that required with arm's control agreements.

Ongoing trade and investment between two countries gives them more reason and occasion to talk and understand each other (and even build friendships that can cut through misinformation), more instruments with which to barter – a technology transfer here in return for an emission commitment

there -- and something immediate to lose if they do not cooperate.[iii] Mutual openness will also allow the monitoring of something as diffused as climate action.

Of course, total dependence on another country gives them an extreme degree of leverage that they will attempt to exploit – think Russian control over natural gas flows to Germany – and near-total isolation gives little reason to cooperate on global public goods – think North Korea. However, moderate but flexible interdependence between countries can allow for rewards (deeper ties) and penalties (reduced ties). International agreements, of which many will be needed for climate action, will be easier in a world that continues to be open.

Mitigating Climate Change – Implementation

Emission mitigation will require an enormous increase in production, investment, financing, and innovation to replace existing emission-intensive capital stock with climate-friendly stock. Continued globalization will facilitate all this.

Take, for instance, battery production, which is necessary to store the power from sustainable energy sources. Lithium, nickel and cobalt are the key metals used to make batteries, and are already projected to be in short supply, as are rare earths used for electrodes and electrolytes. Many of these key commodities are mined in the Democratic Republic of Congo and refined in China and Russia. How much would global battery production be hit if the sourcing for these commodities could only be domestic or from some friendly countries? How much would battery costs rise if they were not produced in the most efficient locales, using the most effective technologies? Would a poor country get the financing to invest in batteries, or would multinationals make investments in that country, if there was a constant threat that its exports would be sanctioned, and further investment cut off, for instance if a future government joined the wrong alliance?

Put differently, while actual de-globalization increases the costs of manufacturing mitigation equipment, even the threat of de-globalization based on values or political affiliation increases the uncertainty surrounding investment and reduces it, especially in poorer parts of the world where governance is less stable.

Adaptation to Climate Change

If mitigation is too slow, people will need to adapt. Consider two facets of the need to adapt as temperatures rise, the loss of traditional livelihoods, especially in agriculture, and the mounting climatic risks to supply.

Adaptation to Climate -- Livelihoods

Planet heating will make it harder to grow traditional crops in the tropics using traditional methods – the tragic floods in Pakistan are the most recent reminder. New crops and new technologies will help but they require investment, and absent financing, poor farmers in poor countries are not well positioned to make them. Indeed, in a study of how different agricultural communities in the United States reacted to the great American drought in the 1950s, Rodney Ramcharan and I find that wealthier communities, and communities with greater initial access to financing could invest more in technologies like tractors and irrigation, had higher productivity, and avoided the out-migration that characterized communities that

were not so favored.[iv] In other words, adaptation will require new techniques and additional financing, and for many developing countries, this will have to come from abroad.

Despite such adjustments, agriculture will become unprofitable for many in the tropics. They will have to look for new livelihoods outside agriculture, which will require an acceleration in economic development. To date, the surest way for countries to develop is to export their way to growth, benefiting from dependable demand in the more developed (and less heat affected) world. Rising protectionist barriers in more developed economies will impede growth in developing countries, thereby hurting the ability of their people to adapt.

Adaptation to Climate -- Risks

Global supply chains tend to have specialized intermediate products passed along from one segment to the next. These are hard to acquire from outside the existing lot of suppliers. Volatility in the climate is already disrupting production. Supply chains have to become more resilient, not by reshoring them entirely within a country which would increase their exposure to climate risk (unless the country is continent-sized), nor even near-shoring within a region, but by diversifying them and developing flexibility.

The first requires multiple suppliers across different regions and continents for every segment of the supply chain, with the ability to shift volumes from a climate-hit supplier to a supplier elsewhere quickly. The second requires the ability to rapidly redesign parts whose production is in short supply so that they can be sourced elsewhere. For example, Tesla reprogrammed software during the pandemic so that a chip in short supply could be replaced by a more available one. Clearly, the greater the range of geographies where a supply chain can arrange suppliers or employ designers or programmers, the better insured it will be. A descent into regionalism or autarky will limit such insurance.

Similarly, in the case of commodities, especially critical ones like food and fuel, the best form of insurance against disruption is the existence of a well-connected freely accessible global market. The more local or regional the market, the more severely it will be hit by climatic disruption.

Two examples that should make the point, albeit in response to a different adverse shock, the pandemic. China contained the early strains of the COVID-19 virus relatively quickly. As a result, while the rest of the world was closing down, it was able to ramp up production, from around 10 million masks per day in March 2020 to over 100 million masks by May 2020. In spring 2020, it exported more than three times the number of masks that were made in the entire world in 2019.[v] Even though global travel may have helped spread the virus initially, global markets and trade allowed the world to acquire masks quickly. However, as China confronted further strains of the virus, its unwillingness to embrace globalization and vaccinate its population using effective vaccines developed in the West has led to more misery than warranted for its people.

Migration Due to Climate Change

When all else fails, people in climate affected areas will be forced to migrate. If we do little on mitigation and adaptation, the scale of migration will be unprecedented. It would be myopic for mildly affected countries to assume they will live comfortably behind border walls. Not only will they find it hard to ignore the humanitarian tragedy occurring outside, desperate climate refugees will not let them do so for they will scale or break down any wall. Moreover, unless their conditions of existence are addressed,

people marooned in climate affected regions are likely to increase their emissions; poor farmers whose yields are collapsing are likely to clear more forests, while richer citizens will use more air conditioning powered by legacy energy sources – since investment to replace them with renewables makes little sense in a doomed land. Allowing for migration may not just be the morally right decision, it may also be a rational one.

If migration is uncoordinated, climate refugees will rush into richer welcoming countries, thus overwhelming them, while avoiding poor or hostile countries. Almost surely, this will result in greater hostility towards climate refugees even in countries that were initially welcoming.

There are better ways of placing refugees. With ageing populations in a number of countries, including some emerging markets like China, job openings will grow. Countries do prevent the free movement of labor across national borders today, but borders are becoming more porous, and an ageing domestic population will necessitate them being even more so. Rather than every refugee moving to the richest country that will take them, it may be better for refugees to move to a country where their skills are a better match, at a pace at which they can be assimilated. A global matching market between climate refugees and available work will allow refugees to be absorbed with dignity and with maximal benefit to the world.

Better still if that global matching market emerges due to self-interest, as each country deals with its ageing problem. As citizens grow accustomed to immigrants, tolerance increases.[vi] The market will effectively expand with use, and will be available, if and when climate change necessitates mass migration. Climate refugees will then simply add additional supply to it. Once again, steady globalization (of labor markets) will allow us to better address climate change.

Wherever possible, potential climate refugees need to equip themselves with skills (including language) relevant for the countries where they will find new homes. This requires them to have a reasonable sense of where they will be placed – we will need a predictable global system of allocating refugees across countries, before they actually have to move. There will also be those, such as elderly refugees, who simply cannot work in their new homes. A global agreement should specify how such refugees will be humanely allocated across countries (for instance, some family presence and some cultural proximity in the host country would be ideal for the elderly), and how countries that take them will be compensated. As argued earlier, such agreements will be easier to reach in a more globalized world.

Policies that will Enable Globalization and Climate Action

If continued globalization is likely to be a key aid in our existential battle against climate change, how do we deal with its unpopularity, especially in industrial countries that used to be its champions? Importantly, history suggests a change in attitude is possible. Emerging markets that resisted globalization in the past were told by multilateral organizations like the IMF and the WTO (echoing the then voice of dominant industrialized countries) to absorb the pain. There certainly were losers from globalization in emerging markets, but perhaps because their democracies were then not strong enough for the voices of the affected to be heard, they were ignored.[vii] Eventually, the benefits of globalization became more apparent and widespread. However, opposition is once again gaining strength in emerging markets, not least because opponents can argue former champions like the United States are giving up on globalization.

Consider three important concerns with globalization, other than the traditional one about those who lose out not being helped. First, the international agreements traditionally associated with globalization tend to curtail a country's democratic decision making. While motivated by the laudable objective of creating a level playing field, they impose a uniform set of rules on all countries, negotiated by faceless international bureaucrats. Such intrusive rule-making allows influential countries excessive power, imposes uniform policies when countries democratically deciding for themselves might find more suitable ones, and shuts out the possibility of learning from varied experiences. For example, many developing countries resent the 1994 agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) because they see stronger patent protection as raising their costs of essential medicines while favoring multinational pharmaceutical companies. In the United Kingdom, concern about being subject to Brussel's rule-making was well captured by the Brexit slogan, "Take back control".[viii]

Second, together with automation, globalization has led to a loss of middle-skill jobs in industrial countries, especially in manufacturing, while elevating the number of low-skill jobs and the pay of high-skill jobs. This skill-related increase in economic inequality is particularly pernicious because the children of the well-paid highly-skilled rich have the resources to become highly skilled themselves -- better pre-schools and nutrition, well-funded secondary schools in safe neighborhoods, coaching for entrance exams, and a well-marked-out pathway into prestigious universities. This entrenches inequality and contributes to political fractionalization.

Third, globalization thrived on *Pax Americana*, with the Soviet Block essentially excluded till it broke up. As geo-political rivalry heats up again today, with geo-political rivals within the trading system, concerns about dealing with a potential enemy are mounting.

How can we devise policies that promote climate action keeping these concerns in mind? We cannot naively hope for magical global reconciliation. But we need to create an environment where global agreements are possible and some global flows continue to keep channels of dialogue, and hope for reconciliation open. Here are some examples of policies, and the deeper principles that underlie them.

1. *Follow the Principle of Subsidiarity*

Economists agree that a global tax on carbon would be the economically efficient way to give both US utilities and Tanzanian utilities a common incentive to cut back on carbon emissions. Yet there are two important problems with it.

First, it imposes a uniform global solution, even though countries may more appropriate policies that are better economically, and more politically acceptable. Global one-size-fits-all measures actually fit very few. Second, a global carbon tax will be profoundly unfair for it will impose the same costs of mitigation on Tanzania, which emits so little per capita, as the United States, which emits so much.

We must strive for a fair global scheme following *the principle of subsidiarity*: A higher, more central authority, whether international or national, should not perform tasks or enact rules that can be efficiently done at a more local level.

A scheme that I call the Global Carbon Reduction Initiative (GCRI) achieves the objective of a global carbon tax but in a decentralized "subsidiarity-consistent" way, and is fair to boot: Every country that emits per capita more than the global average emission pays into a global incentive fund. This annual payment will be calculated based on the product of the country's excess emissions (over the global

average) per capita, the country's population, and a dollar amount called the Global Carbon Incentive (GCI), which could be set at the level of the contemplated global carbon tax.[ix] Countries below the global per capita average would receive a payout commensurate with their "under-emission".[x]

So countries are held up to their differentiated responsibility through a transparent system of allocating property rights in carbon emissions; over-emitters pay under-emitters for the privilege of using their carbon budget. But the responsibility is also common in that every country, whether US or Tanzania, faces the same cost of raising per capita emissions – the US has to pay more to the fund, while Tanzania will receive less.

Why would the US pay? Because rich countries have committed to pay poor countries $ 100 billion a year from 2020 to help their climate actions, and the Biden administration has already said it will fulfil its responsibilities. This scheme gives the world a measurable way of allocating that responsibility among countries, which should please the US for it limits free-riding by less responsible emitters. When leveraged 10 to 1, these payments will provide poor countries $ 1 trillion a year, the financing that is needed for serious climate action.

Equally important, each country can do whatever it pleases domestically, so long as it meets its international obligations to the fund. For instance, there is substantial political opposition to carbon taxes in the United States, so the US could offer positive incentives for carbon emission reduction instead (as in the Inflation Reduction Act). Similarly, some developing countries might find it easier to impose regulations banning coal plants than to measure and monitor carbon emissions, while the Maldives might use the funds it receives to help its people adapt.

Finally, one argument in favor of a global carbon tax is that it imposes equal disadvantage on manufacturers across countries.[2] If that is what it takes to get global agreement, it is possible to negotiate a carbon tax for certain industries globally (with the tax even varying by industry) in parallel to the GCRI – since the GCRI only determines inter country payments. In short, the GCRI is extremely flexible.

2. Less is more

We need to create safe spaces where countries with differing values and systems can interact with confidence whatever the shifts in domestic politics or in the geopolitical landscape, short of actual war. At the same time, we have to be realistic that geo-political rivals will not trust each other over strategic goods. Finally, the world may need some capacity to inflict economic penalties on irresponsible rogue countries, with those penalties substituting for actual conflict. Here is a proposal to achieve this.

Some trade between countries, for example in food and medicines, should continue for humanitarian reasons under any circumstances short of actual war. Can countries coming together under the aegis of (say) the WTO, agree to shield trade and investment in these goods from sanctions? Furthermore, could goods and investments that contribute to addressing climate change, as well as spare parts for critical civilian infrastructure, be added to the list? The focus should be on broadening the list as much as possible, and preserving cross-border interaction in these goods, but not imposing detailed policies, say on patent protection or minimum wages, that are best left to be decided within each country. However, the agreement could set out a short "negative list" of economic behaviors that are prohibited because

[2] I thank Anne Krueger for pointing this out

of the adverse spillovers they entail for others, or because they impair mutual confidence or market access.

With growing geo-political rivalry and the impotence of organizations like the UN, some weaponization of global trade may be inevitable. It may even be desirable if it prevents a hot war. Therefore, on goods and services that are outside the shielded set, a country could have the ability, when no other options seem workable, to restrict trade with, or inward investment by, or outward investment in, a strategic rival. Consequently, these goods and services will be more prone to friend shoring, but that may be the price we have to pay for growing global distrust.

Nothing prevents allies from coming together to sanction a target country, but sanctions on a country's use of key global infrastructure (such as payment systems), or secondary sanctions on those who resist sanctions on a targeted country, should require the support of a reasonable number of countries (perhaps with votes weighted by economic size, as in the IMF).

Any agreement of this kind (delineating shielded and unshielded goods and services, and possible actions on each) tries to create some light rules of the game, enforced by rarely-used collective sanctions, to keep some interaction between countries with different value systems going.

Such agreements will not be easy in an environment where any accommodation is seen as weakness. It will require leadership of the kind President John F. Kennedy demonstrated at a commencement address at American University on June 10 1963. In the midst of the Cold War, he boldly announced that the United States was unilaterally suspending nuclear tests. In justifying his decision, he urged Americans

"not to see only a distorted and desperate view of the other side, not to see conflict as inevitable, accommodation as impossible, and communication as nothing more than an exchange of threats."

Later in the speech he said

"And history teaches us that enmities between nations, as between individuals, do not last forever. However fixed our likes and dislikes may seem, the tide of time and events will often bring surprising changes in the relations between nations and neighbors." [xi]

More generally, these first two proposals emphasize that global schemes should impinge as little as possible on citizens' democratic agency and empowerment, while facilitating climate action and keeping a minimum level of globalization going. With channels of dialogue open, we may find surprising avenues for cooperation, even among rivals.

3. Liberalize Services

Protectionism is infectious and could spiral up, with a national security rationale invoked all too often. Relatedly, there is something to be said for the bicycle theory of reforms – trying to stay in place increases the chances of falling off, so we must try and move forward. One reason industrial countries have soured on open borders is their manufacturing workers have been disproportionately hit by global competition and outsourcing, while service workers have benefited. Both politically and economically, further liberalization of manufacturing has diminishing returns.

Services account for the largest share of GDP in the world, and are ripe for more competition, made possible by improvements in communication technology. Apart from the benefits of services like telemedicine reducing the cost of healthcare across the world, trade and investment in services could help reduce economic inequality in industrial countries, a key contributor to the allure of protectionism.

Importantly, trade in services can benefit climate action. Emission mitigation and climate adaptation will require effective redesign of appliances, machinery, and buildings – think R&D, engineering, design, and architecture. Relatedly, it will require more effective reuse of materials (such as glass, wood, and concrete) recovered from the tearing down of climate-unfriendly structures. As those services flourish globally, every country will benefit from global best practices and thinking.

Weightless services also consume little energy on the way to the final consumer, unlike manufactured goods. Export-led services growth will be much less environmentally harmful – the world cannot afford India to follow China's path, even if it were open to it.

Furthermore, the production of these services can be distributed across a country. In developing countries, this will reduce the burden on the large megacities that are becoming heat sinks and increasingly unlivable. It will also generate a source of income and a reliable stock of human capital to seed rural communities that would otherwise lack the economic capacity to survive the loss of agricultural incomes. In industrial countries, an expansion in the domestic and international market for services provided at a distance would similarly allow good livelihoods in places away from the large coastal cities that have hitherto benefited from globalization.

Today, there are significant barriers to the production of services at a distance, even within a country, let alone across the world. Licensing requirements prevent a doctor, lawyer, or architect from one state in the United States from offering services in another. It is very hard for national medical insurance systems in one country to pay providers from other countries. Some countries prohibit law firms from other countries from operating domestically.

Much therefore can be done to liberalize trade in services. For instance, a giant step forward would be if countries start recognizing each other's degrees, and offer equivalency exams widely to ensure providers across the world can meet their specific requirements. This will also help prepare potential climate migrants, as discussed earlier.

The facilitation of services at a distance will inevitably require new agreements. For instance, a consensus will be needed surrounding the acquisition, use, and storage of data, so as to assure citizens and their governments that privacy will be protected, and data will not be misused by foreign organizations and their governments, including for spying or blackmail. The potential for non-tariff barriers here is significant as are the legitimate security concerns of countries. Progress will be difficult but immensely worthwhile.

4. Strengthen Multilateral Institutions and Make Them More Independent

I have outlined a number of new agreements needed to facilitate climate action. The United States largely designed and nurtured the post-World War II global order, and as sole hegemon, it obtained a leadership status in many multilateral institutions. Unfortunately, it is now one of the contending parties and its design of a new structure for climate action, or its leadership of reforms, will not go unquestioned.

Multilateral institutions have to step up to independently set the agenda for climate action, including developing initial templates for agreements, no doubt following broad marching orders from their member countries. Despite much reform, multilateral institutions are still not seen as fully independent of the post-war power structures. The framework of multilateral institutions needs to be thoroughly re-examined so that, while accountable to shareholding countries, institutional actions are, and seen to be, in the global interest. Management's independence from any government will be particularly helpful in helping them mediate between hostile economies. Much has been written about the reform of multilateral institutions, and how they can help catalyze climate action and financing. [xii] I have little to add other than emphasizing the need for it.

Conclusion

Attempting to tackle climate change while allowing the world to break up into regional or smaller economic blocks is a surefire way of making a near impossible task even harder. To have the best chance of mitigating climate change and adapting to its consequences, we need to keep globalization going. As frictions between nations grow, and superpower rivalry increases once again, the task seems hard. But we cannot afford to abandon it.

Rodney King, whose brutal beating by police precipitated the Los Angeles riots in 1992 said something that seems simple but is as relevant as President Kennedy's words. He said

"Please, we can get along here. We all can get along. I mean, we're stuck here for a while. Let's try to work it out."

As, we embark on a battle against climate degradation that may determine the nature of our existence, we have to preserve the minimum cooperation needed, even while hoping that it will lead to much more.

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[i] https://link.springer.com/article/10.1007/s11625-020-00877-9

[ii] See, for example, Gaia Vince, *Nomad Century: How Climate Migration Will Reshape Our World*

[iii] This is not a restatement of Tom Friedman's Golden Arches observation on the consequence of globalization (that no two countries that both have a McDonald's have ever fought a war against each other).[iii] That was an interesting observation that has not survived the subsequent evidence. I merely suggest that mutual openness will facilitate negotiations without always necessitating good outcomes.

[iv] See Raghuram Rajan and Rodney Ramcharan, "Finance and Climate Resilience: Evidence from the 1950s Drought", working paper, University of Southern California.

[v] See Gary Gereffi "What Does the Covid-19 Pandemic Teach us about Global Value Chains? The Case of Medical Supplies." Journal of International Business Policy 3, no 3,(July 15 2020): 287-301, cited in The Globalization Myth: Why Regions Matter by Shannon O Neil.

[vi] See, for example, Ryan Enos, "The Causal Effect of Intergorup Contact on Exclusionary Attitudes", PNAS, March 2014, https://www.pnas.org/doi/10.1073/pnas.1317670111 and Alberto Alesina, Armando Miana, and Stefanie Stantcheva, "Immigration and Redistribution", NBER working paper 24733, July 2018.

[vii] See, for example, Petia Topolova, "Factor Immobility and Regional Effects of Trade Liberalization: Evidence on Poverty and Inequality from Indian Districts", *American Economic Journal: Applied Economics*, vol. 2(4), pp. 1-41, October 2010.

[viii] See, for example, Dani Rodrik, *Straight Talk on Trade: Ideas for a Sane World Economy* (Princeton, NJ: Princeton University Press, 2018)

[ix] For a GCI of $ 10 per ton, the US which emits 16 tons per capita, exceeding the world average by 11.4 would pay 11.4*325 million people*10$ per ton = $38bn.

[x] See, for example, my article in the Financial Times in 2021 at https://www.ft.com/content/19fa191a-62d9-41b5-ab04-de19833cbe63. For detailed calculations, see Somik Lall, Raghuram Rajan, and Christian Schoder, "A Global Incentive Scheme to Reduce Carbon Emissions", University of Chicago Working Paper 2022.

[xi] https://www.jfklibrary.org/archives/other-resources/john-f-kennedy-speeches/american-university-19630610

[xii] See, for example, the *Report of the G20 EPG on Global Financial Governance: Making the Global Financial System Work for All*, https://www.globalfinancialgovernance.org/report-of-the-g20-epg-on-gfg/