Geo-Economic Fragmentation and the Future of Multilateralism - Online Annexes

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Annex I. Future-Proofing the International Monetary System: Historical Perspective[1]

In any given era, the international monetary system is either designed for, or evolves to, a particular configuration of the world economy. While the system may serve that configuration well, it may be unable to accommodate significant shifts in the world economy. In the face of such shifts, the system may collapse or experience a major crisis. This thesis is vividly illustrated by three episodes: the 1930s interwar monetary chaos; the 1970s collapse of Bretton Woods; and the 2008 global financial crisis.

The Interwar Period

The interwar gold-exchange standard was modelled after—and designed for—the world of the classical gold standard. During the classical period, when Britain, France and Germany were the main creditors (the United States was the largest debtor), creditor countries were generally willing to import from the countries to which they had lent (especially Britain, which imported foodstuffs and raw materials). Financial obligations arising from wars (such as the Napoleonic Wars, 1793-1815, and the 1870 Franco-Prussian War) were paid by the export of goods and services, with the creditors accepting the corresponding imports. In deficit countries, central banks could raise discount rates, and this would be transmitted to wages, which were flexible. Capital flows were mostly long-term; short-term capital flows were either for seasonal balance of payments (BOP) needs or—given the credibility of the gold standard—stabilizing. As such, the international adjustment mechanism worked well.

But the world of 1931 was vastly different from that of 1913. The United States had become the major creditor with most European countries becoming debtors. Excess productive capacity meant that surplus countries (the United States, France) were intent on promoting their exports and discouraging imports and therefore sterilized reserves inflows, thus vitiating the international adjustment process. Wages had become inflexible and the more diffuse post-war investor base preferred deposits and fixed income assets—resulting in unemployment and bankruptcies when deficit-country central banks raised interest rates.

Following the mid-1920s Dawes Plan and Loan stabilization of Germany, the gold standard was restored (albeit as a less-credible gold-exchange standard). American banks entered a period of massive international lending, averaging a billion dollars a year over 1924-29, much of it destined for Europe and intermediated by British banks. While these loans allowed debtor countries to meet their obligations (including war reparations), it merely postponed the adjustment problem (whereby surplus countries were not willing to accept imports).

When a boom in the New York stock market in the late 1920s drew both domestic and foreign capital to the United States, Europe suffered a “sudden stop”. Debtor countries then bore the full brunt of the adjustment especially because France demanded gold in exchange for its accumulated foreign currencies and the U.S. Federal Reserve raised interest rates. The result was a huge deflationary shock to the world economy as deficit countries lost gold and were forced to follow contractionary policies. The 1931 failure of the Austrian bank, Creditanstalt, triggered a run on the gold reserves of the German Reichsbank, forcing a standstill on all German debt payments. Next came a speculative attack on sterling forcing Britain off the gold exchange standard. As the global slump deepened and amidst highly disruptive “hot money” flows, countries resorted to competitive devaluations, exchange and trade restrictions, and other beggar-thy-neighbor policies, contributing to the collapse of world trade and incomes, and greatly exacerbating the Great Depression.

The Bretton Woods System

The Bretton Woods system was designed for a time when the United States was expected to remain the major balance of payments surplus country for the foreseeable future. As a result, the system had no means of forcing surplus countries to revalue their currencies (nor could the U.S. dollar, which was the lynch pin of Bretton Woods, ever be devalued without severely disrupting the system). Moreover, growth in international reserves would have to rely on gold production or US balance of payment deficits.

[1] Prepared by Atish Rex Ghosh

By the early 1960s, however, the world economy had changed considerably. The United States was running balance of payments deficits (and by the end of the decade, trade deficits as well), resulting in a "dollar glut" rather than a "dollar shortage"; private capital flows began to dominate official flows with the growth of the Eurodollar market and industrialized countries' dismantling of capital controls. The Triffin Dilemma meant that while the system needed dollar deficits for international reserves to underpin the expansion of world trade and incomes, but those same deficits were undermining faith in the dollar's official gold convertibility and therefore in the Bretton Woods system.

By the early 1970s, despite the introduction of the Special Drawing Right to resolve the Triffin Dilemma and various measures to prop up Bretton Woods, the system was close to collapse. U.S. deficits continued to widen, surplus countries (Germany, Japan) refused to revalue for fear of losing competitiveness, and the rise of private capital flows meant there could be huge speculative and self-fulfilling flows in anticipation of devaluation. Finally, frustrated by the recalcitrance of the surplus countries to adjust, on August 15, 1971, President Nixon suspended official dollar convertibility. After the short-lived Smithsonian Agreement, by early 1974, the major industrialized countries were floating, and the collapse of Bretton Woods was complete.

The Global Financial Crisis

Following Bretton Woods, the world became molded to the existing global economic order, where the major industrialized economies accounted for 65-70 percent of world GDP from the 1960s through the end of the 1990s. But in the first decade of the twenty-first century, as emerging markets gained importance, the Group of 7's share had fallen to 50 percent.

After the 1997-98 East Asian crisis, many EMs took the lesson that they should not rely on foreign capital, and they should embark on export-led growth by maintaining competitive exchange rates. Global manufacturing shifted to these countries (notably, but not exclusively, China) where rising incomes coupled with high propensities to save resulted in higher global savings and lower world real interest rates. Moreover, lower labor costs and increased productivity meant lower prices for global manufactures, which contributed to lower inflation in the AEs. Lower real interest rates coupled with lower inflation implied lower nominal interest rates across the yield curve. Lower yields resulted in higher asset valuations, including of housing. Meanwhile, in AEs, this globalization of manufacturing implied a declining share of labor and stagnating real wages for workers, who thus lacked the wherewithal to absorb (purchase) the global production of manufactures. The solution lay in credit, which the U.S. financial system was happy to provide.

In an environment of low nominal yields, and with EM central banks accumulating safe assets, the "originate-and-distribute" model allowed the U.S. commercial banks to extend mortgages then package them into mortgage-backed securities and sell them to investment banks. As commercial banks shed the mortgages they had originated, they freed up their balance sheets, allowing them to extend more mortgages. The lending boom fueled house prices increases, which in turn justified larger mortgages and equity withdrawals. In Europe, the rise of universal banks—spurred by the Single European Market Act, the EC Directive on the Free Movement of Capital, and passporting rights—resulted in a lending boom, partly to the euro area periphery (where it financed widening current account deficits and rising property prices), and—taking advantage of the same regulatory arbitrage as U.S. investment banks—partly to the United States (where it constituted gross, not net, flows as European banks financed their purchases of U.S. asset-backed securities in the wholesale funding markets).

The result was a "triple-bubble" world economy: the United States became the "consumer of last resort" absorbing the exports and savings of the emerging markets; within the United States, increasing reliance on housing-related consumer credit to sustain "middle class" consumption in the face of a declining share of labor and stagnating real wages; and within the euro area credit to, and the deficits of, the periphery absorbed the savings and exports of the euro area surplus countries. While the going was good, the going was good, but eventually these bubbles burst, plunging the world economy into the global financial crisis.

Conclusion

What these episodes, more than 75 years apart, have in common is that each resulted from the difficulties of the IMS to adapt to a world undergoing dramatic structural transformation—specifically, to meet one or more of its three core challenges: (i) preventing crises; (ii) promoting an equitable burden of adjustment between surplus and deficit countries and (iii) ensuring sufficient global liquidity. As such, history provides a sobering perspective of the potential fragilities of the current IMS in the face of GEF.

Annex II. Literature Review for Transmission Channels of GEF[2]

Table 1: The Trade Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical exercises	
Eugster et al. (2022)	The Effect of Tariffs in Global Value Chains	Show the effects of tariffs on economic outcomes via IO matrices (sample of 13 manufacturing sectors for up to 35 countries)	Upstream and downstream tariffs generally hurt economic activity (e.g., value added, labor productivity and TFP). Higher domestic protection is generally found to be insignificant, bar a borderline-significant negative effect on employment. Higher tariffs on competitors are associated with higher value added and employment.
Furceri et al. (WBER 2022)	The Macroeconomy after Tariffs	Estimate the effect of tariff increases on a panel of 151 countries from 1963 to 2014	Tariff increases are associated with persistent, economically, and statistically significant declines in domestic output and productivity, as well as higher unemployment and inequality, real exchange rate appreciation, and insignificant changes to the trade balance. These effects are asymmetric, being larger when tariffs go up than when they fall.
Ahn et al. (RIO 2019)	Reassessing the productivity gains from trade liberalization	Estimate the direct and indirect (via input linkages) effects of tariffs on productivity in a large country-industry-year dataset	Results point to a dominant role of the indirect input market channel in fostering productivity gains. A 1 percentage point decline in input tariffs is estimated to increase total factor productivity by about 2 percent in the sector considered.
Barattieri et al. (JIE 2021)	Protectionism and the business cycle	Estimate the dynamic effects of temporary trade barriers using empirics and model calibrations	Country-level and panel VARs show that protectionism acts as a supply shock, causing output to fall and inflation to rise in the short run. Different scenarios calibrated with a small open economy model with firm heterogeneity, endogenous selection into trade, and nominal rigidity show protectionism is not an effective tool for macroeconomic stimulus.
Freund et al. (2022)	Natural Disasters and the Reshaping of Global Value Chains	Examines trade in the automobile and electronic sectors after the 2011 earthquake in Japan to understand supply chain adjustment after other natural disasters, like the COVID-19 pandemic.	Find evidence that the shock did not lead to reshoring, nearshoring, or diversification across non-Japanese suppliers; and trade in intermediate products was disrupted less than trade in final goods. Imports did shift to new suppliers, especially where dependence on Japan was greater. But production relocated to developing countries rather than to other top exporters, and to larger countries.
Cerutti et al. (2019)	Managed Trade: What Could be Possible Spillover Effects of a Potential Trade Agreement Between the U.S. and China?	Examine the direct, first-round spillover effects of the US-China trade war for the rest of the world	Under the assumption that the U.S.-China trade gap is closed by China stepping up purchases of U.S. goods and in the absence of a meaningful boost in China's domestic demand and imports, bilateral purchase commitments are likely to generate substantial trade diversion effects. This could impose significant losses on affected countries if accompanied by some type of market segmentation.

[2] Prepared by Tatjana Schulze

Table 1 (continued): The Trade Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Modeling exercises	
Caceres et al. (2019)	Trade Wars and Trade Deals: Estimated Effects using a Multi-Sector Model	Study the potential long-term effects of increasing trade tariffs using a multi-sector computable general equilibrium trade model calibrated to 165 countries and 17 sectors.	Across alternative scenarios on the US-China trade war, the overall effects on GDP across countries tend to be relatively small albeit negative in most cases. However, sectoral disruptions and positive and negative spillovers to highly exposed 'bystander' economies can be large. There is also heterogeneity at the subnational level in the U.S., with richer states benefiting from certain scenarios.
Ossa (JIE 2015)	Why trade matters after all	Use quantitative trade models to argue that accounting for cross-industry variation in trade elasticities greatly magnifies the estimated gains from trade	The analysis is based on 50 countries and 252 industries to estimate trade elasticities. Plugging them in the model shows that the gains from trade (a move from autarky to 2007 levels of trade) range from 49.3% until 62.5%.
Reyes-Heroles et al (IMFER 2020)	Emerging Markets and the New Geography of Trade: The Effects of Rising Trade Barriers	Use a dynamic, general equilibrium, quantitative trade model (featuring multiple countries, sectors, and factors of production) to estimate the long-run global impacts of rising trade barriers on EMs—both direct impacts and spillovers through third-country effects.	Increasing trade barriers (a uniform 5 percentage point increase in trade costs) has a sizable negative impact on global output and welfare. However, while the average effect across AEs and EMs is broadly similar, there are large within-group differences. The variance in outcomes is much larger across EMs, as they are particularly heterogeneous in their exposure to trade shocks through differences in their production structure and factor supplies.

Notes: See Costinot and Rodriguez Claire (2014), Caliendo and Parro (2021), Fajgelbaum and Khandelwal (2022) for an extensive overview of the relevant literature, as well as estimates of heterogeneous gains from trade and of the welfare effects of tariffs across countries under different settings. See Box 1 for details of the papers that estimate the cost of fragmentation in trade and technology diffusion.

Table 2: The Technology Diffusion Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical and conceptual exercises	
Evenett & Fritz (2021)	Subsidies and Market Access: Towards an Inventory of Corporate Subsidies by China, the European Union and the United States	Provide a comprehensive inventory of the world's largest subsidy regimes: 18,137 corporate subsidies awarded by China, the EU, and the US since November 2008. Explore the exposure of global goods trade to corporate subsidies and their adverse economic impact	Document the pervasive nature of subsidies: goods exposed to subsidies from the EU/US (excl. China) comprise 28% of global goods. 84% of goods imports into China were in products where local rivals receive subsidies. Document the adverse cumulative effect of a large number of (hidden) corporate subsidies on the competitive environment of foreign manufacturers exporting to China/EU/US.
Evenett & Fritz (2022)	Emergent Digital Fragmentation: The Perils of Unilateralism	Lay out recent regulatory interventions (more than 15,000) and their consequences for the digital economy and possibility of policy fragmentation	Document evidence of: (1) sharp increase in regulatory interventions in the digital sector since 2020, (2) increase in regulatory heterogeneity posing risks to digital fragmentation, (3) larger barriers between national digital sectors, (4) subsidy races, in particular in semiconductor sector, (5) uncoordinated state action in the digital domain.
OECD (2021)	Measuring distortions in international markets: Below-market finance	Investigate extent of government support to industries through the financial sector (below-market finance), using information for 306 of the largest manufacturing firms in 13 industrial sectors, covering the period 2005-19.	Document evidence of: (1) below-market borrowings occur more frequently in heavy industries (with excess capacity), (2) below-market equity occurs more frequently in high-tech industries (aerospace and semiconductors), (3) firms with more than 25% government investment tend to benefit more from below-market borrowings, (4) below-market finance may have been a contributor to excess capacity in a number of sectors, (5) government support tends to be negatively correlated with firm productivity, (6) concerns about lack of transparency w.r.t. below-market finance.
Drake et al. (2016)	Internet Fragmentation: An Overview	Delineate practices of internet fragmentation and key trends using 28 examples, distinguishing technical, governmental, and commercial fragmentation	Document a vast array of examples of technical, governmental, and commercial fragmentation of the internet observed in previous years
		Modeling exercises	
Garcia-Macia & Goyal (2020)	Technological and Economic Decoupling in the Cyber Era	Investigate motivations of countries to technologically decouple by erecting barriers to cyber technologies, using a model of monopoly power in the digital sector and technology diffusion across borders.	Erecting export bans – in additional to import bans on cyber technologies – can be optimal for countries which, in light of monopoly rents and cyber security vulnerabilities, seek to limit technological diffusion to competing countries which could rise to become global suppliers. Such practices however involve substantial costs to global welfare due to loss of access to digital inputs or inefficiencies in production.
Buera & Oberfield (2020)	The Global Diffusion of Ideas	Develop a theory of innovation and technology diffusion across industries/countries that explains a countries' stock and frontier of knowledge. Quantify how much bilateral trade costs contribute to long-run changes in TFP and individual post-war growth miracles	Technology diffusion can account for a doubling of both gains from trade and the fraction of variation of TFP growth accounted for by changes in trade. The ability of trade barriers to explain changes in TFP from 1962–2000 is up to three times as large when gains from trade are dynamic.

Table 3: The Labor Flows Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical exercises	
Clemens et al. (2018)	Immigration Restrictions as Active Labor Market Policy: Evidence from the Mexican Bracero Exclusion	Are immigration barriers that are intended to raise wages and employment by shrinking labor supply effective? Uses a natural policy experiment: the exclusion of almost half a million Mexican bracero farm workers from the United States to improve farm labor market conditions.	Immigration restrictions did not substantially raise wages or employment for domestic workers in the sector. This is likely due to endogenous technological advances. Employers adjusted to foreign-worker exclusion by changing production techniques towards more capital-intensity and changing production levels.
Mayda et al. (2018)	The effect of the H-1B quota on the employment and selection of foreign-born labor	Show the effect on employment of cap restrictions imposed on the H-1B visa program in the US in fiscal year 2004	Restrictions on visas significantly lowered new employment of workers in the same visa category, especially at the top and bottom of the wage distribution.
Abramitzky et al. (forthcoming)	The Effect of Immigration Restrictions on Local Labor Markets: Lessons from the 1920s Border Closure	Compare the effects of country-specific entry quotas imposed by the US in the 1920s across local labor markets that were differentially exposed to the quotas.	Loss of immigrant workers greater in local labor markets that were more exposed to the national immigration quotas, but no benefits to US-born workers because of (i) internal migration, and (ii) shift to more capital-intensive production in some local markets.
Kato & Sparber (2013)	Quotas and Quality: The Effect of H-1B Visa Restrictions on the Pool of Prospective Undergraduate Students from Abroad	Examine the effect of US reduction of H-1B visas in 2003 on the prospects of undergraduate students from abroad to study in the US	Immigration restrictions led to a reduction in entry test scores of international applicants by 1.5%, disproportionately discouraging high-ability applicants from pursuing higher education in the US.
Glennon (2020)	How Do Restrictions on High-Skilled Immigration Affect Offshoring? Evidence from the H-1B Program	Assesses the impact of H-1B visa restrictions in the US on US multinational firm activity	Visa restrictions caused a rise in employment in foreign affiliates at the intensive and extensive margin, suggesting that immigration barriers increase multinationals' offshoring of jobs.
Bahar et al. (2020)	An Executive Order Worth $100 Billion: The Impact of an Immigration Ban's Announcement on Fortune 500 Firms' Valuation	Uses the 2020 imposition of US H-1B and L1 visa restrictions as an event study to study the effect of immigration barriers on stock market performance	The policy announcement caused negative cumulative average abnormal returns of up to 0.45% relative to pre-event firm valuation. This is equivalent to 100 billion of US dollars of losses.
Bloom et al. (2018)	Demography, Unemployment, Automation, and Digitalization: Implications for the Creation of (Decent) Jobs, 2010–2030	Examine the number and quality of jobs to be created to accommodate recent trends in employment, demography, technological advances, and digitalization, by geographic region, country income group, and human development category.	Between 2010-2030, about 734mn jobs need to be created to meet population growth, compositional changes in age and sex and related labour force participation rates, and achievement of target unemployment levels of ≤ 4% for adults and ≤ 8% for youth. Given current trends in the global labour force and production, serious challenges to the social security system could emerge if not enough decent jobs were created.

Table 3 (continued): The Labor Flows Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Modeling exercises	
Acemoglu (2010)	When Does Labor Scarcity Encourage Innovation?	Examine whether technology adoption and innovation increase when labor is scarce	Scarcer labor fosters technological advances if technology is strongly labor saving, but limits them if technology is strongly labor complementary (i.e. makes labor more productive at the margin).
Mandelman & Zlate (2012)	Immigration, remittances and business cycles	Estimate the cyclicality of unskilled migration and remittances and the impact of immigration policy on their volatility using data on border enforcement and macroeconomic indicators for Mexico and the US.	Immigration and remittance flows are procyclical relative to economic activity in the US/Mexico, generating a procyclical skill premium in the host country. Immigration barriers make unskilled wages and remittances more volatile in the host country.
Acemoglu & Restrepo (2018)	The Race between Man and Machine: Implications of Technology for Growth, Factor Shares, and Employment	Study the concerns that new technologies will render labor redundant. Use a (i) static and (ii) dynamic model in which tasks previously performed by labor can be automated and new versions of existing tasks, in which labor has a comparative advantage, can be created.	(i) When capital is fixed: automation lowers employment and the labor share and may reduce wages. (ii) When capital accumulates endogenously, and new tasks are created: all tasks become automated under some conditions. Automation reduces labor-based production costs, which discourages further automation and encourages the creation of new tasks. Inequality increases in transition periods but can stabilize in the long run under some conditions.

Notes: See also Atoyan et al. (2016) for a survey of the challenges associated with cross-border labor mobility.

Table 4: The Capital Flows Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical exercises	
Caldara & Iacoviello (2022)	Measuring Geopolitical Risk	Construct a news-based geopolitical risk index (GPR) and study its ability to forecast economic activity. Complement the aggregate index with industry- and firm-level indicators of geopolitical risks	Higher geopolitical risk tends to lower future investment and employment, increases disaster probability and tail risks, and divert capital flows away from EMEs towards AEs. Industries that are more exposed to geopolitical risk see a larger drop in investment.
Eichengreen et al. (2021)	Financial Globalization and Inequality: Capital Flows as a Two-Edged Sword	Survey the debate on the association of financial globalization with inequality. Provide facts about capital flows and inequality and take Mexico as a case study.	Draw a number of conclusions based on existing evidence: (1) within-country distributional impact of capital account liberalization is context specific, (2) distributional effects depend on the type of capital flows, their composition, interaction, and on broader economic and institutional conditions.
Alfaro et al. (2009)	FDI, Productivity, and Financial Development	Study the effect of FDI on growth via complementarities between FDI inflows and financial markets	FDI helps countries with well-developed financial markets not mainly through the accumulation of physical and human capital but through improvements in total factor productivity (TFP). Differences in TFP can thus explain cross-country income differences.
Desai et al. (2009)	Domestic Effects of the Foreign Activities of US Multinationals	Investigate if firms investing abroad simultaneously reduce domestic activity, looking at US manufacturing firms between 1982-2004	Findings refute popular claim: foreign activity in fact boosts domestic activity. 10% greater foreign investment is associated with 2.6% greater domestic investment, and 10% greater foreign wage bill is associated with 3.7% greater domestic wage bill.
Bau & Matray (2022)	Misallocation and Capital Market Integration: Evidence from India	Study the effect of foreign capital liberalization on capital misallocation using the staggered liberalization of access to foreign capital across disaggregated Indian industries as a natural experiment.	Access to foreign capital reduced capital misallocation and raised aggregate productivity of the Indian manufacturing sector by at least 6.5%. Foreign investors may substitute for an efficient banking sector. For domestic firms with initially high sales to capital ratios, liberalization increased revenues by 18%, physical capital by 60%, and wage bills by 26% relative to low MRPK firms.
Kose et al. (2009)	Does financial globalization promote risk sharing?	Study patterns of risk sharing among different groups of countries and examine how international financial integration has affected the evolution of these patterns using a variety of empirical techniques	Evidence of modest levels of international risk-sharing departs from levels suggested by theory. Industrial countries, if any, have benefited from risk-sharing during globalization boom while developing countries and EMEs have missed out -- despite high cross-border flows to the latter. EMEs lack of risk sharing may stem from the nature of portfolio debt.
Claessens & van Horen (2021)	Foreign banks and trade	Exploit unique, time-varying, bilateral data on bank ownership for many countries to investigate if financial globalization and banking integration positively affect international trade and, if so, through which channels.	Foreign banks facilitate trade by reducing financial frictions for firms. Exports tend to be larger when a foreign bank from the importing country is present. Entry of a foreign bank also boosts export growth to the home country of the foreign bank relative to other countries, especially when foreign bank presence in the country is large and bilateral cross-border lending low.

Table 4 (continued): The Capital Flows Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical exercises	
Amiti & Weinstein (2011)	Exports and Financial Shocks	Examine if a drop in bank health following financial crises help explain the large declines in exports relative to output. Use a unique data set, covering the Japanese financial crises from 1990-2010, matching exporters with the main bank that provides them with trade finance.	Establish a causal link between the health of banks providing trade finance and growth in a firm's exports relative to its domestic sales.
Morais et al. (2018)	The International Bank Lending Channel of Monetary Policy Rates and QE: Credit Supply, Reach-for-Yield, and Real Effects	Identify the international credit channel by exploiting Mexican supervisory data sets and foreign monetary policy shocks in a country with a large presence of European and U.S. banks.	Results support an international risk-taking channel and spillovers of core countries' monetary policies to emerging markets, both in the foreign monetary softening part (with higher credit and liquidity risk-taking by foreign banks) and in the tightening part (with negative local firm-level real effects).
Caldara & Iacoviello (2022)	Measuring Geopolitical Risk	Construct a news-based geopolitical risk index (GPR) and study its ability to forecast economic activity. Complement the aggregate index with industry- and firm-level indicators of geopolitical risks	Higher geopolitical risk tends to lower future investment and employment and increases disaster probability and tail risks. Industries that are more exposed to geopolitical risk see a larger drop in investment.
Eichengreen et al. (2021)	Financial Globalization and Inequality: Capital Flows as a Two-Edged Sword	Survey the debate on the association of financial globalization with inequality. Provide facts about capital flows and inequality and take Mexico as a case study.	Draw a number of conclusions based on existing evidence: (1) within-country distributional impact of capital account liberalization is context specific, (2) distributional effects depend on the type of capital flows, their composition, interaction, and on broader economic and institutional conditions.
		Modelling exercises	
Caballero et al. (2018)	Bank linkages and international trade	Use a gravity approach to model trade for 66 countries over 24 years with a full set of fixed effects and bank linkages measured for each pair of countries in each year as a number of bank pairs in these two countries that are connected through cross-border syndicated lending.	New connections between banks in a given country-pair lead to an increase in trade flows between these countries in the following year and to trade diversions from countries competing for similar imports. Mechanism: New bank linkages have larger impacts on trade in industries which tend to be subject to more export risk.

Notes: See e.g. Cline (2010) for a survey of the literature of the last decade on growth and financial globalization.

Table 5: The Global Public Goods Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical/conceptual exercises	
Aiyar et al. (2022)	International Trade Spillovers from Domestic COVID-19 Lockdowns	Examine factors other than domestic demand that explain trade patterns during Covid-19. Estimate a standard import demand model using multilateral data. Then analyze granular bilateral trade data.	Pandemic-response policies have negative international spillovers due to supply disruptions following domestic lockdowns. International spillovers accounted for up to 60 percent of the observed decline in trade in the early phase of the pandemic, but their effect was short-lived, concentrated among goods produced in key global value chains, and mitigated by several factors.
Linsenmeier et al. (2022)	The International Diffusion of Policies for Climate Change Mitigation	Examine to what extent the adoption of carbon pricing in a country can explain the subsequent adoption of the same policy in other countries. Quantify the global benefits of policy diffusion in terms of greenhouse gas emission reductions elsewhere, combining a large international dataset on carbon pricing with several other datasets.	Countries are more likely to adopt carbon pricing if other countries that are geographically close or have strong bilateral trade links adopted the policy previously. The main estimate suggests e.g., that adoption of carbon pricing in Canada increases the probability of subsequent adoption in the USA by about 11%. Based on the distribution of policies by the end of 2020 and the dynamic of policy adoption and diffusion over the period 1988-2020, simulations of policy adoption for future scenarios indicate that by 2050, about 11 % more countries will adopt carbon pricing in a scenario with diffusion than in a scenario without diffusion.
		Modelling exercises	
Mora et al. (2022)	Stress Testing the Global Economy to Climate Change-Related Shocks in Large and Interconnected Economies	Using a global network model, stress test the global economy to extreme climate change-related shocks on large and interconnected economies by estimating their external financing needs-at-risk.	Simulations stress the importance of global spillovers in the context climate change-related shocks: Large and interconnected economies vulnerable to climate change could require $1.8 trillion in international reserves (2 percent of 2019's global GDP). Domestic and multilateral macroeconomic policies can help contain these global losses to about $0.8 trillion.
Conte et al. (2021)	Local sectoral specialization in a warming world	Assesses and quantifies the impact of global warming on global economic geography and sectoral specialization using a two-sector dynamic spatial growth model simulated over a 200-year horizon	Rising temperatures lead to northward migration to Siberia, Canada and Scandinavia. Agricultural production also moves northward. By the year 2200, predicted losses in real GDP and utility are 6% and 15%, respectively. Adaptation through changes in sectoral specialization become more costly due to higher trade costs. Changes in geographic concentration further reinforce climate-induced migration.
Hassler & Krusell (2012)	Economics and climate change: Integrated assessment in a multi-region world	Develop a model to quantify how key features of heterogeneity between different regions of the world affect their preferences over different policy options and to understand the distributional consequences of climate change.	Find that taxes have distributionary effects. If all oil-consuming regions coordinate, a tax will allow these regions to capture surplus that the oil-producing regions would otherwise have obtained: the equilibrium price of oil falls. From the perspective of oil consumers, an infinite tax would be best. If oil-consuming regions do not co-operate there will be carbon leakage from high-tax to low-tax countries causing redistribution effects among them, and total damages may be affected as well. Any given oil-consuming region will prefer to have other regions raise taxes on oil consumption. Coordination among oil consumers is Pareto improving.

Notes: See e.g., Buchholz & Sandler (2021) for a survey on global public goods.

Table 6: The Uncertainty Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical exercises	
Bloom et al. (2018)	Really Uncertain Business Cycles	Assess the role of uncertainty in business cycles using detailed Census microdata 1972-2011 and using a DSGE model with heterogeneous firms	Uncertainty shocks (similar in size to US productivity shocks) can reduce gross domestic product by around 2.5%. Increased uncertainty can make policies such as wage subsidies temporarily less effective because firms become more cautious in responding to price changes.
Baker, Bloom & David (2016)	Measuring Economic Policy Uncertainty	Develop an index of economic policy uncertainty (EPU) based on newspaper coverage frequency to capture changes in policy-related economic uncertainty.	Index is able to capture important wars and political events. Firm-level data shows that policy uncertainty comoves with equity price volatility, reduces investment and employment in policy-sensitive sectors like defense, health care, finance, and infrastructure construction. These findings are confirmed at the macro level using data on 12 major economies.
Baker et al. (2020)	Using Disasters to Estimate the Impact of Uncertainty	Identify the causal relationship between uncertainty and booms/busts using cross-country panel data on stock market returns, natural disasters, terrorist attacks, and political shocks	Find a robust negative short-term impact of higher uncertainty (second moment shocks) on growth that holds up to different estimation techniques. Demonstrate that this can be generated by a conventional micro-macro business cycle model with time-varying uncertainty.
Bloom et al. (2022)	The impact of Brexit on UK firms	Examine the impact of the 2016 Brexit referendum on the nonfinancial firm sector based on a survey of UK firms	Estimates indicate: (1) large long-lasting increase in uncertainty, (2) fall in investment by 11% over the first three years post-referendum with a possible delayed response by firms, (3) reduction in UK productivity by 2-5% over first three years.
Handley & Limao (2017)	Policy Uncertainty, Trade, and Welfare: Theory and Evidence for China and the United States	Quantify the impact of policy uncertainty on trade, prices, and real income looking at China's export boom to the US after the 2001 WTO accession	Evidence that WTO accession (1) accounts for over a third of export growth during 2000-2005, (2) reduced US prices, and (3) increased US consumers' income by an equivalent 13% permanent tariff decrease, as it reduced threat of trade war.
Handley & Limao (2022)	Trade Policy Uncertainty	Provide an overview of sources and measures of trade policy uncertainty (TPU), a conceptual framework to study its features, and methods to estimate it.	Among many insights, they point out that uncertainty in terms-of-trade and endowments can alter the optimal unilateral trade policy. One way by the WTO to design trade agreements to affect TPU is to negotiate maximum tariffs. These work to limit externalities on other countries and as a domestic commitment device.
Constantinescu et al. (2019)	Policy Uncertainty, Trade, and Global Value Chains	Quantify impact of economic policy uncertainty on overall trade and trade linked to global value chains, using new data on policy uncertainty for 18 countries over 24 years	A 1% increase in policy uncertainty is associated with a 0.02 percentage point drop in growth of goods and services trade. This amounts to a 1% reduction in world trade growth between mid-2018 and mid-2019. The impact of policy uncertainty on trade linked to global value chains is similar to overall trade.
Hassan et al. (2019)	Firm-Level Political Risk: Measurement and Effects	Construct new measure of political risk faced by individual U.S. firms and study its effect on investment and hiring as well as aggregate co-movement	Evidence that exposure to political risk reduces hiring and investment by firms, which turn to actively lobby and donate to politicians. Dispersion of firm-level political risk rises during episodes of high aggregate political risk.

Table 6 (continued): The Uncertainty Channel – Selected Literature Review

Author(s)	Paper title	Question	Main findings
		Empirical exercises	
Fernandez-Villaverde et al. (2015)	Fiscal Volatility Shocks and Economic Activity	Examine how unexpected changes in uncertainty about fiscal policy affect economic activity by (i) estimating volatility in US taxes and spending and its impact in a VAR, and (ii) feeding a dynamic model with volatility shocks	Economic activity is sizably adversely affected when uncertainty about fiscal policy changes unexpectedly, and this likely happens when markups increase endogenously due to uncertainty.
Cieslak et al. (2022)	Policymakers' uncertainty	Examine how types of uncertainty affect monetary policy decisions by the Federal Open Market Committee (FOMC), specifically the uncertainty that the Fed perceives	Uncertainty about inflation strongly predicts a more hawkish policy stance, controlling for the internal Fed's forecasts and publicly perceived uncertainty. In contrast, policy decisions are not affected by policymakers' uncertainty about growth. Policymakers' inflation uncertainty captures concerns about maintaining nominal anchor.
Berestycki et al. (2022)	Measuring and assessing the effects of climate policy uncertainty	Construct new indicator of Climate Policy Uncertainty based on newspaper coverage frequency for 12 OECD countries covering the period 1990-2018, and study its macroeconomic effect using global firm-level data	Index captures sentiment around major political events and discussions around potentially significant climate policy changes. Find that Climate Policy Uncertainty significantly lower investment, particularly in pollution-intensive sectors that are most exposed to climate policies, and among capital-intensive companies.
		Modelling exercises	
Basu & Bundick (2017)	Uncertainty Shocks in a Model of Effective Demand	Study the impact of aggregate uncertainty on the macroeconomy by (1) identifying an uncertainty shock in stock market data that comoves with the business cycle, and (2) rationalizing the evidence in a dynamic general equilibrium model.	A one standard deviation rise in uncertainty generates an output drop by 0.2%, pushing down consumption, investment, and hours worked. Then argue that traditional models cannot generate this co-movement due to precautionary labor supply by households. Show that a model with sticky prices can produce the stylized fact. Adverse effect of uncertainty worsens when monetary policy is constrained.
Acemoglu et al. (2015)	Political Economy in a Changing World	Develop a framework to analyze institutional dynamics in an environment in which payoffs and political powers change stochastically. Study the dynamics of political rights and repression in the presence of threats from extremist groups and the dynamics of collective experimentation.	The model is able to rationalize some of the observed political transitions to radicalism of political groups such as the Bolshevik Revolution. It captures groups forming temporary coalitions in a changing environment of stochastic shocks and can thus shed light on a variety of strategic interactions.

PUBLICATIONS

Geoeconomics Fragmentation and the Future of Multilateralism

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