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Appendix to

# INTERDEPENDENCE AND POWER IN A GLOBALIZED WORLD

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# Appendix 1: Theoretical Justifications of Sub-dimensions to FBIC Index

This appendix reviews the theoretical justifications of each sub-dimension included in the FBIC Index. It also includes a broader discussion of the data series supporting each sub-index.

## Economic Dimension

Economic relations between states encompass trade, investments, and monetary flows.[1] This includes the provision of aid.[2] Economic relations between states cannot be understood looking at market forces only, but need to be considered from a political perspective too. This is because they represent powerful tools for statecraft which can be used as both carrots and sticks.[3] Economic realities "have a significant role to contribute to formulating the foreign policy of a state."[4] The level of cross border economic interaction is determined not only by private market actors seeking economic gain but by policy makers who attempt to maximize the economic and security benefits to their own societies or parts thereof.[5]

The FBIC Index differentiates between market and political categories within economic bandwidth and dependence components. In the FBIC Index, economic bandwidth refers to the size and depth of commerce-related interactions between two states. Economic dependence denotes the degree to which one state is reliant on the economic relationship with another state. States can leverage such dependencies to exert influence over the behavior of their peers—a phenomenon which has been empirically tested on multiple occasions.[6] This Index operationalizes the market category through trade (*total trade* for bandwidth and *total trade as a percentage of national GDP* for dependence). The political category is operationalized through trade agreements (bandwidth) on the one hand, and aid provision (as a percent of total GDP for dependence) on the other. Trade is *always* indicative of bandwidth, simply because it entails interaction between corporations and individuals, but can also imply dependence: for instance if the target market lacks diversity of suppliers and reverting to alternative suppliers is costly.[7] Trade agreements require mutual understanding and *trust* to negotiate,[8] and often further political objectives by reinforcing alliances and by aligning foreign policy interests.[9] Aid provision, by fostering structural dependence, yields similar boons.[10] Similar to the security dimension, bandwidth and dependence in the economic dimension are closely interrelated. This is because large

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1 Joan E. Spero and Jeffrey A. Hart, *The Politics of International Economic Relations*, 7th ed. (Boston: Wadsworth, 2009), 1.; Evan Luard, *Economic Relationship among States: A Further Study in International Sociology*, 1st ed. (London: Macmillan Press, 1984), 55.;

2 Huck-ju Kwon and Eunju Kim, "Poverty Reduction and Good Governance: Examining the Rationale of the Millennium Development Goals," *Development and Change* 45, no. 2 (2014): 354.

3 Allen Baldwin, *Economic Statecraft* (New Jersey: Princeton University Press, 1985), 39.

4 Charles Chatterjee, *International Law and Diplomacy* (New York: Routledge, 2010), 121.; see also Herman M. Schwartz, *States Versus Markets: The Emergence of a Global Economy*, 3rd ed. (New York: Palgrave Macmillan, 2009), 189. and Susan Strange, *States and Markets*, 2nd ed. (New York: Continuum, 1994), 23.

5 See Baccardi et al. on flexibility and depth; Leonardo Baccini, Andreas Dür, and Manfred Elsig, "The Politics of Trade Agreement Design: Revisiting the Depth–Flexibility Nexus," *International Studies Quarterly* 59 (2015): 766.

6 See Vreeland et al., on UNGA voting patterns vis-a-vis IMF funding Axel Dreher and Jan-Egbert Sturm, "Do the IMF and the World Bank Influence Voting in the UN General Assembly?," *Public Choice* 151, no. 1/2 (2012): 368.; Axel Dreher and Nathan M. Jensen, "Independent Actor or Agent? An Empirical Analysis of the Impact of U.S. Interests on International Monetary Fund Conditions," *Journal of Law and Economics* 50 (2007): 121.; James Raymond Vreeland, *The Internationak Monetary Fund: Politics of Conditional Lending* (New York: Routledge, 2007), 46.; Alberto Alesina and David Dollar, "Who Gives Foreign Aid to Whom and Why?," *Journal of Economic Growth* 5, no. 1 (March 1, 2000): 55, https://doi.org/10.1023/A:1009874203400.

7 Georg Strüver, "What Friends Are Made of: Bilateral Linkages and Domestic Drivers of Foreign Policy Alignment with China," *Foreign Policy Analysis*, 2014, 17, http://onlinelibrary.wiley.com/doi/10.1111/fpa.12050/full.

8 Baccini, Dür, and Elsig, "The Politics of Trade Agreement Design: Revisiting the Depth–Flexibility Nexus," 766.

9 See Gartzke on Capitalist Peace Erik Gartzke, "The Capitalist Peace," *American Journal of Political Science* 51, no. 1 (2007): 180.; see also John R. Oneal and Bruce Russett, "Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict," *Journal of Peace Research* 36, no. 4 (1999): 439.

10 See Wade on structural dependence Robert Hunter Wade, "What Strategies Are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space,'" *Review of International Political Economy* 10, no. 4 (2003): 639.; see also Vreeland on IMF voting patterns vis-a-vis aid Vreeland, *The Internationak Monetary Fund: Politics of Conditional Lending*, 46.

relationships (if terminated) exact—depending on dependence asymmetry—considerable exit costs on at least one of the affected parties.[11]

# Economic Bandwidth

## Trade Volume

Data on the gross value of trade flows within a dyad helps measure economic bandwidth because they are indicative of commerce which, by definition, involves interaction between market actors. This is because distributing goods and services within societies requires communication between actors at the individual, corporate, and policy maker levels. High value of trade between two states within a dyad equates to the transfer of a higher volume of goods and services (commerce) which, in turn, entails a higher volume of transactions within other economic flow categories as well, including FDI (capital) value and labor & information flows.[12] Access to foreign markets allows suppliers to take advantage of economies of scale, further reinforcing comparative specialization advantages.[13] Furthermore, firms are challenged to adapt to the norms and cultures that are present within the target market.[14] They may also open up offices and invest in infrastructure, which can create employment opportunities for individuals from both sides of the dyad.[15] Such actions contribute to economic bandwidth by bolstering consumer demand and, by extension, increasing volume of commerce, as well as by generating interactions which are not directly related to commerce.

In addition, high dyadic trade volumes are more often than not accompanied with and facilitated by the presence of trade agreements.[16] Trade agreements often include provisions related to the free movement of people (and, by extension, information),[17] and regulations concerning product standards, a process which, during the time period 1960-2000 (sample size: 96 countries), has been identified as a key contributor to such agreements' ability to double bilateral trade over the course of ten years.[18] Both of these pathways (whether through commerce or through interaction resulting from migration) are indicative of economic bandwidth. It is relevant to note that a high volume of trade may also be indicative of economic dependence. Trade

11 Timothy M. Peterson, "Dyadic Trade, Exit Costs, and Conflict," *Journal of Conflict Resolution* 58, no. 4 (2013): 565.

12 See Beata S. Javorcik et al., "Migrant Networks and Foreign Direct Investment," *Journal of Development Economics* 94 (2011): 238. and Maurice Kugler and Hillel Rapoport, "International Labor and Capital Flows: Complements or Substitutes?," *Economic Letters* 94 (2007): 161. for empirical analysis of relationship between migrant flows and FDI; see { | Kim, & Park, 2012 |p. 7 |zg:1317265:VUTJJXS3} for empirical analysis of relationship between trade and migrant flows; see also Lei Zhu and Nam Jeon, "International R&D Spillovers: Trade, FDI, and Information Technology as Spillover Channels," *Review of International Economics* 15, no. 5 (2007): 962. and Bang Nam Jeon, Linghui Tang, and Lei Zhu, "Information Technology and Bilateral FDI: Theory and Evidence," *Journal of Economic Integration* 20, no. 4 (2005): 624. for empirical analysis of relationship between R&D spillover (information) and trade, FDI, migration.

13 Paul Krugman, "Scale Economies, Product Differentiation, and the Pattern of Trade," *The American Economic Review* 70, no. 5 (1980): 958.

14 Jean-Claude Usinier, Julie Anne Lee, and Julie Lee, *Marketing Across Cultures* (Essex: Pearson Education Unlimited, 2005), 87.

15 See Elbert et al., on outsourcing of labor and coordination between corporations in international shipping logistics Ralf Elbert, Holger Pontow, and Alexander Benlian, "The Role of Inter-Organizational Information Systems in Maritime Transport Chains," *Electron Markets* 27 (2017): 165.

16 Edward D. Mansfield and Rachel Bronson, "Alliances, Preferential Trading Arrangements, and International Trade," *American Political Science Review* 91, no. 01 (March 1997): 100, https://doi.org/10.2307/2952261.

17 See for example Schengen: European Commission, "Schengen Area," Migration and Home Affairs, 2017, http://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/schengen_en.

18 Scott L. Baier and Jeffrey H. Bergstrand, "Do Free Trade Agreements Actually Increase Members' International Trade?," *Journal of International Economics* 71 (2007): 92.

value has been shown to correlate with foreign policy alignment[19] and at high volumes to be indicative of high "exit costs."[20] These sources of dependence are further discussed in the economic dependence section.

## Operationalization of Trade Volume

Within the market dimension, economic bandwidth through several 'flow' categories. These flow categories have been previously established in literature surrounding the measurement of globalization,[21] and have been utilized to construct several prominent indices within the sector.[22] One example is DHL's Global Connectedness Index, which measures levels of national integration in the global economy by conceptualizing these flows as 'pillars'[23] that capture the intensity of interactions within commodity,[24] capital,[25] information,[26] and labor-based market subsections.[27] These are operationalized through measurements that capture *percent of GDP exports* (commodity), *FDI flows* (capital), *Internet bandwidth per user* (information), and *gross migration values* (labor), respectively.[28] This approach aligns (by-and-large) with the modus operandi employed by the Economic Global Indicators Index published by the OECD.[29] Past empirical studies have explored the relationship between these flow categories allows for the elimination of redundant measurement techniques. Growth in FDI (capital) and labor flows are closely linked to increases in commodity (trade) flows;[30] information flows have been linked to labor (and, by extension, trade) flows.[31] Trade

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19 See Scott L. Kastner, "Buying Influence? Assessing the Political Effects of China's International Trade," *Journal of Conflict Resolution* 60, no. 6 (September 1, 2016): 999, https://doi.org/10.1177/0022002714560345.; see also Thai relationship with Japan AREMU Fatai Ayinde, "Trade, Asymmetrical Dependence and Foreign Policy Behavior: An Analysis of Japan and Korea's Relationship with East Asian Countries," 18, accessed May 5, 2017, https://www.apu.ac.jp/rcaps/uploads/fckeditor/publications/journal/RJAPS_V27_Aremu.pdf. and Oneal and Russett on Capitalist Peace Oneal and Russett, "Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict," 439.

20 See Peterson, "Dyadic Trade, Exit Costs, and Conflict," 565.; see also Zeev Moaz, "The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis," *American Journal of Political Science* 53, no. 1 (2009): 223.

21 See Iván Arribas, Francisco Pérez, and Emili Tortosa-Ausina, "Measuring Globalization of International Trade: Theory and Evidence," *World Development* 37, no. 1 (2009): 127,.; see also J. Perraton, "The Scope and Implications of Globsalisation," in *The Handbook of Globalisation*, ed. Jonathan Michie (Cheltenham: Edward Elgar, 2003), 41., Torben M. Andersen and Tryggvi Thor Herbertsson, "Measuring Globalization," Discussion Paper, Discussion Paper Series (Bonn: The Institute for the Study of Labor, 2003), 8., and Peter A. G. van Bergeijk and Nico W. Mensink, "Measuring Globalization," *Journal of World Trade* 31, no. 3 (1997): 159.,

22 See the DHL Global Connectedness Index Pankaj Ghemawat and Steven A. Altman, "DHL Global Connectedness Index 2016: The State of Globalization in an Age of Ambiguity" (DHL, 2017).; see also OECD Economic Globalisation Indicators Thomas Hatzichronoglou et al., *Measuring Globalisation: OECD Economic Globalisation Indicators 2010* (Secretary-General of the OECD, 2010).

23 Ghemawat and Altman, "DHL Global Connectedness Index 2016: The State of Globalization in an Age of Ambiguity," 12.

24 See Arribas, Pérez, and Tortosa-Ausina, "Measuring Globalization of International Trade: Theory and Evidence," 130.; see also Niels Fold and Marianne Nyalandsted Larsen, *Globalization and Restructuring of African Commodity Flows* (Uppsala: Nordiska Afrikainstitutet, 2008), 26.

25 Capital flows include purely financial factors such as FDI (foreign direct investment) and capital (currency) investments. Pankaj Ghemawat, *The Laws of Globalization and Business Applications* (New York: Cambridge University Press, 2017), 18.; see also Maurice Obstfeld, "Financial Flows, Financial Crises, and Global Imbalances," *Journal of International Money and Finance* 31 (2012): 474.; see also European Commission, "Capital Movements," Policies, Information and Services, 2017, https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-markets/capital-movements_en.

26 Information flows refer to processes through which individuals, corporations, and states share knowledge to ultimately increase the value of their production chains. See Ghemawat, *The Laws of Globalization and Business Applications*, 18.; Kate Bailey and Mark Francis, "Managing Information Flows for Improved Value Chain Performance," *International Journal of Production Economics* 111 (2008): 4–5.; see also Assaf Razin and Efraim Sadka, *Labor, Capital, and Finance: International Flows* (Cambridge: Cambridge University Press, 2001), 3.

27 Labor flows measure the 'gross creation and destruction of jobs'Ben-David Nissim, "A Technique for Calculating Labor Market Flows," *Economic Letters* 104 (2009): 61.; see Ghemawat, *The Laws of Globalization and Business Applications*, 18.; see also Ghemawat and Altman, "DHL Global Connectedness Index 2016: The State of Globalization in an Age of Ambiguity," 18-24; 241-242.

28 Ghemawat and Altman, "DHL Global Connectedness Index 2016: The State of Globalization in an Age of Ambiguity," 18-24; 241-242.

29 Hatzichronoglou et al., *Measuring Globalisation: OECD Economic Globalisation Indicators 2010*, 9.

30 Fabien Candau, "Trade, FDI and Migration," *International Economic Journal* 27, no. 3 (2013): 460.

31 See Javorcik et al., "Migrant Networks and Foreign Direct Investment," 238. and Kugler and Rapoport, "International Labor and Capital Flows: Complements or Substitutes?," 161. for empirical analysis of relationship between migrant flows and FDI; see { | Kim, & Park, 2012 |p. 7 |zg:1317265:VUTJJXS3} for empirical analysis of relationship between trade and migrant flows; see also Zhu and Jeon, "International R&D

represents, in other words, a blanket measurement that can be used as proxy for a wide variety of economic transaction types. The FBIC Index therefore operationalizes economic bandwidth through a measurement of the total value of dyadic trade. The total trade variable is expressed as the natural log of the annual total trade between state A and state B. Applying the natural log assumes reducing increases to influence with each additional unit of trade. Values are converted to 2011 constant US dollars for comparisons across time. We use the IMF Direction of Trade Statistics dataset[32] for this measurement. This dataset covers the period from 1950 to 2015.

## Trade Agreements

Aside from measuring economic bandwidth through trade, the FBIC Index operationalizes the concept by gauging the depth of active trade agreements dyadically. Trade agreements are indicative of strengthened cooperation because their implementation results from a conscious political decision to boost institutional integration by removing barriers which may include accepting mutual antitrust rules, ensuring corporate governance, embracing common product standards, and adopting shared regulatory positions vis-à-vis labor and environment.[33] As previously outlined, such forms of institutional integration facilitate the free movement of people, societal interaction, and increased trade by lowering entry barriers associated with taking advantage of the opportunities provided by economies of scale.[34] This also depends on the depth of such trade agreements.[35] Operationalization of depth has differed between studies: dyadic, large-N research generally weights the depth of trade agreements on the basis of theoretical conceptualizations of differences between types,[36] including customs unions, full or preferential trade agreements (more on this below). In addition, some studies also consider particular "aspects" (e.g., military cooperation, specific addendums) of trade agreements to assess depth.[37] The greater the depth of the trade agreement, the greater the strength of the ties that bind the two states together for multiple reasons. The depth of trade agreement has been shown to be indicative of trust between the participating nations. Here, the concept of flexibility is relevant. Flexibility refers to clauses which allow participating states to default (within reason) upon obligations.[38] As a result, its presence deprives trade agreements of insurance against noncompliance. Research into the flexibility of trade agreements finds that "deeper" trade agreements are almost always more flexible.[39] This indicates trust on both sides of the dyad because trade agreements have been shown to foster mutual dependence, and thus constitute structures which are, in the absence of trust, worth insuring.[40] Trade agreements incentivize specialization according to comparative advantage.[41] Moreover, disengagement from an economy with

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Spillovers: Trade, FDI, and Information Technology as Spillover Channels," 962. and Jeon, Tang, and Zhu, "Information Technology and Bilateral FDI: Theory and Evidence," 624. for empirical analysis of relationship between R&D spillover (information) and trade, FDI, migration.

32 International Monetary Fund, "IMF Data - Direction of Trade Statistics," October 14, 2016, http://data.imf.org/default.aspx?sk=9D6028D4-F14A-464C-A2F2-59B2CD424B85.

33 See Baier and Bergstrand, "Do Free Trade Agreements Actually Increase Members' International Trade?," 78.; see also Robert Z. Lawrence, *Regionalism, Multilateralism, and Deeper Integration* (Washington, D.C.: Brookings Institutution Press, 1996), 7. and Rachel Denae Thrasher and Kevin P. Gallagher, "21st Century Trade Agreements: Implications for Long-Run Development Policy," THE PARDEE PAPERS (Boston: Boston University, 2008), 16.

34 See Baier & Bergstand on FTA impact on trade Baier and Bergstrand, "Do Free Trade Agreements Actually Increase Members' International Trade?," 78.

35 Baccini, Dür, and Elsig, "The Politics of Trade Agreement Design: Revisiting the Depth–Flexibility Nexus," 706.; A. van de Heetkamp and R. Tusveld, "Rules of Origin in Free Trade Agreements," in *Origin Management* (Berlin, Heidelberg: Springer, 2011), 27.; Vincent Vicard, "On Trade Creation and Regional Trade Agreements: Does Depth Matter?," *Review of World Economics* 145, no. 2 (2009): 182.

36 See Vicard Vicard, "On Trade Creation and Regional Trade Agreements: Does Depth Matter?," 182.; see also van de Heetkamp and Tusveld, "Rules of Origin in Free Trade Agreements," 27.

37 Baccini, Dür, and Elsig, "The Politics of Trade Agreement Design: Revisiting the Depth–Flexibility Nexus," 707.

38 Baccini, Dür, and Elsig, 766.

39 Baccini, Dür, and Elsig, 774.

40 See Vicard, "On Trade Creation and Regional Trade Agreements: Does Depth Matter?," 182.; see also Baccini, Dür, and Elsig, "The Politics of Trade Agreement Design: Revisiting the Depth–Flexibility Nexus," 706.

41 See Kenneth C. Shadlen, "Exchanging Development for Market Access? Deep Integration and Industrial Policy under Multilateral and Regional-Bilateral Trade Agreements," *Review of International Political Economy* 12, no. 5 (2005): 4. and Anthony J. Venables, "A Political-Economic Analysis of Free-Trade Agreements," *The Economic Journal* 113, no. 490 (2003): 510.; Philip I. Levy, "A Political-Economic Analysis of Free-Trade Agreements," *The American Economic Review* 87, no. 4 (1997): 506–19.; see also discussion in Mark S. Copelovitch and Jon C. Pevehouse, "Ties

which a trade agreement exists exacts considerable exit costs on both parties.[42] These exit costs may take the form of sunk costs—large investments, such as a power plants or office buildings, that require long-term engagement to become profitable[43]—but may equally manifest themselves through dependence on strategic materials of one industry on the other.[44]

In line with the earlier observed interrelation between bandwidth and dependence in this category, trade agreements have been shown to transpose into tangible influence vis-à-vis foreign policy. States use trade agreements as carrots to "derive strategic benefits."[45] These benefits may take the form of normative quid pro quos on the domestic front,[46] but they may also present as influence (whether through voting or conflict initiation) internationally.[47] In addition, trade agreements that either incorporate security-related addendums or are initiated by great powers have been shown to align foreign policy interests over time.[48] Such relationships are also unlikely to develop in the absence of ideational similarity (see correlation between alliance formation, trade agreements, and ideational similarity under security bandwidth section).[49]

## Operationalization of Trade Agreements

Trade agreements are generally classified in two overarching categories—multilateral trade agreements (MTAs) or regional trade agreements (RTAs)—based on the number and geographic distribution of participating states.[50] The MTA category consists of *partial scope* and *free trade* agreements while the RTA category incorporates *customs unions* (CUs), *common market arrangements* (CMs), and *preferential trade agreements* (PTAs).[51] Within the RTA category, CUs and CMs, precisely due to their tendency to regulate standards, are viewed as deeper than PTAs.[52] The general consensus within the literature is that RTAs

That Bind? Preferential Trade Agreements and Exchange Rate Policy Choice," *International Studies Quarterly* 57 (2013): 98. on how PTA's block state ability to protect domestic businesses through protectionist measures.

42 See Peterson, "Dyadic Trade, Exit Costs, and Conflict," 565.; see also Moaz, "The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis," 223.

43 Jonathan O'Brien and Timothy Folta, "Sunk Costs, Uncertainty and Market Exit: A Real Options Perspective," *Industrial and Corporate Change* 18, no. 5 (2009): 821.; Fahri Karakaya, "Market Exit and Barriers to Exit: Theory and Practice," *Psychology and Marketing* 17, no. 8 (2000): 652.; Gordon L. Clark and Neil Wrigley, "Exit, the Firm and Sunk Costs: Reconceptualizing the Corporate Geography of Disinvestment and Plant Closure," *Progress in Human Geography* 21, no. 3 (1997): 343.

44 Peterson, "Dyadic Trade, Exit Costs, and Conflict," 575.

45 See Michael Wesley, "The Strategic Effects of Preferential Trade Agreements," *Australian Journal of International Affairs* 62, no. 2 (June 1, 2008): 218, https://doi.org/10.1080/10357710802060568.; see also Edward D. Mansfield and Jon C. Pevehouse, "The Expansion of Preferential Trading Arrangements," *International Studies Quarterly* 57 (2013): 602.

46 Wade, "What Strategies Are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space,'" 639.

47 See Vreeland for IMF voting patterns Vreeland, *The Internationak Monetary Fund: Politics of Conditional Lending*, 46.; see Rudloff & Scott for discussion recipient state conflict initiation with aid provider rival states Peter Rudloff and James M Scott, "Buying Trouble? The Impact of Foreign Assistance on Conflict in Direct and Indirect Rivalry Situations," *All Azimuth* 3, no. 1 (2014): 413.

48 See Kirshner on trade agreements with great powers Jonathan Kirshner, "Political Economy in Security Studies after the Cold War," *Review of International Political Economy*, 1998, 73–75, https://doi.org/10.1080/096922998347651.; see Christopher Sprecher et al., "Trading for Security: Military Alliances and Economic Agreements*," *Journal of Peace Research* 43, no. 4 (July 1, 2006): 435, https://doi.org/10.1177/0022343306065884. on alignment over time

49 Jonathan Swift, "Cultural Closeness as a Facet of Cultural Affinity," *International Marketing Review* 16, no. 3 (1999): 184.

50 Vincent Vicard, "Trade, Conflict, and Political Integration: Explaining the Heterogeneity of Regional Trade Agreements," *European Economic Review* 56 (2012): 59.

51 See Vicard, "On Trade Creation and Regional Trade Agreements: Does Depth Matter?," 168. and Vicard, "Trade, Conflict, and Political Integration: Explaining the Heterogeneity of Regional Trade Agreements," 55.

52 Vicard, "Trade, Conflict, and Political Integration: Explaining the Heterogeneity of Regional Trade Agreements," 55.

denote a higher degree of depth than MTAs.[53] This is because MTAs involve little institutional integration,[54] and thus do not bolster bandwidth outside trade. This Index's approach differentiates and weights six different types of trade agreements, in line with the measurement methods applied in previous large-N studies.[55]

# Economic Dependence

## Trade Dependence

High trade reliance on one state by another is indicative of dependence because the "concentration of trade share in a *single* partner is argued to represent vulnerability and might be indicative of political manipulation."[56] At the national economic level, high trade volume may foster structural dependence by incentivizing market specialization according to competitive advantage.[57] Structural dependence refers to a scenario in which state A's economy has developed (due to expected continuity in relations) in a way that renders it reliant on state B for the import and/or export of goods. This dynamic does not yield influence for either side *per se*: in cases where dependence is symmetrically distributed (states within the dyad are interdependent), the exit costs associated with disengagement disincentive either side from undermining the status quo.[58] Dependence does not emerge until this relationship becomes asymmetrical: when state B is less dependent on state A than vice versa, state B can afford to hold off or break trade ties.[59] In this scenario, state B can credibly threaten to withdraw from the relationship. This dynamic may increase state A's responsiveness to the demands of state B, and has the effect of causing economically disadvantaged states to accommodate the foreign policy interests of those they are more dependent on.[60] The dynamics outlined in the previous paragraphs assume countries A and B have no other trade partners. In the real world, this assumption is unrealistic: trade dependency frequently is mitigated by diversification of trade partners. This allows for procurement of vital materials through alternate pathways, and mitigates (from state A's perspective) the problem of influence

53 Mansfield and Bronson, "Alliances, Preferential Trading Arrangements, and International Trade," 103.; Wesley, "The Strategic Effects of Preferential Trade Agreements," 216.; Vicard, "On Trade Creation and Regional Trade Agreements: Does Depth Matter?," 168.; Vicard, "Trade, Conflict, and Political Integration: Explaining the Heterogeneity of Regional Trade Agreements," 55.

54 See Edward Best, "Supranational Institutions and Regional Integration" (European Court of Justice, 2005), 40, https://www.scribd.com/document/253799593/best-supranational-institutions-and-regional-integration-pdf. on ASEAN; see also R. Pomfret, *The Economics of Regional Trading Arrangements* (Oxford: Oxford University Press, 1997), 295. on NAFTA

55 Vicard, "Trade, Conflict, and Political Integration: Explaining the Heterogeneity of Regional Trade Agreements," 55.; Vicard, "On Trade Creation and Regional Trade Agreements: Does Depth Matter?," 168.; Baier and Bergstrand, "Do Free Trade Agreements Actually Increase Members' International Trade?," 72.

56 Erik Gartzke and Quan Li, "Measure for Measure: Concept Operationalization and the Trade Interdependence-Conflict Debate," *Journal of Peace Research* 40, no. 5 (September 1, 2003): 555, https://doi.org/10.1177/00223433030405004.

57 Mettew C. Mahutga, "The Persistence of Structural Inequality? A Network Analysis of International Trade, 1965-2000," *Social Forces* 84, no. 4 (2006): 1866.

58 Robert Keohane and Joseph S. Jr. Nye, "Power and Interdependence in the Information Age," *Foreign Affairs* 77, no. 5 (1998): 89.

59 Keohane and Nye, 89.

60 Strüver, "What Friends Are Made of," 10.

through dependence.[61] In general terms, trade dependence has been linked to the "size of the reliance relationship, importance of the good on which one relies, and ease, availability, and cost of the replacement alternatives."[62]

Trade dependence has been shown to transpose into foreign policy compliance over time.[63] This dynamic is often actively pursued by state actors, and often exhibits clear traces of intent.[64] Ample studies corroborate the notion that states utilize economic statecraft to pursue national interests, with examples ranging from trade agreements used to secure natural resources in the Asia-Pacific region[65] to enforcement of human rights standards.[66] Empirical studies of state voting patterns in UN bodies have found that volume of trade is a strong predictor of third-state party alignment when it comes to low-stake (matters which are not controversial or vital to the survival of the state) issues.[67] Larger-N studies conducted by Gartzke and Oneal & Russett similarly find that when it comes to alignment in foreign policy preferences (quantified by *lack* of conflict onset) it is trade, not regime type, that matters. Gartzke outlines that capitalist dyads, whether democratic or not, "never appear to fight wars,"[68] while Oneal & Russett observe that "a one standard deviation increase in the trade-to-GDP ratio lowers the likelihood of conflict for a contiguous dyad by 38% to 76%."[69] Several studies which span the period 1984-2000 find that dependence, operationalized through measurement of exit costs, may cause violent conflict when it is unilateral, but pacifying when it is mutual.[70] This dynamic is subject to several caveats. First, the rate at which alignment occurs can be expedited considerably by controlling for strategic materials.[71] Generally speaking, this category consists of "fuels, metals, minerals, basic manufactures, and high technologies."[72] Second, import dependence has been found to be a stronger predictor than export dependence.[73] Third, it does not recur across *all* dyads. This is because exploiting an asymmetric advantage requires giving the advantage up. If an oil producing state for instance wants to exert influence by leveraging its oil reserves, doing so will erode its bargaining position over time. Because of this, asymmetries at the micro level need not transpose into action.

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61 See Brainard on uncertainty and diversification William C. Brainard, "Uncertainty and Diversification in International Trade," *Food Research Institute Studies and Agricultural Economics, Trade, and Development*, 1965, 273.; see also Sebnem Kalemli-Ozcan, Bent E. Sørensen, and Oved Yosha, "Risk Sharing and Industrial Specialization: Regional and International Evidence," *The American Economic Review* 93, no. 3 (2003): 904. on risk sharing through diversification

62 James A. Caporaso, "Dependence, Dependency, and Power in the Global System: A Structural and Behavioral Analysis," *International Organization* 32, no. 1 (1978): 22.

63 Strüver, "What Friends Are Made of," 22.

64 Caporaso, "Dependence, Dependency, and Power in the Global System," 22.

65 Jeffrey D. Wilson, "Resource Security: A New Motivation for Free Trade Agreements in the Asia-Pacific Region," *The Pacific Review* 25, no. 4 (2012): 446.

66 Emilie M. Hafner-Burton, "Trading Human Rights: How Preferential Trade Agreements Influence Government," *International Organization* 59, no. 3 (2005): 624.

67 Kastner, "Buying Influence?," 999.; see also Thai relationship with Japan Ayinde, "Trade, Asymmetrical Dependence and Foreign Policy Behavior," 18.

68 Gartzke, "The Capitalist Peace," 180.

69 Oneal and Russett, "Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict," 439.

70 See Peterson, "Dyadic Trade, Exit Costs, and Conflict," 565.; see also Moaz, "The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis," 223. and Håvard Hegre, John R. Oneal, and Bruce Russett, "Trade Does Promote Peace: New Simultaneous Estimates of the Reciprocal Effects of Trade and Conflict," *Journal of Peace Research* 47, no. 6 (2010): 763.

71 Peterson, "Dyadic Trade, Exit Costs, and Conflict," 575.

72 Rafael Reuveny and Heejoon Kang, "Bilateral Trade and Political Conflict/Cooperation: Do Goods Matter?," *Journal of Peace Research* 35, no. 5 (September 1, 1998): 586, https://doi.org/10.1177/0022343398035005003.

73 Strüver, "What Friends Are Made of," 17.

## Operationalization of Trade Dependence

Previous large-N studies have operationalized dependence in several ways. Data pertaining to trade value and trade as a percentage of GDP is commonly used, if only because it is widely and consistently available.[74] This validity approach is challenged by scholars that argue that this measurement technique fails to quantify the political importance of trade, and which operationalize trade dependence by looking at state A's trade with state B as a percentage of state B's total trade.[75] Approaches which control for dependence on strategic materials are also common, with measurement of energy sources constituting the predominant focus within the literature.[76] 'Gravity models' such as these also frequently incorporate measurements of import elasticity for products which command large market shares in the target state to further operationalize the concept of dependence.[77] The FBIC Index addresses the literature's lack of consensus vis-à-vis dependence measurement by simply incorporating both camps' measurement techniques. The Index measures total trade among the dyad as a percent of influencee's total trade and as a percent of influencee's GDP.[78] The trade data is from the International Monetary Fund (IMF) Direction of Trade Statistics (DOTS). The GDP figures come from the World Bank's World Development Indicators.[79] Penn World Tables data[80] are used to fill in missing values. A natural log is applied to the values of both indicators, assuming diminishing returns to of influence with each additional unit of trade as a percent of influencee's total trade and trade as a percent of influencee's GDP. As outlined, this approach is largely in keeping with the methodology employed by previous studies.

## Aid Dependence

The FBIC Index operationalizes the political category of economic dependence through aid dependence of the recipient on the donor.[81] Aid relationships feature various characteristics that imply dependence and allow the aid donor to exert influence over the aid recipient. First, aid donors typically only offer aid if the recipient meets political demands. Over time, aid can cause recipient states to develop a structural dependence on the donor state. In the context of aid dependence, structural dependence refers to scenarios in which the structure of state A's economy relies on aid provision from state B to operate. This structural dependence can derive from two phenomena. First, aid may incentivize market development into sectors which are nonviable in the long run. This may hamper a state's ability to become economically self-sufficient, and renders noncompetitive market sectors

74 Peterson, "Dyadic Trade, Exit Costs, and Conflict," 575.; Timothy M. Peterson, "Third-Party Trade, Political Similarity, and Dyadic Conflict," *Journal of Peace Research* 48, no. 2 (2011): 190.; Hegre, Oneal, and Russett, "Trade Does Promote Peace: New Simultaneous Estimates of the Reciprocal Effects of Trade and Conflict," 764.; Moaz, "The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis," 233.; Oneal and Russett, "Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict," 425.

75 Gartzke and Li, "Measure for Measure," 555.

76 Peterson, "Dyadic Trade, Exit Costs, and Conflict," 575.; Moaz, "The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis," 225.

77 Moaz, "The Effects of Strategic and Economic Interdependence on International Conflict across Levels of Analysis," 233.

78 GDP data is pulled from WDI/Penn World Tables and converted to 2011 $US Constant Dollars

79 The World Bank, "World Development Indicators," October 17, 2016, http://data.worldbank.org/data-catalog/world-development-indicators.

80 University of Groningen and University of California, Davis, "Penn World Table," October 17, 2016, http://www.rug.nl/research/ggdc/data/pwt/?lang=en.

81 See Vreeland et al., on UNGA voting patterns vis-a-vis IMF funding Dreher and Sturm, "Do the IMF and the World Bank Influence Voting in the UN General Assembly?," 368.; Dreher and Jensen, "Independent Actor or Agent? An Empirical Analysis of the Impact of U.S. Interests on International Monetary Fund Conditions," 121.; Vreeland, *The Internationak Monetary Fund: Politics of Conditional Lending*, 46.; Alesina and Dollar, "Who Gives Foreign Aid to Whom and Why?," 55.

dependent on continued aid provision.[82] Second, aid incentivizes rent-seeking behavior.[83] This drives excessive (unsustainable) government expenditure on public projects and, consequently, continued demand for aid provision.[84]

The concept of conditionality is central to the argument that aid relationships can result in structural dependence. Conditionality refers to the phenomenon that aid comes attached with strings. These strings may take the form of payments that the recipient must fulfill in the future,[85] but they may also appear under the guise of policy prescriptions,[86] or of quid pro quo arrangements regarding the international conduct of the recipient.[87] These policy prescriptions often include provisions intended to improve the rule of law,[88] incentivize structural reform in labor and sectoral markets,[89] and—most importantly—promote market liberalization.[90] Some scholars have argued that these strings have cemented relations of structural dependence because they have contributed to recipients getting caught in development traps.[91] This leaves them dependent on the donor state, which is closely related to the second argument.

The second argument supporting aid's ability to foster dependence in the target state centers on rent-seeking behavior on the part of the recipient's government. Rent-seeking presents as government initiatives to invest in projects that allow for diversion of funds meant for public use.[92] This constitutes a misallocation of resources, which hampers aid's ability to produce desired outcomes. Aid, moreover, tends to be 'fungible'. Fungibility refers to the fact that the recipient can use the resources provided for different purposes than the donor seeks to finance.[93] This is particularly salient when it involves governments of states plagued by high levels of corruption, weak rule of law, and poor accountability.[94] Such governments, other than losing future aid funding, have few incentives not to divert aid funds towards private consumption.[95] This type of patronage makes government officials in recipient states dependent on aid to finance their lavish lifestyles while also complicating the provision of public goods in the

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82 See Hagen on Fungibility of aid Rune Jansen Hagen, "Buying Influence: Aid Fungibility in a Strategic Perspective," *Review of Development Economics* 10, no. 2 (2006): 277.; see also Craig Burnside and David Dollar, "Aid, Policies, and Growth," *The American Economic Review* 90, no. 4 (2000): 2035. and Wade on inefficient market specialisation Wade, "What Strategies Are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space,'" 639.

83 See Wade on inefficient market specialisation Wade, "What Strategies Are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space,'" 639.

84 Burnside and Dollar, "Aid, Policies, and Growth," 864.

85 See aid as a loan Willem Molle, *Governing the World Economy* (New York: Routledge, 2014), 339.

86 See Molle, 339.; see also Wade, "What Strategies Are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space,'" 639.

87 Vreeland, *The Internationak Monetary Fund: Politics of Conditional Lending*, 43.

88 Kwon and Kim, "Poverty Reduction and Good Governance: Examining the Rationale of the Millennium Development Goals," 357.

89 Molle, *Governing the World Economy*, 339.

90 Wade, "What Strategies Are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space,'" 639.; Molle, *Governing the World Economy*, 339.

91 Halit Yanikkaya, "Trade Openness and Economic Growth: A Cross-Country Empirical Investigation," *Journal of Development Economics* 72 (2003): 62.; Wade, "What Strategies Are Viable for Developing Countries Today? The World Trade Organization and the Shrinking of 'Development Space,'" 626.; see also Paul Collier, *Wars, Guns, and Votes: Democracy in Dangerous Places* (New York: HarperCollins, 2010), 189. and Paul Collier, *The Bottom Billion: Why the Poorest Countries Are Failing and What Can Be Done About It* (New York: Oxford University Press, 2007), 108.

92 See Jakob Svensson, "Foreign Aid and Rent-Seeking," *Journal of International Economics* 51 (2000): 456.; see also Nasir M. Khilji and Ernest M. Zampelli, "The Fungibility of U.S. Military and Non-Military Assistance and the Impacts on Expenditures of Major Aid Recipients," *Journal of Development Economics* 43 (1994): 345, 361.

93 Aid is fungible when it is possible for the recipient to divert provided resources away from the activity that the donor seeks to finance; see Hagen, "Buying Influence," 277.; Burnside and Dollar, "Aid, Policies, and Growth," 2035.; Khilji and Zampelli, "The Fungibility of U.S. Military and Non-Military Assistance and the Impacts on Expenditures of Major Aid Recipients," 345, 361.

94 Alberto Alesina and Beatrice Weder, "Do Corrupt Governments Receive Less Foreign Aid?," *The American Economic Review* 92, no. 4 (2002): 1127.; Svensson, "Foreign Aid and Rent-Seeking," 439.

95 The problem of aid fungibility can be bypassed –and the donor's officially stated-effect of aid can be attained - if transfers are 'large enough compared to the resources at the recipient government's command' Hagen, "Buying Influence," 282.. Therefore recipient governments - in *not* allocating aid as intended - may, as a result of the fungibility, increase rent seeking behavior.

recipient's society.[96] In other words, because corruption hamstrings development, it compounds the problem of structural dependence.

The notion that aid fosters dependence (and is politically motivated) is further corroborated by the fact that it has been shown to facilitate foreign policy alignment. Small-N dyadic research into aid provision shows that factors such as colonial history and UN General Assembly (UNGA) voting alignment increase state B's willingness to provide state A with aid, and thus corroborates the notion that aid allocation is interest-driven.[97] Volume of aid has also been shown to correlate with political preferences. This is corroborated at the macro level by (amongst others) studies which find that between 1962 and 2000 the United States frequently allocated aid to states with which it shared a rival.[98] Conversely, other research has shown how aid is also used to *support* rivals during periods of political upheaval, presumably to "reduce the likelihood of instability-driven irregular leadership turnover."[99] Large-N studies (sample size up-to 188) looking at the period 1970-2008 have shown that state voting in favor of the interests of the United States or its allies in the UNGA correlates strongly with gross value of IMF and World Bank aid provision.[100]

### Operationalization of Aid Dependence

The FBIC Index operationalizes aid dependence by measuring both total aid donations from influencer to influencee as a percent of influencee's total aid receipts and total aid donations from influencer to influencee as a percent of influencee's GDP. The data is sourced from aiddata.org[101] and covers the time period from 1962 to 2013. 2013 values are extrapolated linearly by dyad for 2014 and 2015. This approach is in line with operationalization of aid dependence in the literature, which has (at a large-N level) tended towards measuring the size of contributions in absolute terms.

## Security Dimension

In assessing the ability of state A to exert influence over state B, we consider both the size of relationship in the security domain (bandwidth) and the extent to which state B can be said to be dependent on state A (dependence). To measure these two aspects, the FBIC Index considers arms transfers, both total and relative to a state's imports, and military alliance agreements while using the dyadic military expenditure ratio as a proxy for power difference in the relationship. Relationships in the security domain almost universally have the side effect of introducing dependence between states even if the connection is often complex. Arms transfers are indicative of bandwidth, but they also foster increasing levels of dependence as they begin to make up larger chunks of a state's military capacity. Arms transfers may therefore help actors fight wars and deter adversaries, but they may equally render them incapable of maintaining a *sans-support* status quo.[102] Participation in alliances may in theory further the interests of all actors involved, but sometimes it also leads to buck-passing and free riding,[103] rendering states incapable of self-

96 Paul Collier, "Is Aid Oil? An Analysis of Whether Africa Can Absorb More Aid," *World Development* 34, no. 9 (2006): 1485.

97 See aid provision from Japan Alesina and Dollar, "Who Gives Foreign Aid to Whom and Why?," 40.; see also See Alesina & Dollar on Japan Alesina and Dollar, 40.; see also Dreher et al., on USA Axel Dreher, Peter Nunnenkamp, and Rainer Thiele, "Does US Aid Buy UN General Assembly Votes? A Disaggregated Analysis," *Public Choice* 136, no. 1–2 (July 2008): 150, https://doi.org/10.1007/s11127-008-9286-x. and Strüver on China Strüver, "What Friends Are Made of," 10.

98 Peter Rudloff, James M Scott, and Tyra Blew, "Countering Adversaries and Cultivating Friends: Indirect Rivalry Factors and the Allocation of US Foreign Aid," *Cooperation and Conflict* 48, no. 3 (September 1, 2013): 402, https://doi.org/10.1177/0010836713482552.

99 Gary Uzonyi and Toby Rider, "Determinants of Foreign Aid: Rivalry and Domestic Instability," *International Interactions* 43, no. 2 (2017): 295.

100 See Vreeland et al., on UNGA voting patterns vis-a-vis IMF funding Dreher and Sturm, "Do the IMF and the World Bank Influence Voting in the UN General Assembly?," 368.; Dreher and Jensen, "Independent Actor or Agent? An Empirical Analysis of the Impact of U.S. Interests on International Monetary Fund Conditions," 121.; Vreeland, *The Internationak Monetary Fund: Politics of Conditional Lending*, 46.; Alesina and Dollar, "Who Gives Foreign Aid to Whom and Why?," 55.

101 AidData, "Country-Level Research Datasets," October 17, 2016, http://aiddata.org/country-level-research-datasets.

102 See T. V. Paul, "Influence through Arms Transfers: Lessons from the US-Pakistani Relationship," *Asian Survey, 32(12)*, 1992, 1081, https://www.academia.edu/4247912/Influence_through_Arms_Transfers_Lessons_from_the_US-Pakistani_Relationship.

103 See Glenn Herald Snyder, "The Security Dilemma in Alliance Politics," *World Politics* 36, no. 4 (1984): 463.; see alson Glenn Palmer, Scott B. Wohlander, and T. Clifton Morgan, "Give or Take: Foreign Aid and Foreign Policy Substitutability," *Journal of Peace Research* 39, no. 1 (January 1,

defense and making them more dependent on their allies.[104] In the case of many modern alliances, these phenomena can (in part) be attributed to an 'asymmetry of motivation' between participants.[105] In taking on this complex connection, the FBIC Index must therefore differentiate between bandwidth and dependence while combining these two components to produce a measurement of the capacity to influence.

# Security Bandwidth

## Arms Transfers

The volume of arms transfers, particularly those flowing from powerful countries to weak countries, is a good proxy for the bandwidth of security cooperation.[106] Arms trade between two states typically only takes place if the states also engage in other forms of security cooperation.[107] Moreover, states are likelier to engage in costly forms of security cooperation including the transfer of arms to other states with which they share similar preferences.[108] Preference similarity is defined as alignment between two actors' ordering of possible outcomes of an interaction.[109] The United States and Japan, for example, both prefer a scenario in which the outcome of developments on the Korean Peninsula equates to a denuclearized North Korea. There is considerable evidence that states are more likely to export arms to other states if there is a greater alignment of state interests, which is corroborated by different measurements of similarity which include a shared political orientation,[110] convergence in UNGA voting patterns,[111] and shared rivalry with other states.[112] The causal logic underlying this argument is straightforward. Because military hardware is associated with coercive capability—and because the sale of such goods is subject to approval by the government—states are unlikely to greenlight shipments which benefit potential competitors.[113] From the perspective of influence exertion, studies have also shown that arms recipients are more likely to pursue foreign policies which are favorable to their arms suppliers.[114] This is because dependence on external sources of arms forces ties the importing state's ability to provide for its national security (including maintaining territorial integrity) to the exporting state's interests.[115] Arms transfers can thus be

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2002): 22, https://doi.org/10.1177/0022343302039001001. and Thomas Plümper and Eric Neumayer, "Free-Riding in Alliances: Testing an Old Theory with a New Method," *Conflict Management and Peace Science* 32, no. 3 (2014): 249–50.

104 Palmer, Wohlander, and Morgan, "Give or Take," 22.; For the strategies of small powers, see Tim Sweijs, *The Role of Small Powers in the Outbreak of Great Power War* (Centre for Small State Studies, 2010), 5–14, https://rafhladan.is/handle/10802/5101.

105 Walt, Stephen M., "Explaining Alliance Formation," in *The Origin of Alliances* (London: Cornell University Press, 1987), 44.

106 This also implies that with respect to this measurement the FBIC Index is slightly biased towards the measuring the influence capacity potential of more powerful states that possess the technological knowhow as well as the military industrial base to produce military equipment in high volumes.

107 Strüver, "What Friends Are Made of," 20.

108 Patrick R. Bentley, "Alliances, Arms Transfers and Military Aid: Major Power Security Cooperation with Applications and Extensions to the United States" (Vanderbilt University, 2013), 35, http://etd.library.vanderbilt.edu/available/etd-03262013-141440/unrestricted/Bentley.pdf.

109 Jeffry Frieden, "Actors and Preferences in International Relations," in *Strategic Choice and International Relations*, ed. David A. Lake and Robert Powell (Princeton: Princeton University Press, 1999), 42.

110 Margherita Comola, "Democracies, Politics, and Arms Supply," *Review of International Economics* 20, no. 1 (February 1, 2012): 160, https://doi.org/10.1111/j.1467-9396.2011.01014.x. Margherita Comola's research into the correlation between regime similarity and arms transfers, which finds that - in the context of a large-N (international) study - the relationship between arms sales and *orientation* (based on Polity scores) is positive and statistically significant during all time periods save the *end* of the Cold War.

111 Bentley, "Alliances, Arms Transfers and Military Aid," 37.; Florian Johannsen and Inmaculada Martinez-Zarzoso, "Gravity of Arms," 2014, 22, https://works.bepress.com/inma_martinez_zarzoso/31/.

112 Bentley, "Alliances, Arms Transfers and Military Aid," 96.

113 Johannsen and Martinez-Zarzoso, "Gravity of Arms," 2.

114 Strüver, "What Friends Are Made of," 20.

115 David Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict," *Journal of Peace Research* 35, no. 1 (January 1, 1998): 10, https://doi.org/10.1177/0022343398035001002.; Christian Catrina, *Arms Transfer and Dependence* (New York: Taylor & Francis, 1988).; James D.

understood as a carrot that can be turned into a stick: once a dependency is solidified, the influencing potential associated with threatening a discontinuation is considerable.

These observations support this Index's subscription to the notion that total arms transfers reflect dyadic security cooperation. The bandwidth of this security relationship is measured using *total arms transfers* as opposed to percentage of total within dyads. This approach (a dyadic valuation of arms transfer as measured by the Stockholm International Peace Research Institute [SIPRI]) aligns with the modus operandi of several other studies which have attempted to quantify security cooperation.[116] Note that (as is the case in this study), SIPRI data is almost universally combined with data pertaining to scope of the formal obligations, depth of the commitment between signatories, and the potential military capacity of an alliance.[117] This approach allows the Index to speak to the intensity or the size of the relationship rather than to the *nature* of the relationship, which is covered by dependence.

## Operationalization of Arms Transfers

The FBIC Index measures total arms transfers by looking at total arms transfers between two states using a 10-year running total with a 10 percent annual depreciation rate. The data is from SIPRI and covers the time period from 1960 to 2015.[118] Values are converted to 2011 constant US dollars. Using the depreciating running total removes the volatility that exists in the annual arms transfer data and assumes that influence from arms trade continues after the initial purchase through technical support and the purchase of replacement parts and ammunition. The arms trade stock also has a natural log applied which assumes a decreasing return to influence for each additional unit of arms.

## Military Alliances

The second indicator considered in the FBIC Index to gauge the bandwidth of a dyadic security relationship is the existence of a military alliance agreement. Participation in a military alliance reflects an official commitment to the security of the other state, whether actively (through a defense pact) or passively (through a non-aggression pact or a so-called entente).[119]

Military treaties come in the form of agreements to consult in case of aggression, neutrality, or non-aggression pacts, which pledge non-involvement in conflicts involving the other signatories and prohibit military aid to aggressors, and defense pacts, which require states to come to each other's aid if they are attacked.[120] In terms of conflict alignment, having an ally with which one of the aforementioned treaties is signed increases the probability that militarized disputes with a third party will initiate by 47 percent (alliances which incorporate offensive or consult provisions), 57 percent (alliances which incorporate neutrality or non-aggression clauses), and decreases the probability that militarized disputes with a third party will initiate by 28 percent (alliances which incorporate defense provisions) respectively.[121] Military alliances are cemented by frequent interaction between civil and military officials as well as closer relations in other domains.[122] This can be attributed in no small part to the fact that regular contact breeds trust and that issue linkage widens the range of acceptable compromises and thus increases the

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Morrow, "Alliances and Asymmetry: An Alternative to the Capability Aggregation Model of Alliances," *American Journal of Political Science* 35, no. 4 (1991): 911–12.

116 See Bentley, "Alliances, Arms Transfers and Military Aid," 25.

117 Brett V. Benson and Joshua D. Clinton, "Assessing the Variation of Formal Military Alliances," *Journal of Conflict Resolution*, 2014, 870–75.

118 Stockholm International Peace Research Institute, "SIPRI Arms Transfers Database," SIPRI, 2017, https://sipri.org/databases/armstransfers.

119 Douglas Gibler and R. Sarkees Meredith, "Measuring Alliances: The Correlates of War Formal Interstate Alliance Dataset, 1816-2000," *Journal of Peace Research* 41, no. 2 (2004): 212.

120 Brett Ashley Leeds, "Do Alliances Deter Aggression? The Influence of Military Alliances on the Initiation of Military Interstate Disputes," *American Journal of Political Science* 47, no. 3 (2003): 429.; see also John A. Vasquez, *The War Puzzle Revisited* (New York: Cambridge University Press, 2009), 173.

121 Leeds, "Do Alliances Deter Aggression? The Influence of Military Alliances on the Initiation of Military Interstate Disputes," 436.; see also J. D. Singer and Melvin Small, "National Alliance Commitments and War Involvement, 1815–1945," *Peace Research Society (International) Papers* 5 (1966): 109–40. and J. D. Singer, "Alliance Aggregation and the Onset of War, 1815–1945," in *Quantitative International Politics: Insights and Evidence* (New York: Free Press, 1968).

122 Sprecher et al., "Trading for Security," 435.

probability that both sides will reach an agreement.[123] States thus engage in 'trading for security' and conclude military alliances in conjunction with economic agreements. An analysis of the Alliance Treaty Obligations and Provisions dataset records that close to one out of five (18 percent) of alliances concluded in the period 1814-1944 "either include articles requiring specific acts of economic cooperation or include statements requiring general economic cooperation."[124] In analyses of more recent periods, studies looking at the period 1950-2000 have found that dyadic alliances bolster total trade value (likely an effect of more trade agreements and ideational overlap)[125] and that the shared external security issues they generate contribute to international nuclear nonproliferation.[126] The United States routinely denied adversaries the commercial benefits it extended (and often formalized) to allies between 1960 and 1990.[127] This trend persists at the international (dyadic) level, which displays that—between 1980 and 2000—both direct and indirect alliances are strong predictors of high trade volume.[128]

There is also evidence to suggest that states sharing ideological affinity are more likely to enter into alliances. Ideological affinity is measured in different ways and includes polity similarity,[129] shared language, and religion.[130] Alliances typically also "play a role in the formation of military strategy,"[131] pointing toward greater interaction between state representatives. Military alliances are therefore indicative of a broader range of cooperative and sometimes institutionalized interactions between states while at the same time often reflecting some degree of ideological affinity.

### Operationalization of Military Alliances

In measuring alliances, the FBIC Index employs a weighted count of alliances shared between the states in the dyad based on the level of military support and guarantees that alliance members agree to. The total score is the weighted sum of all binary alliance variables, each indicating the presence or absence of a certain alliance type. Data is from the Correlates of War Alliance dataset[132] and spans the period 1816-2012. Values from 2012 are copied and carried forward from 2013 through 2017. No interpolation is used.

## Security Dependence

### Arms Imports

States that import a high volume of their arms from a single source become reliant on the arms provider for a critically important strategic good.[133] This is because substituting major weapon systems comes with huge transaction costs. This leads to long-term

123 See Sprecher et al., 435..

124 Sprecher et al., 437.

125 T. Camber Warren, "The Geometry of Security: Modeling Interstate Alliances as Evolving Networks," *Journal of Peace Research* 47, no. 6 (2010): 697–709.

126 Charles H. Anderson and John R. Carter, *Principles of Conflict Economics* (Cambridge: Cambridge University Press, 2009), 220.

127 For an excellent study from the late 1990s, see Mansfield and Bronson, "Alliances, Preferential Trading Arrangements, and International Trade," 104.

128 Dotan A. Haim, "Alliance Networks and Trade: The Effect of Indirect Political Alliances on Bilateral Trade Flows," *Journal of Peace Research* 53, no. 3 (2016): 485.

129 Swift, "Cultural Closeness as a Facet of Cultural Affinity," 184.

130 Brian Lai and Dan Reiter, "Democracy, Political Similarity, and International Alliances, 1816-1992," *Journal of Conflict Resolution* 44, no. 2 (April 1, 2000): 217, https://doi.org/10.1177/0022002700044002003.; Samuel Bowles and Herbert Gintis, "Persistent Parochialism: Trust and Exclusion in Ethnic Networks," *Journal of Economic Behavior and Organization* 55, no. 1 (2004): 6.; Z. Maoz et al., "Structural Equivalence and International Conflict: A Social Network Analysis," *Journal of Conflict Resolution* 50, no. 5 (2006): 673.

131 Geoffrey P.R. Wallace, "Alliances, Institutional Design, and the Determinants of Military Strategy," *Conflict Management and Peace Science* 25, no. 3 (July 2008): 238, https://doi.org/10.1080/07388940802218978.

132 Gibler and Meredith, "Measuring Alliances: The Correlates of War Formal Interstate Alliance Dataset, 1816-2000."

133 See Schelling on the art of commitment Thomas C. Schelling, *Arms and Influence: With a New Preface and Afterword* (United States of Americs: Yale University, 2008), 59.; see also Josh Sislin, "Arms as Influence: The Determinants of Successful Influence" 38, no. 4 (1994): 682.

structural dependence—a phenomenon in which the importing state relies on the exporting state for its technological know-how and spare parts to maintain and repair weapons systems.[134] It can pose a serious risk to national security when the integrity of a nation's defense program is "significantly determined by the policymakers of another state,"[135] which translates into a high level of dependence of one state on another. In such situations, the importer is beholden to the supplier's interests, whose crucial leverage allows it to exert influence over the importer's decisions. The causal logic of this argument has been corroborated in an array of empirical studies across different strategic contexts. In a study of the conflict behavior of Egypt, Syria, Iran, Iraq, and India, it was found that arms suppliers were able to exert greater influence as transfer dependence (as measured by lack of diversity in supplier portfolio) increased.[136] Larger-N studies that explore dyadic relationships over time similarly find a strong correlation between arms transfers and preference alignment.[137] Reversing this logic, some authors observe situations in which importers often deliberately seek to exploit the exporter's interests in order to 'exert reverse influence' over their suppliers.[138] The observations illustrates that exerting influence takes place in a dynamic process in which two actors participate.

## Operationalization of Arms Imports

In order to do justice to these various aspects of dependence, the FBIC Index utilizes a twofold measurement of import dependence to capture the concept of supply diversification. These measurements include *arms imports stock as a percentage of total arms imports* and *arms imports stock as a percentage of total state military spending stock*. This two-pronged approach accounts for 1) a possible lack of supplier diversity (because higher percentages in the *arms imports stock as a percentage of total arms imports* measurement imply lower supplier diversity); 2) the type of capabilities (because higher percentages in the *arms imports stock as a percentage of state military spending stock* are a good proxy for more expensive—and typically more advanced—technologies[139]); and 3) the share of these imports in a state's total military expenditure (to account for the fact that some states are major arms producers and are therefore less reliant on external arms suppliers). This approach differs from previous literature, which has generally gravitated toward looking at raw import values, and equates typically higher values in this category with higher dependence.[140]

134 See Derek S. Reveron, *Exporting Security* (Washington, D.C.: Georgetown University Press, 2010), 113.; for an example, see Turkish dependence on U.S. to maintain F-16 fleet Nasuh Uslu, *Turkish Foreign Policy in the Post-Cold War Period* (New York: Nova Science Publishers, 2004), 126.; see also Lockheed Martin software patches / landing gear replacements for F-35 Dan Grazier, "The F-35 Is a $1.4-Trillion National Disaster," War is Boring, March 31, 2017, http://warisboring.com/the-f-35-is-a-terrible-fighter-bomber-and-attacker-and-unfit-for-aircraft-carriers/.

135 Paul, "Influence through Arms Transfers," 1080.

136 Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict," 17.

137 Time period 1950-2008: see Steven J. Childs, "Security as Satisfaction Conventional Arms Transfers and the International Order" (Claremont Graduate University, 2011), 1.. See also Cassady Craft, *Weapons for Peace, Weapons for War: The Effect of Arms Transfers on War Outbreak, Involvement, and Outcomes* (New York: Routledge, 1999), 51–84.

138 See Paul, "Influence through Arms Transfers," 1081.; see also Grazier, "The F-35 Is a $1.4-Trillion National Disaster." for discussion of JSF operational dependence on updated (software, hardware) sourced from Lockheed Martin.

139 See Grazier, "The F-35 Is a $1.4-Trillion National Disaster." for discussion of JSF program costs.

140 See Kinsella, "Arms Transfer Dependence and Foreign Policy Conflict," 12.; Johannsen and Martinez-Zarzoso, "Gravity of Arms," 8.; see also Childs, "Security as Satisfaction Conventional Arms Transfers and the International Order," 1. and Craft, *Weapons for Peace, Weapons for War: The Effect of Arms Transfers on War Outbreak, Involvement, and Outcomes*, 25.

## The Political Dimension

The FBIC Index considers state-on-state interaction in the political domain solely from the perspective of bandwidth or the magnitude and intensity of the relationship. This is because—though a diplomatic relationship can undoubtedly be characterized by dependence from one state on another—it is the relations in the security and economic domain (e.g., arms transfers, aid provision, etc.) that foster dependence. These relations are covered by the security and economic dimensions of the Index and are therefore not considered here in order to avoid redundancy. Diplomatic representation and shared international governmental organization (IGO) membership facilitates policy diffusion,[141] contributes to the alignment of foreign policy interests over time,[142] and creates ally networks which can be collectively lobbied for change.[143] Policy diffusion is commonly attributed to state ability to share information and (specifically in the case of IGOs) to learn from mistakes made by their peers.[144] Foreign policy alignment and civilian lobby capacity derive from the socializing effect of diplomatic interaction, which instills common norms and values in participating states and increases the potential impact of collective action.[145] In addition, such forms of cooperation are in-and-of-themselves indicative of bandwidth because their absence can be simply equated to an absence of bilateral communication.[146]

## Diplomatic Bandwidth

Diplomatic bandwidth refers to state interaction through diplomatic venues. The FBIC Index considers the intensity and frequency of both indirect (multilaterally facilitated) and direct (bilaterally propagated) interactions. These two aspects are measured within the FBIC Index through a combination of indices which capture the level of dyadic diplomatic representation and shared membership of IGO. Level of representation refers to on-the-ground diplomat 'deployment' through, for example the presence of a national embassy, and has been shown to be indicative of a state's pursuit of vital interests and of ideational alignment.[147] The measurement of 'level' within this Index requires operationalization through an ordinal measurement scheme, and thus accounts for the rank held by and the volume (number) of ambassadors present.[148] Shared IGO membership is synonymous with institutionalized interaction between diplomats, and has been shown to contribute to alignment in foreign policy preference over time.

### Diplomatic Representation

The level of diplomatic representation is a good indicator of political bandwidth for several reasons. First, and very straightforward, diplomats represent their state through participation in purposeful, ritualized forms of interaction with individuals in the target state and society.[149] Diplomats may interact (in keeping with realist, state-centered views of diplomacy) with

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141 Katharina Füglister, "Where Does Learning Take Place? The Role of Intergovernmental Cooperation in Policy Diffusion," *European Journal of Political Research* 51 (2012): 339.

142 David H. Bearce and Stacy Bondanella, "Intergovernmental Organizations, Socialization, and Member-State Interest Convergence," *International Organization* 61, no. 04 (October 2007): 703, https://doi.org/10.1017/S0020818307070245.

143 This improves the nongovernmental sectors' capacity to influence policy; see Fabrizio Gilardi, "Transnational Diffusion: Norms, Ideas, and Policies," in *Handbook of International Relations*, 2nd ed. (SAGE Publications, 2013), 436.

144 Füglister, "Where Does Learning Take Place? The Role of Intergovernmental Cooperation in Policy Diffusion," 339.; Bearce and Bondanella, "Intergovernmental Organizations, Socialization, and Member-State Interest Convergence," 723.

145 See Bearce and Bondanella, "Intergovernmental Organizations, Socialization, and Member-State Interest Convergence," 729.

146 Christer Jönsson and Martin Hall, *Essence of Diplomacy* (Hampshire: Palgrave Macmillan, 2005), 42–45.; Harald Müller, "Arguing, Bargaining and All That: Communicative Action, Rationalist Theory and the Logic of Appropriateness in International Relations," *European Journal of International Relations* 10, no. 3 (2004): 396–97.; Christer Jönsson and Martin Hall, "Communication: An Essential Aspect of Diplomacy," *International Studies Perspectives* 4 (2003): 195.; Paul Sharp, "For Diplomacy: Representation and the Study of International Relations," *International Studies Review* 1, no. 1 (1999): 35.

147 Eric Neumayer, "Distance, Power and Ideology: Diplomatic Representation in a World of Nation-States," *Area* 40, no. 2 (June 1, 2008): 233, https://doi.org/10.1111/j.1475-4762.2008.00804.x.

148 Maoz et al., "Structural Equivalence and International Conflict: A Social Network Analysis," 673.

149 Jönsson and Hall, *Essence of Diplomacy*, 98–117.

members within the target state's government[150]—thus attempting to influence state conduct directly—but they may equally (in a dynamic which is more in keeping with Nye's concept of soft instruments of power and associated with a the liberal strand of thought in international relations) achieve preferred outcomes by interacting with the target state's civilian population,[151] and with the private sector.[152]

Second, outside of facilitating state-on-state and state-society interaction, diplomatic representation also contributes to society-society contact because it increases trade and tourism.[153] Level of representation has been shown to have a strong positive impact on economic interaction. Even unilateral embassy presence bolsters economic interaction by increasing trade within a dyad.[154] Such representation increases the likelihood that preferential trade agreements will be concluded by 3 to 5 percent,[155] and has been shown to have a particularly positive impact on the host state's propensity to export goods to the represented state.[156] It also increases revenues from tourism: the presence of embassies and consulates has been shown to increase tourism *to* and *from* G7 countries between 2001 and 2003 by between 15 and 30 percent,[157] and therefore implies increased interaction between publics (and, indirectly, between publics and actors within the national private sector).

It can thus be surmised that states dispatch diplomatic missions to states where they maintain special interests for political, economic, and ideological reasons[158] or with whom share important values.[159] Evidence for this is provided by an assortment of qualitative analyses in diplomatic history,[160] as well as by large-n studies in political science. In the latter category, Eric Neumayer's study analyzes dyadic interactions between 1970 and 2005 to conclude that that "more powerful countries are both more likely to send missions abroad and to receive missions."[161] More powerful states—and great powers in particular—have been previously shown to pursue more diversified interest portfolios internationally.[162] These interest portfolios derive from these states' interest in enforcing or challenging a status quo on multiple fronts.[163] Corresponding behavior manifest through the purposefully pursued venues in these states' extensive alliance networks,[164] their role in shaping (and enforcing) the world order

150 Sharp, "For Diplomacy: Representation and the Study of International Relations," 38.

151 See Nye on public diplomacy Nye, *Soft Power: The Means to Success in World Politics*, 68.

152 Jönsson and Hall, *Essence of Diplomacy*, 88–90.

153 David MacKenzie, "An Early Effort in Cultural Diplomacy: The Canadian Co-Operation Project and Canadian Tourism," *International Journal* 68, no. 4 (2013): 590.; Salvador Gil-Pareja, Rafael Llorca-Vivero, and José Antonio Martínez-Serrano, "The Impact of Embassies and Consulates on Tourism," *Tourism Management* 28 (2007): 359.

154 Peter A. G. van Bergeijk, Henri L. F. de Groot, and Mina Yakop, "The Economic Effectiveness of Diplomatic Representation: An Economic Analysis of Its Contribution to Bilateral Trade," *The Hague Journal of Diplomacy* 6, no. 1 (January 1, 2011): 113, https://doi.org/10.1163/187119111X566751.

155 Michael Plouffe and Roos van der Sterren, "Trading Representation: Diplomacy's Influence on Preferential Trade Agreements," *The British Journal of Politics and International Relations* 18, no. 4 (2016): 906.

156 Bergeijk, Groot, and Yakop, "The Economic Effectiveness of Diplomatic Representation," 117.

157 Gil-Pareja, Llorca-Vivero, and Martínez-Serrano, "The Impact of Embassies and Consulates on Tourism," 359.

158 Neumayer, "Distance, Power and Ideology," 234.

159 Mark J. C. Crescenzi, Andrew J. Enterline, and Stephen B. Long, "Bringing Cooperation Back In: A Dynamic Model of Interstate Interaction," *Conflict Management and Peace Science* 25, no. 3 (August 7, 2008): 266, https://doi.org/10.1080/07388940802219059.

160 The list of such studies is extensive. See Albrecht Carrié for an impressive surveyRéné Albrecht Carrié, *A Diplomatic History of Europe since the Congress of Vienna* (HarperCollins, 1958).; see also Bobbitt Philip Bobbitt, *The Shield of Achilles: War, Peace, and the Course of History* (London: Penguin, 2002).

161 Neumayer, "Distance, Power and Ideology," 233.

162 Thomas J. Volgy et al., "Major Power Status in International Politics," in *Major Powers and the Quest for Status in International Politics* (New York: Palgrave Macmillan, 2011), 10.

163 Joghn G. Ikenberry, *After Victory* (New York: Princeton University Press, 2000), 11.

164 Jack S. Levy, *War in the Modern Great Power System: 1495-1975* (Kentucky: University Press of Kentucky, 1983), 8–49.

through IGOs,[165] and their tendency to actively pursue venues through which to modify the domestic policies of other states.[166] Interests are also frequently pursued through the creation of shared value networks. This notion is corroborated by Bergeijk et al.'s finding that ideological differences often prevent countries from maintaining a diplomatic representation,[167] and by Neumayer's observation that ideological similarity is a particularly strong predictor of embassy presence when neither state is powerful.[168] Moreover, diplomatic relationships tend to be characterized by high degrees of reciprocity. In 90 percent of the cases which occur during the 1970-2005 period, "a pair of countries had either no representation in either one or both were represented in each other's state."[169]

## Operationalization of Diplomatic Representation

Previous studies have quantified level of representation in different ways, for instance by recording the presence of ambassadors (unilaterally or bilaterally present)[170] or by simply counting embassies.[171] As interests between states may be asymmetrical, the FBIC Index ranks diplomatic offices by their level of engagement with the host state—by assigning dyads a weighted Index on a 0-1 scale. This measures the average level of formal diplomatic representation between the two countries based on the Pardee Center for International Future's Diplomatic Representation dataset.[172] The time coverage of the dataset is from 1960 to 2015. The LOR Index weights diplomatic offices by their level of engagement with their host state. This is a directional measure, each state's representation in the other may be different, so the average of the LOR score from state A to state B and state B to state A is used to convert this Index into a shared measure. The dataset includes a significant number of diplomatic types and levels of engagement including accounting for single and multiple state representation and whether the diplomatic office is within, or outside of the state. This approach is consistent with the literature's past operationalization of level of representation. The weighting scheme serves as an improvement over past approaches, as it trades a nominal measurement scale for one which allows for interval data.

## IGO Membership

The second indicator of political bandwidth in the FBIC Index is shared membership of IGOs. Shared IGO membership is indicative of bandwidth for two reasons. First, it institutionalizes (and increases) interaction between states. Second, it contributes to their socialization within norms-and-values-based international frameworks.[173] This is due to the prevailing norm of reciprocity that exists within the institutionalized framework provided by IGOs. This norm encourages cooperation through a 'shadow of the future' dynamic that differs from such dynamics absent that framework.[174] Within the context of IGOs, shadow of the future's interaction with the norm of reciprocity dictates that noncooperation today will lead to a failure to gather support for initiatives tomorrow.[175] Put simply, extensive contact and interaction through IGOs creates social structures that help to define the conditions under which member states view acts of aggression or cooperation as being rational strategies of action.[176] The norm of reciprocity "serves as the primary norm for interaction in systems of self-help ranging from primitive communities to the interstate

165 Levy, 8–49.; see also Ikenberry, *After Victory*, 13.

166 Levy, *War in the Modern Great Power System: 1495-1975*, 8–49.

167 Bergeijk, Groot, and Yakop, "The Economic Effectiveness of Diplomatic Representation," 113.; see also Levy, *War in the Modern Great Power System: 1495-1975*, 8–49.

168 Neumayer, "Distance, Power and Ideology," 234.

169 Neumayer, 232.

170 Plouffe and van der Sterren, "Trading Representation: Diplomacy's Influence on Preferential Trade Agreements," 892.; Neumayer, "Distance, Power and Ideology," 230.

171 Gil-Pareja, et al., 2007; Bergeijk, et al., 2011

172 The Pardee Center for International Futures, 2016

173 See also Bearce and Bondella's discussion of state development of a 'new social identity' through IGOs; Bearce, & Bondanella, 2007; see also Koehane and Martin on institutional theory Koehane, & Martin, 1995, Goodman & Derek on socializing states Goodman, & Jinks, 2013, and Miller et al. on status attribution in international politics Miller, et al., 2009

174 Fausett, & Volgy, 2010; Bearce, & Bondanella, 2007; Bó, 2005

175 Bó, 2005

176 Maoz, 2006

system."[177] Over time, exposure to this norm has been shown as having a socializing function:[178] states acclimatize to their peers' expectations, and modify their behavior as a result.[179] Even if socialization through institutionalization is real, it certainly does not completely neutralize power asymmetries within IGOs. Mechanisms that punish noncompliance through political conditionality and issue linkage or through coercion will remain less likely to modify the behavior of the great powers that enforce them than that of small and medium sized powers,[180] although they have been shown to level the playing field to a certain degree.

Cooperation in IGOs is also facilitated by their role in increasing member state access to information concerning capabilities and intentions.[181] In the event of disagreement, this allows for issue-linkage during the bargaining process, and significantly increases the range of venues through which member states can pursue their policy objectives.[182] While the previously outlined increased understanding has been found to entail a "statistically significant larger probability of nonviolent conflict behavior between dyads,"[183] it should be noted that it has also been shown to decrease the onset rate of large-scale (conventional) conflict.[184] This phenomenon supports the argument that increased interstate bandwidth through IGO membership causes states to consciously moderate their behavior. At a macro level, trends in dyadic IGO membership have also been used to show that both direct and indirect network similarity (with the latter referring to a high overlap in shared membership vis-à-vis partner states) are strong predictors of conflict non-initiation[185] as well of increased trade.[186]

## Operationalization of IGO Membership

The FBIC Index assigns dyads IGO bandwidth by simply counting instances of shared IGO membership. Previous studies into state cooperation through IGOs have looked at indirect networks[187] or simply tallied number of instances of shared membership.[188] As IGOs differ by issue specialization and scope, it is useful (within the context of this Index) to recall that each instance of shared dyadic membership represents an increase in institutionalized bandwidth.[189] This Index's approach may not account for degree of formality in interactions between states within the context of each IGO, but it provides a strong proxy for dyadic bandwidth volume through such institutions.

177 Leng, 1993

178 Fausett, & Volgy, 2010; Bearce, & Bondanella, 2007

179 This phenomenon is commonly referred to as the development of a 'new social identity' on the part of the state Bearce, & Bondanella, 2007

180 Strüver, 2014; Anderson, et al., 2016

181 Fausett, & Volgy, 2010

182 Fausett, & Volgy, 2010

183 Presumably due to increased friction resulting from increased interaction; see Fausett, & Volgy, 2010

184 Fausett, & Volgy, 2010

185 Maoz, et al., 2006

186 Haim, 2016

187 See Maoz, et al., 2006 on 'friends of friends' networks in IGOs

188 See Bearce, & Bondanella, 2007; see also Boehmer, et al., 2004

189 This approach is considerably simpler than the approaches employed to operationalize the trade and military alliances variable.