

## Regional Integration and Economic Development: Optimal or Messy Networks?

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**Abstract** States join regional integration organizations (RIOs) hoping that membership will boost economic development. Such cooperation should improve the efficiency of economic factors via firm competition, which will promote development. We argue that economic growth is difficult to produce when states form overlapping memberships and join RIOs with economies of similar size and similar levels of development. While joining an RIO may be beneficial, many overlapping memberships tend to involve larger costs through added obligations, leading to low economic performance. Integrating with similarly sized economies is not as beneficial as integrating with larger, relatively wealthier partners. We support our hypotheses using 180 states from 1962-2014. Using social network and time-series analysis, we find that joining multiple RIOs tends to decrease GDP per capita growth. However, the effect is not uniform: the negative effect is stronger in lesser-developed countries and does not hold when RIO membership includes a large economic partner.

**Keywords:** comparative regional integration, economic performance, asymmetric power, developing economies, social network analysis, time series regression

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## I. Introduction

The strategy of economic integration has gained popularity among developing countries because states increasingly view the free flow of investment, goods, and services as a means of improving economic growth and development. The strategy is so popular that states are joining multiple regional integration organizations (RIOs) in the belief that participating in more than one RIO<sup>1)</sup> would be more advantageous. These states' logic of multiple and overlapping memberships

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assumes that RIOs have additive benefits. In other words, the more memberships, the better. By making this assumption, one ignores the very real differences among RIOs. For example, RIO members vary in market size. The benefits and costs of market integration between two similarly sized partners will be different from RIO membership with partners that are asymmetric in market size. Moreover, members of different RIOs can vary on their level of development leading to further variation in benefits and costs. RIOs also vary in their legal requirements (*e.g.* rules of origin, food safety regulations, product exclusions, etc.) and/or the depth of integration (*e.g.* free trade agreements versus customs unions). Such differences could possibly produce additional obligations and therefore additional costs. This paper examines overlapping RIO membership in order to determine if multiple memberships are beneficial for economic development, a claim that has not been fully investigated in the literature (Bhagwati 2002; Mengistu 2015).

Why would national leaders believe that joining more RIOs produce more economic benefits? Or do multiple memberships harm development? Are states weaving together a fine tapestry of economic development or are they making an entangled mess? We especially wish to examine the economic impact multiple memberships has on developing countries. We argue that the institutionalization of regional integration produces costs that can harm the ability to realize the longer-term benefits if countries join many RIOs. With each new membership, states must enforce new obligations. The question is, do states and their economies have the ability to adjust to, and comply with, these new obligations? We theorize that benefits-to-cost ratios are higher if RIO membership includes states that are asymmetrical in economic size and development. We further argue that among lesser-developed countries, greater numbers of overlapping RIO memberships without partners of asymmetrical economic size and development are likely to stretch their already limited state capabilities in order to fulfill added obligations. If obligations are unfulfilled, disputes develop, and undermine RIOs along with any promised benefits.

Our first task is to examine the literature of development and see how liberal foreign economic policies contribute to improving economic wealth. The empirical tests show the effects that multiple RIO memberships have on GDP per capita growth while controlling for alternative explanations and examining subpopulations of development. The final section concludes with policy recommendations for countries that wish to use economic integration as a means to improve economic development.

## II. Past Work on Trade, Growth, and Regional Agreements

Political economy scholarship that explores the relationship between trade, growth, and

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1) Examples of RIOs include the European Union, MERCOSUR, and the Association of Southeast Asian Nations (ASEAN).

globalization come up with diverse conclusions. Soros (1998) argues that globalization brings countries together all over the world, with national economies becoming steadily more integrated as cross-border flows of trade, investment and financial capital increase. New trade theory focuses on the role of increasing returns to scale and network effects. Krugman (1986) argues that there are many economies-of-scale goods, resulting in increasing volumes, especially between similar countries. Shiozawa (2007) generalized Krugman's model and emphasized the importance of intermediate goods. He argues that volumes increased for intermediate goods when transportation costs decreased, altering the pattern of comparative advantage and enlarging the world production possibility set.

Unfortunately, globalization and trade have not benefited all equally, with significant differences between developed and developing countries. Among the developing countries, there is a growing sense that globalization is proceeding too rapidly, increasing income disparities, producing unequal economic growth between urban and rural areas, and leading to the infusion of domestic civil strife. As a result of the divergent perspectives, developing countries have kept high tariffs and non-tariff barriers, while industrializing countries remained closed to their exports (e.g. commodities), perpetuating a double standard in the international trading system. Conversely, under the auspices of the General Agreement on Tariffs and Trade (GATT), postwar trade barriers among major industrial countries declined significantly, while RIO initiatives proliferated, including the European Union, the North American Free Trade Agreement, and the Association of Southeast Asian Nations Free Trade Area (AFTA). World trade grew by approximately 6 percent per year from 1950 in real terms, about 50 percent faster than world output growth over the same period (Hummels 2007).

There is no clear consensus on how such RIOs affect growth through output and productivity effects, including domestic and global competition and scale. Viner (1950) originally suggested that the effects of regional integration on trade could be trade creating, when trade replaces or complements domestic production, or trade diverting, when trading partners' production replaces trade from the rest of the world. Others argue that the effects of RIOs are dynamic, as competition creates industry that is more efficient, growth, and higher long-run productivity (Grossman and Helpman 1991; Neary 2001). Blomstrom and Kokko (1997) posit that regional integration leads to efficiency gains and higher growth owing to more efficient resource allocation. Specifically, Vamvakidis (1998) explores if and how RIOs affected growth from 1970 to 1990, but finds little substantive impact when controlling for other economic determinants such as openness. Sally (2006) argues that RIOs can actually have a negative impact on multilateral global trade, weakening regional economies by distracting attention from the WTO, unilateral liberalization and necessary, yet politically difficult, national structural reforms.

Besides geographical distance (Krugman 1991; Frankel 1997; Hummels 2007), colonial histories, and civilization traditions (Huntington 1996; Rauch 1999; Guiso et al. 2009), patterns of trade

continue to define globalization's winners and losers. Neoclassical growth (Solow 1956; Swan 1956) and endogenous growth economists (Romer 1987; Rebelo 1991) seek to explain these differences by examining the fundamental drivers of economic development. Income convergence and conditional income convergence purport that less developed nations, if able to escape the poverty trap, will grow at faster rates than developed countries owing to larger potential labor pools, increasing marginal returns in mobilizing productivity gains, and leapfrogging more advanced economies through technology transfer (Barro 1991; Levine and Renelt 1992).

Turning to the inter-relationship between trade, growth, and RIOs, Williamson (1996) and O'Rourke and Williamson (1999) stress that reductions in postwar trade barriers, and the resulting globalization, propelled economic growth and were a key engine driving income convergence throughout the world. They find that convergence occurs under open economic policy preferences and divergence during spates of trade contraction. Epstein et al. (2003) discover that trade does affect income convergence across the globe, albeit differently for countries according to level of development and time periods. Using standard growth models for nearly 100 developing countries over 1970-2004, te Velde (2011) does not find robust growth effects of regional integration. However, other regional integration measures yield positive effects through trade and investment. He concludes that trade and FDI promote growth and, since RIOs increase trade and FDI, regional integration can still have a positive impact on growth. The literature, therefore, gives us a mixed reading regarding the effect RIOs would have on economic development. Pieces of the puzzle left unexplored include the role membership characteristics and multiple RIO memberships. In the next section, we look at the relationship by examining how the proliferation of multiple obligations, which comes with multiple memberships, has on a country's economic development.

### **III. Regional Integration and Development**

We first examine how regional integration is more likely to develop when memberships include large variations in both national economic size and levels of development. We then develop our central argument that RIOs that are made up of similarly sized economies with low levels of economic development are more likely to produce little or no benefits for member states. We further argue that multiple memberships in such RIOs exacerbate the poor economic outcomes.

Regional integration is the process of lowering or eliminating barriers to market exchanges. While the desired outcome is a merging of various markets, the process is also political. The institutionalization of regional integration, through treaties, carries obligations for the member states. These obligations commit members to agreements such as the harmonization of trade policies and the establishment of common procedures and rules. The institutionalization of

integration is where countries incur many, if not most, of the "start-up" costs of membership. The ability of states to assume the costs of administering agreements will vary with lesser-developed countries being less capable to do so. With small per capital income, lesser-developed countries are not likely to take in the needed tax revenue to build up enforcement capacity (Leblang 1997; Abdollahian et al 2012). Wealthier countries are more capable in assuming the costs of institutionalization and are therefore tolerated, and likely well managed, because of the longer-term economic benefits produced by the merging of markets.

As stated in the prior section, economic theories point out that closed economies are inefficient because they hamper competition, innovation, and effective factor allocations. Integration on the other hand improves efficiency through greater competition. Factor allocation for production becomes more efficient when countries produce goods in which they have a comparative advantage (Ricardo 1817). The gains come out of indirect production of goods through free trade, which come in the form of lower prices. Theory also tells us that potential gains occur when countries shift production of outputs that require relatively scarce inputs to those that require relatively abundant inputs (Heckscher 1919; Ohlin 1933). The shift occurs because trade induces competition that favors less expensive outputs produced from abundant inputs.

Gains from trade also develop through realizing economies of scale. Economies of scale produce gains in intra-industry trade when home markets are not able to absorb the potential supply of products. Combining to form a larger market promotes gains since each additional unit produced and sold will lower the cost per unit. Increased competition can also reduce production inefficiencies (Horn et al 1995). In addition, intra-industry trade benefits firms because inputs are available at lower prices spurred by greater competition. Evidence also indicates that potential gains of economies of scale motivate exporters to push for regional rather than unilateral or multilateral agreements (Busch and Milner 1994; Milner 1997).

However, these gains can be larger for a firm from a small home market if there is a variation in market size of the actors in an RIO. In other words, the greater the asymmetry of the partnership, the larger the gains for the small home market firm through trade. Firms also obtain greater efficiency when greater competition produces lesser priced inputs (or scarce inputs in general) for all firms (*i.e.* from large and small markets) and greater product variation.

Varying levels of development can also be important in obtaining benefits due to comparative advantage as well as economies of scale. Developing countries tend to be abundant in labor relative to developed countries that are relatively capital abundant.<sup>2)</sup> The Heckscher-Ohlin model therefore predicts greater economic benefits when these two types of economies integrate (*i.e.*, benefits of intra-industry trade). Developing countries also would greatly benefit through intra-industry trade (economies of scale) because protectionist policies hamper competition (Rodrik 1988; Flores 1997). Still, the gains are potentially larger if developing countries integrate with

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2) Land varies greatly among developing and developed countries so it is not considered.

developed countries for two reasons. First, flows of foreign direct investment (FDI) from developed countries to developing countries would increase. Second, technology transfers, that spillover from FDI, reduce the need to re-invent processes or products.

Underlying the theory behind the benefits of openness is the trade creation assumption and not the trade diversion one (Bhagwati 2002). If an RIO allows for the substitution of intra-regional imports for cheaper extra-regional imports, then we would not expect to see economic growth because the price of goods would not significantly decline. Under these conditions, increased firm competition is not present, economies of scale are unrealized, and factor distribution remains inefficient.

When is it likely that an RIO will promote diversion and not trade creation? Theory and empirical evidence suggest that this is likely in an RIO that includes among small, developing countries (Schiff and Winters 2003). Their small size and level of development means that they are unlikely to provide each other with their respective needs. What they cannot supply to each other will need the rest of the world to supply at prices that would include the import tariff. As a result, we cannot expect consumption of these goods to increase. Since demand does exist, we would expect that one or more firms will attempt to satisfy this demand, but at higher costs and prices. Diversion is therefore a cost for the RIO partners. Overlapping membership in similar types of RIOs simply increases the costs while also diluting commitments for multiple states.

International relations theory also points to a greater likelihood of integration success among partners of varying size. Regional integration research indicates that integration is more likely to develop among asymmetric partners that are also similarly satisfied with existing arrangements (Efird and Genna 2002; Genna and Hiroi 2004; Genna 2010). The asymmetry argument states that the preponderant economy within an RIO has the capability to offer goods to other partners. When countries move from closed to open economies, the reallocation of production factors produce short-term costs for individuals in previously protected sectors. In addition, public investment in integrative infrastructure (such as transportation) is necessary for the success of integration. Finally, there is a need to finance common institutions for administering the legal requirements of the agreements.

The advantages of integrating with a larger economy does not assume benevolence by the more powerful actor. Instead, we assume that the larger partner will reap benefits in providing goods through its leadership role (Destradi 2010). There are cases when the preponderant power lacks the willingness to offer goods and thereby neglects its leadership role when it pulls away its attention from their local region (Kaphohl 2014). In total, however, it is more advantageous to have a larger, more economically developed partner in an RIO because there is a potential for leadership. Relying on similarly sized member states at the same level of lower economic development will lower the likelihood of reaping economic benefits. In other words, while the former condition may lead to unfulfilled expectations, the latter will, we argue, more likely to

lead to poor economic outcomes.

Among similar sized economies, pooling resources to offset costs to individual states can be problematic because pooling would not be much different from each state going it alone. However, if a preponderant, developed economy is among the RIO membership, then pooled resources would be larger than a unilateral strategy. This has some important effects. First, it provides incentives for smaller economies to join up with larger ones because of the added benefits. Second, and more importantly, the likelihood of reaping the benefits from integration is larger when the larger partner provides goods. Short-term adjustment funds, investment in infrastructure, and common institutions are important to minimizing the negative effects of integration for individuals and firms, which not only smooths the way for greater gains from trade, but also provides incentives for FDI. Finally, there is the ability for the larger partner to improve its bargaining advantage with the rest of the world. As the larger partner is able to gather more member states under its economic influence, it has a greater ability to head negotiations (on the other partners' behalf) at the global level.

Another counter argument to the benefits for a small country under the condition of preponderance is for the small country to enter into an RIO with multiple large and developed countries. The underlying assumption of the counter argument is that the small country can obtain the same *negotiated* benefits as it would with one preponderant power. If the agreement were full liberalization of all products and services, regardless of which agreement the small countries signs, then the counter argument would have merit. However, this is seldom the case. The aim in many sets of negotiations is to protect specific sectors at home while demanding that others liberalize. Therefore, the negotiating dynamics would alter to the disadvantage of a smaller country with the increased size and wealth of potential partners since negotiation advantage is on the side of the larger countries especially if they can form a solid coalition when preferences converge.<sup>3)</sup>

The above international relations and economics literatures provide us with arguments to assess the benefits ( $b$ ) and costs ( $c$ ) of regional integration. The ideal  $b/c$  value range for country  $\alpha$  would be for  $b > c$ . If country  $\alpha$  participates in  $\text{RIO}_i$  with  $i$  actors ( $m, n, o \in i$ ) and market sizes of  $\alpha \approx m \approx n \approx o$  then it will incur  $b_i$  benefits and  $c_i$  costs. If country  $\alpha$  participates in  $\text{RIO}_j$  with  $j$  actors ( $x, y, z \in j$ ) and the market size of  $x \gg \alpha, y, z$  then it will incur  $b_j$  benefits and  $c_j$  costs. If the preponderant member state in  $\text{RIO}_j$  is more developed than  $\alpha$ , then  $\alpha$  will incur  $b_j^*$  benefits and  $c_j^*$  costs. Given our theoretical framework,  $b_j^*/c_j^* > b_j/c_j > b_i/c_i$  for  $\alpha$ .

Furthermore, each RIO that country  $\alpha$  joins will carry an added cost. This cost is a function of three components. First, it will need to contribute to the cost of an administrative agency (either its own or a regional one) to enforce the treaty obligations. If the agency lacks funding,

3) See Mansfield and Milner (1999) for a good overview of the debate regarding "pluralistic" versus a single preponderant power centered RTAs.

then defections from the rules are likely to occur adding to a costly disagreements among partners. Second, there will be a trade diverting effect and subsequent economic inefficiency due to lower competition. Ease of access depends on tariff and non-tariff barriers and legal regulations, such as rules of origin, differ across independently negotiated RIOs. Third, there will be disincentives for potential investors. The unevenness of market access due to the variation in legal restrictions and non-tariff barriers lead to the lower likelihood of realizing the economies of scale. Each additional RIO cost ( $\gamma_n$ ), where  $n$  equals the number of additional RIOs, changes the gains:

$b_j^*/(c_j^* + \sum r_n) > b_j/(c_j + \sum r_n) > b_i/(c_i + \sum r_n)$ . Given that the benefits of similar sized economies are small, it is possible that  $b_i < (c_i + \sum r_n)$ . Therefore, two hypotheses come out of this reasoning:

- H<sub>1</sub>:** The higher the number of connections among institutionalized integration organizations, the lower the economic growth per capita to member states.
- H<sub>2</sub>:** The overlapping membership effect will negatively affect developing countries more than developed ones.

The effect multiple RIO membership will not necessarily be linear for all states. It is possible for more well off economies to see some benefit for a small number of multiple RIO memberships because they have the capability to offset the costs thereby improve benefits, up to a point. Added costs for developing countries are due to opportunistic behavior by the national elites to join multiple RIOs with the aim of benefiting domestic coalitions. The RIO obligations produce legal fragmentation and regulatory vagueness that increase the technical and bureaucratic costs of compliance and implementation requiring more state resources (Gómez-Mera 2015; Mengistu 2015). When state capacity is limited, this leads to the failure to implement rules and subsequently to break agreements and the non-realization of promised benefits. We theorize that multiple memberships will have a negative effect since the effect will have an inverse U-pattern for developed countries while having a linear negative effect for developing countries.

The one way that states may obtain growth, or limit the negative economic impacts of the multiple membership problem, is if RIOs that are led by a regional preponderant economy. A regional leader can absorb more of the institutional costs and provide a larger market for smaller potential partners. For example, if RIO<sub>*i*</sub> possesses a large economic partner and RIO<sub>*j*</sub> exclusively includes similar sized members, then state  $\alpha$ 's  $b/c$  ratio from RIO<sub>*i*</sub> will be greater than its  $b/c$  ratio from RIO<sub>*j*</sub> because the economic benefits are larger and institutional costs are smaller. For this reason, we expect that if states are members of several RIOs but that one or more have a regional preponderant economy, then this would mitigate the multiple membership problem and economic growth is possible for  $\alpha$ :



**H<sub>3</sub>:** The larger the economic size ratio between a regional preponderant economy and member states in an RIO, the less negative growth from having overlapping RIO memberships.

In sum, we theorize that the multiple membership approach to integration does more harm than good for the economic growth of developing countries if the membership composition includes only similarly sized economies with low levels of development. The requirements of greater institutionalization of these RIOs exacerbates the problem. However, the problem can be diminish if a regional economic preponderant power is involved in the RIOs and when there is a large development gap between it and member states.

## IV. Research Design

We test the hypotheses from our theory using a sample states from 1962-2014 (Please see Table A1 in the Appendix for the list cases and their RIO memberships). The following is the notation of the full regression model:

$$\begin{aligned} \text{Percentage GDP/capita change}_{i,t} = & \alpha + \beta_1 \text{Degree}_{i,t-1} + \beta_2 \text{Degree}_{i,t-1}^2 + \beta_3 \text{Power Ratio}_{i,t-1} \\ & + \beta_4 (\text{Power Ratio} * \text{Degree})_{i,t-1} + \beta_5 \text{Democracy}_{i,t} + \beta_6 \text{School Enrollment/capita}_{i,t} \\ & + \beta_7 \text{Revolutions}_{i,t} + \beta_8 \text{Fatal MIDS}_{i,t} + \beta_9 \text{Coups}_{i,t} + \beta_{10} \text{Middle East}_{i,t} + \beta_{11} \text{Africa}_{i,t} \\ & + \beta_{12} \text{Asia}_{i,t} + \beta_{13} \text{North America}_{i,t} + \beta_{14} \text{South America}_{i,t} \end{aligned}$$

Where  $i$  notes the state and  $t$  is the year, making the unit of analysis state-year. The data structure is a pooled time-series format. While the above represents the full model, we will run sub-models and present results before running the full model. All variables the regression models vary over time except for the regional dummy variables. In addition, the Degree and Power Ratio, as well as their interaction terms, are lagged one year.<sup>4)</sup>

### A. Percentage GDP/capita change

Our dependent variable, change in development, is the year-to-year GDP per capita positive or negative growth. The measurement of GDP per capita growth is in current US\$ and comes from the World Development Indicators database.

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4) The regressions were also lagged three years with similar results. The one-year lags were kept in order to maximize the number of cases.

## B. Degree

We measure multiple RIO memberships using a social network variable, *degree centrality*, which measures the number of connections per state. This is superior to a simple count of the number of RIO memberships since we are able to weight the connection to other states within the RIO and thus, locate each country accurately in the entire RIO network. A simple count does not tell us how strongly connected any pairs of countries are tied together. We see multiple cases of what is often referred to as "variable integration" or "multi-speed integration" where some countries integrate more deeply in an RIO than others. Having the degree variable allows us to weight each connection by the level of committed integration and therefore have a finer measurement. We first take the direct connection to all other member states into consideration, and then use the level of institutionalized integration achievement to capture the strength between pairs of countries. Therefore, each connection is weighted by the level of commitments stated in the RIO treaties. Our weighted network takes not only the quantity but also quality of the RIOs for each country's participation. Centrality measures in social network analysis best reflect this type of information, so we start our analysis with the most basic metric: degree, which focus only on the number of directly connected countries.

We determine the weight of each connection using the level of institutionalized regional integration as measured by the integration achievement score (*IAS*). *IAS* is an index composed of six Guttman scale categories: (1) mobility of goods and services; (2) capital mobility; (3) labor mobility; (4) supranational institutional building; (5) monetary policy coordination; and (6) fiscal policy coordination (Efird and Genna 2002; Feng and Genna 2003; Genna and Hiroi 2004). Each category has a value between 0 and 5 (with higher values indicating greater institutional integration). The final *IAS* value is an average the six categories (see Appendix Table A2 for more details).

## C. Power ratio

To test the third hypothesis, we use a *power ratio* variable that compares the economic size of the largest member of an RIO with all other member economies:

$$Power\ Ratio_{RIO_{i,t}} = \frac{Preponderant\ Power\ GDP_{RIO_{i,t}}}{\sum GDP\ of\ all\ RIO\ Members_{RIO_{i,t}}}$$

Since member states are often members of more than one RIO, we used the RIO with the largest power ratio.  $RIO_{i,t}$  represents the selected RIO of  $i$  at year  $t$ . The GDPs are in current US\$ and come from the World Development Indicators database.

## D. Control variables

We also include control variables that could contribute to explaining changes in economic development. *Democracy* is a dummy variable calculated from the Polity IV data set's polity2 variable (Marshall & Jaggers 2010). Polity2 is a 21-point measurement that ranges from -10 to 10, with higher numbers indicating higher levels of democracy. We apply the convention that a state with a score of 6 and higher is a democracy (*democracy*=1) and a score of 5 and below is a non-democracy (*democracy*=0). We hypothesize that democratic states will have better GDP per capita growth than non-democracies. The next control variable that can have a positive effect on economic development is *school enrollment per capita*. The variable includes both primary and secondary enrollment from the Cross-National Time-Series Data Archive.

The next two control variables measure the negative economic effects due to domestic and international conflict. *Revolutions*, downloaded from the Cross-National Time-Series Data Archive, counts the number of "illegal or forced change in the top government elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from the central government." *Fatal MIDs* (militarized interstate disputes) are events that produce fatalities due to threats, displays, or use force against one state from another member of the international system. The Militarized Interstate Dispute 4.0 data set is from the COW project (Jones, Bremer, & Singer 1996; Ghosn, Palmer, & Bremer 2014). Given the societal disruption due to revolutions and militarized interstate disputes, we hypothesize that both will reduce GDP per capita growth.

Finally, we control for regional effects. Some regions have had a long history of slow economic development, frequent economic shocks, and chronic underdevelopment. Since we cannot include all the factors associated with these phenomena, we include dummy variables for the following regions: Middle East, Africa, Asia, North America, and South America. Europe is the omitted dummy variable.

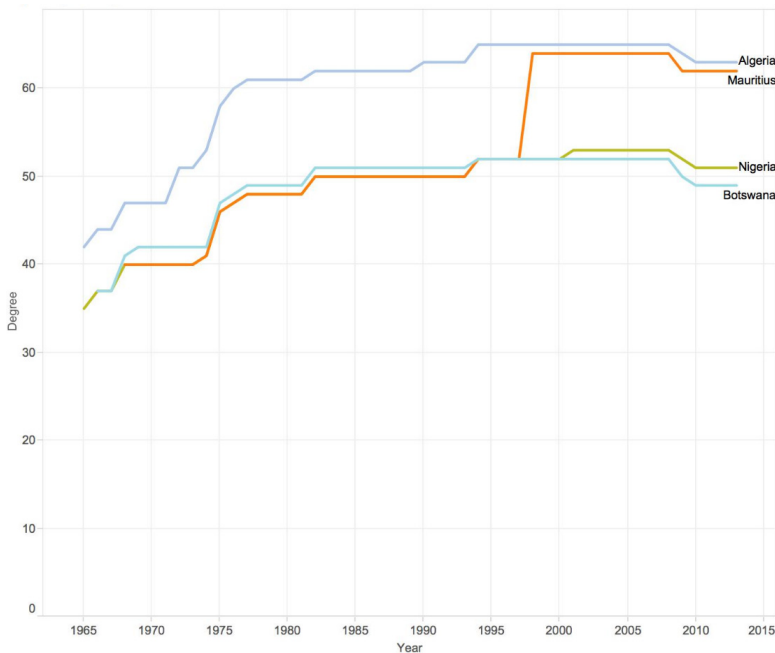
Considering that our dependent variable is continuous and measures cross-sections over time, we cannot use ordinary least squares regression. We instead use the panel corrected standard errors regression technique created by Beck and Katz (1995). A key strength of this estimator is that it can account and correct for both autocorrelation and panel heteroscedasticity. Table A3 provides summary statistics for all variables.

## V. Results

To start, we would like to provide an illustration of the social network of institutionalized regional integration memberships. Figure 1 charts the evolution of the four countries with the

highest values for degree: Algeria, Mauritius, Nigeria, and Botswana. It is not surprising that the top four are located in Africa. The African continent hosts the highest concentration of RIOs, which is part of the African Union's plan for integration. This plan involves the development of overlapping memberships so that sub-continental regions will integrate, and at the same time, not harm the pace of continental integration.

**Figure 1.** Evolution of social network degree for the top four countries



We begin with an analysis of how joining multiple RIOs effects GDP per capita growth. Do multiple memberships, and the institutional weight of the memberships, harm economic development? Our first model, without controls or the power ratio variable (Table 1), illustrates that higher social network degrees do predict lower GDP per capita change. *Degree* is significant with a coefficient of -0.0404. Model two (Table 1) introduces the *Degree* squared term, along with the *Degree* term. The *Degree* term is no longer statistically significant while the squared is highly significant. Recall that our theory postulates that there would be an inverse-U relationships, especially among developed countries, due to the limited capacity to fulfill multiple treaty obligations. We will investigate the relationship between levels of development and RIO membership later in this section.

Model three (Table 1) displays the results of the full model. The *Degree* squared term remains statistically significant while the *Degree* term, by itself, is not. Model three therefore demonstrates that the results hold even when including control variables. Functioning democracies see a

positive impact on their economies by 2.12 percentage points. *Revolutions* also has a negative effect on GDP per capita growth (-0.963) while the other variables are not statistically significant at  $p \leq 0.10$ . The regional dummies Asia, North America, and South America are significantly different from Europe, while the Middle East and Africa dummies are not.

**Table 1.** Analysis of Social Network Degree Effects on GDP/Capita Change, 1962-2014

	Model 1	Model 2	Model 3
Degree	-0.0404*** (0.0097)	-0.0173 (0.0399)	-0.0145 (0.036)
Degree Squared	-	-0.0004*** (.00013)	-0.0004*** (0.0002)
Democracy Dummy	-	-	2.12*** (0.5038)
School Enrollment/capita	-	-	-.0004 (.000)
Revolutions	-	-	-0.963* (0.487)
Fatal MIDS	-	-	1.30 (0.854)
Coups	-	-	-1.94 (1.20)
Middle East	-	-	1.19 (1.06)
Africa	-	-	-0.210 (0.954)
Asia	-	-	-1.17* (0.647)
North America	-	-	-1.52* (0.917)
South America	-	-	-1.17* (0.621)
Constant	8.02*** (0.266)	7.92*** (0.339)	8.02*** (0.729)
N	5,958	5,958	5,958
Groups	173	173	173
Wald chi2	17.46***	19.19***	79.36***

Notes. Panel corrected robust standard errors are in parentheses.

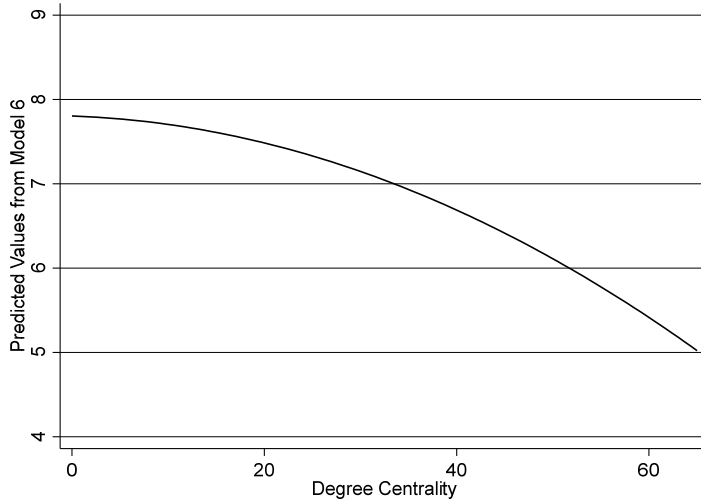
\* $p \leq 0.10$ , \*\* $p \leq 0.05$ , and \*\*\* $p \leq 0.01$ , two-tailed tests.

Table 2 continues the analysis by first examining *Power Ratio* variable and then displays the results of the full model. Model 4 (Table 2) includes the *Power Ratio* variable and excludes *Degree* variables and the controls. The negative statistically significant negative coefficient seems to run counter to expectations. However, the third hypothesis postulates that power asymmetry should reduce the negative impact as *Degree* increases. We will therefore need to see if this

is the case when we run the full model. Model five (Table 2) adds the control variables. As shown, the *Power Ratio* term does not change signs, there is a small change in magnitude, while its statistical significance is reduced, but still strong at  $p \leq 0.05$ . Among the controls, *Democracy*, *Revolutions*, *Fatal MIDS*, and *Coups* are statistically significant. Africa and North and South America are statistically different than Europe.

Model six (Table 2) displays the results of the full regression equation. The square of the *Degree* variable remains negative as does the *Power Ratio* variable. Substantively, model six (Table 2) tells us that with the highest value of *Degree* (65) will see a -1.69% GDP per capita change. The magnitude of the change on the GDP per capita growth from *Degree*=1 to the highest level is approximately 98.5%. The results, however, needs to be interpreted base on their interaction term, which is positive. Figure 2 plots the predicted GDP per capita values as the *Degree* variable increases. The overall results from the model confirm the first hypothesis.

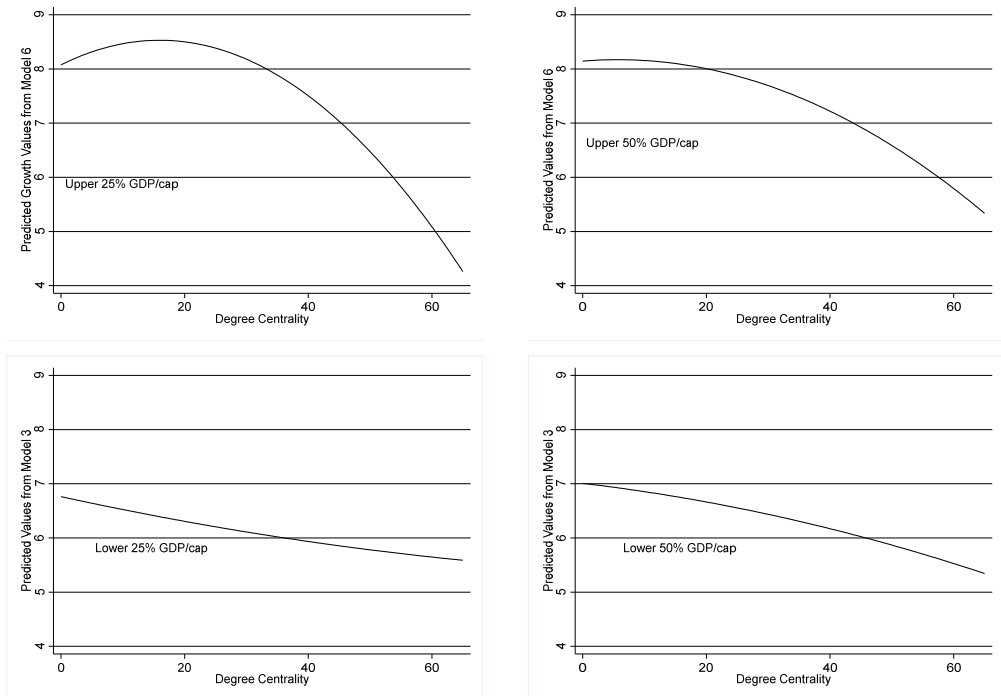
Figure 2. Predicted GDP/cap growth over degree centrality in RIOs



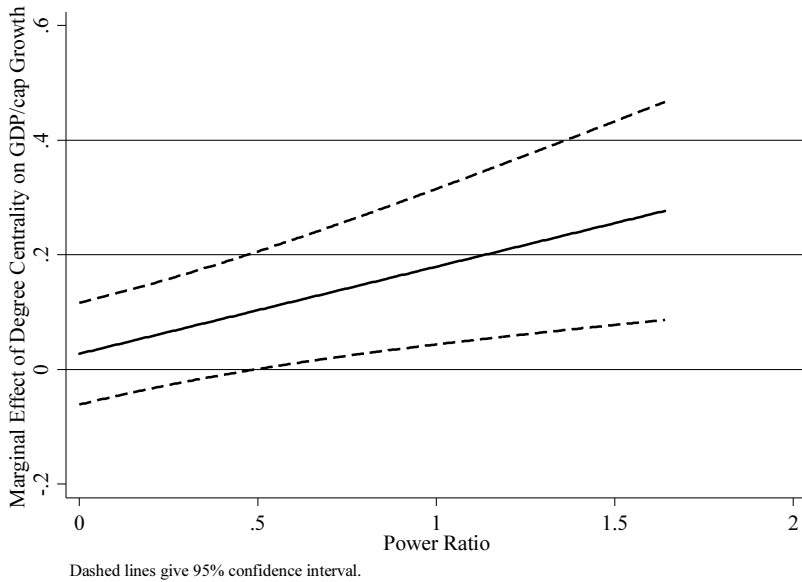
To examine the second hypothesis, we created a set of new dummy variables to see if lesser-developed economies have a stronger negative impact than developed economies. The dummy variables represent four levels of development based on GDP per capita: upper 25%, upper 50%, lower 25%, and lower 50%. The new variables were added to model six (Table 2) with the upper 50% as the omitted variable. Figure 3 plots the predicted GDP per capita growth as *Degree* increases for the four levels. The upper 25% level demonstrates a curve different from the one found Figure 2. Instead of a gradual decline, we see an increase in growth followed by a decrease after a *Degree* value of approximately 25. Among these economies, a certain level of connections (i.e. multiple RIO memberships) does benefit them. The upper 50% group

has a flat effect until we witness a drop after approximately 20. The examination of the lower 25% and 50% group shows an opposite picture: both levels' GDP per capita growth rates decline with increased *Degree*. The results do confirm the second hypothesis: the negative effect on lesser-developed countries is stronger than in more developed countries. This condition holds while controlling for other factors (see model six).

**Figure 3.** Predicted GDP/cap growth over degree centrality in RIOs by development levels



Model six also confirms the third hypothesis. As shown, the sign on interaction term is positive. Figure 4 illustrates the marginal effect *Degree* has on GDP per capita growth as the *Power Ratio* increases. When we have a *Power Ratio* of less than 0.5, the preponderant power's economy has no statistically significant effect. However, as *Power Ratio* increases, we see a positive effect of *Degree* on GDP per capita growth. As the preponderant power's economy increases, the level of *Degree* becomes a positive and not a negative effect on a country's economic growth.

**Figure 4.** Marginal effect of degree centrality on GDP/cap growth at varying power ratios

## VI. Conclusion

The results indicate that the logic of overlapping regional integration is a mixed story regarding economic growth rates. The important flaw in the logic is that all RIOs are equivalent, therefore the  $b/c$  ratios all have equal weights. If we assume that each RIO is not equivalent and that some types of RIOs provide larger  $b/c$  ratios, then greater care is necessary for choosing RIO partners in order to maximize benefits and reduce costs. In addition, these findings add further evidence to the argument that prioritizing openness may not be a magic elixir for development and economic growth (Rodríguez and Rodrik 2000).

Our data allowed for statistical comparison of almost all states in the international system along with their memberships in RIOs. We were also able to measure the depth of integration in these RIOs to explain what effect multiple memberships have on a country's economic performance. Our empirical results support our theoretical arguments. First, joining multiple RIOs tends to decrease economic growth for a member state, not increase it. We theorized that producing inter-twinning memberships entails costs with little benefit for a country's economy. These costs arise from multiple obligations among the various memberships, and increase the deeper (i.e. the more institutionalized) RIOs become. Therefore, by accruing more memberships, and particularly the more institutionalized memberships, states reduce their economic growth.

However, we do not uniformly observe the negative effect. First, the negative effect is stronger



in lesser-developed countries than in developed ones. As we saw, wealthier countries (those in the upper 25%) actually have positive effects when moderately connected to multiple RIOs, producing an inverted U-pattern. The effect of multiple RIO memberships were detrimental to states in the lower 25% and 50% levels. These two groups saw no positive effect with increased *degree* of connections. In addition, the negative effect does not hold when a state is a member of an RIO with a large economic partner. We saw that a membership with a much larger partner converts the negative effect *degree* has on economic growth to a positive one. When such a power is present, it can provide goods to the other members such as access to its larger market for smaller member states, financial support by assuming larger costs, and/or supplying a disproportionate amount of FDI.

Policy implications are similar for developing and developed countries. However, the following recommendations are more imperative for developing countries given their greater need for continuous economic growth and greater vulnerability to the faulty assumptions of the multiple membership logic of RIOs. First, states need to prioritize membership for those RIOs that involve lower cost obligations. Second, we suggest participation in as few RIOs as possible. States need to calculate the cost per RIO and determine affordability. Third, economic benefits are more likely when collaborating within a group that has a preponderant partner, not one that includes similar sized economies. An economic asymmetry will likely promote the creation of public goods that benefits smaller states. RIOs among similar sized poor countries will likely result in sharing poverty, while RIOs with a preponderant power can lead to distribution of relative wealth among all members.

While this take in developing and testing our theory is promising, greater detail is necessary in future research. Theoretically, there may be a need to develop greater specificity regarding the *b/c* ratios for all possible types of RIOs. This would include more precise formulations of the *b/c* ratios for the possible mixtures of market sizes and stages of development. The idea is to demonstrate how member states could maximize benefits with market size and development asymmetry under the assumption of total liberalization at each stage of integration.

## References

- Abdollahian, Mark, Kyungkook Kang, & John Thomas. (2012). Setting the stage: The politics of economic growth. In Jacek Kugler & Ronald L. Tammen (Eds.), *The performance of nations* (pp. 49-74). Lanham, MD: Rowman & Littlefield.
- Barro, Robert. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics*, 106(2), 407-444.
- Beck, Nathaniel, & Jonathan Katz. (1995). What to do (and not to do) with Time-Series-Cross-Section

- Data in Comparative Politics. *American Political Science Review*, 89(3), 634-647.
- Bhagwati, Jagdish. (2002). *Free trade today*. Princeton, NJ: Princeton University Press.
- Blomstrom, Magnus, & Ari Kokko. (1997). *Regional integration and foreign direct investment*. National Bureau of Economic Research.
- Busch, Marc L., & Helen V. Milner. (1994). The future of the international trading system: International firms, regionalism, and domestic politics. In Richard Stubbs & Geoffrey R. D. Underhill (Eds.), *Political economy and the changing global order* (pp. 259-276). New York: St. Martin's Press.
- Destradi, Sandra. (2010). Regional powers and their strategies: Empire, hegemony and leadership. *Review of International Studies*, 36(4), 903-930.
- Efird, Brian, & Gaspare M. Genna. (2002). Structural conditions and the propensity for regional integration. *European Union Politics*, 3(3), 267-295.
- Epstein, Philip, Peter Howlett, & Max-Stephan Schulze. (2003). Distribution dynamics: Stratification, polarization, and convergence among OECD economies, 1870-1992. *Explorations in Economic History*, 40(1), 78-97.
- Flores, Renato. (1997). The gains from MERCOSUR: A general equilibrium, imperfect competition evaluation. *Journal of Policy Modeling*, 19(1), 1-18.
- Frankel, Jeffrey. (1997). *Regional trading blocs in the world economic system*. Washington, DC: Institute for International Economics.
- Genna, Gaspare M. (2010). Economic size and the changing international political economy of trade: The development of western hemispheric FTAs. *International Politics*, 47(6), 638-658.
- Genna, Gaspare M., & Taeko Hiroi. (2004). Power preponderance and domestic politics: Explaining regional economic integration in Latin America and the Caribbean, 1960-1997. *International Interactions*, 30(2), 143-164.
- Ghosn, Faten, Glenn Palmer, & Stuart A. Bremer. (2004). The MID3 Data Set, 1993-2001: Procedures, coding rules, and description. *Conflict Management and Peace Science*, 21(2), 133-154.
- Grossman, Gene M., & Elhanan Helpman. (1991). Trade, knowledge spillovers and growth. *European Economic Review*, 35(2), 517-526.
- Guiso, Luigi, Paola Sapienza, & Luigi Zingales. (2009). Cultural biases in economic exchange. *The Quarterly Journal of Economics*, 124(3), 1095-1131.
- Heckscher, Eli. (1919). The effect of foreign trade on the distribution of income. *Ekonomisk Tidskrift*, 21, 497-512.
- Horn, Henrik, Harald Lang, & Stefan Lundgren. (1995). Managerial effort incentives, X-inefficiency and international trade. *European Economic Review*, 39(1), 117-138.
- Hummels, David. (2007). Transportation costs and international trade in the second era of globalization. *Journal of Economic Perspectives*, 21(3), 131-154.
- Huntington, Samuel. (1996). *The clash of civilizations and the remaking of world order*. New York, NY: Simon & Schuster.
- Jones, Daniel, Stuart Bremer, & J. David Singer. (1996). Militarized interstate disputes, 1816-1992: Rationale, coding rules, and empirical patterns. *Conflict Management and Peace Science*, 15(2), 163-213.
- Krapohl, Sebastian, Katharina L. Meissner, & Johannes Muntschick. (2014). Regional powers as leaders

- or Rambos? The ambivalent behaviour of Brazil and South Africa in regional economic integration. *Journal of Common Market Studies*, 52(4), 879-895.
- Leblang, David. (1997). Political capacity and economic growth. In Marina Arbetman & Jacek Kugler (Eds.), *Political capacity and economic behavior*. Boulder, CO: Westview Press.
- Levine, Ross, & David Renelt. (1992). A sensitivity analysis of cross-country growth regressions. *American Economic Review*, 82(4), 942-963.
- Mansfield, Edward D., & Helen V. Milner. (1999). The new wave of regionalism. *International Organization*, 53(3), 589-627.
- Marshall, Monty G., & Keith Jagers. (2010). Polity IV project. Retrieved from <http://www.bsos.umd.edu/ci-dcm/inscr/polity>
- Mengistu, Muhabie M. (2015). Multiplicity of African regional economic communities and overlapping memberships: A challenge for African integration. *International Journal of Economics, Finance and Management Sciences*, 3(5), 417-425.
- Milner, Helen V. (1997). Industries, governments, and the creation of regional trade blocs. In Edward D. Mansfield & Helen V. Milner (Eds.), *The political economy of regionalism*. New York: Columbia University Press.
- Neary, J. Peter. (2001). Of hype and hyperbolas: Introducing the new economic geography. *Journal of Economic Literature*, 39(2), 536-561.
- O'Rourke, Kevin H., & Jeffrey G. Williamson. (1999). *Globalization and history*. Cambridge, MA: MIT Press.
- Ohlin, Bertil. (1933). *Interregional and international trade*. Cambridge: Harvard University Press.
- Rauch, James E. (1999). Network versus markets in international trade. *Journal of International Economics*, 48(1), 7-35.
- Rodríguez, Francisco, & Dani Rodrik. (2000). Trade policy and economic growth: A Skeptic's guide to the cross-national evidence. *NBER Macroeconomics Annual*, 15, 261-325.
- Rodrik, Dani. (1988). Imperfect competition, scale of economies, and trade policy in developing countries. In *Trade Policy Issues and Empirical Analysis*. National Bureau of Economic Research Conference Report Series. Chicago: University of Chicago Press.
- Sally, Razeen. (2006). Free trade agreements and the prospects for regional integration in east asia. *Asian Economic Policy Review*, 1(2), 306-321.
- Schiff, Maurice, & L. Alan Winters. (2003). *Regional integration and development*. Washington, DC: The World Bank.
- Shiozawa, Yoshinori. (2007). A new construction of Ricardian trade theory—A many-country, many-commodity case with intermediate goods and choice of production techniques. *Evolutionary and Institutional Economics Review*, 3(2), 141-187.
- Soros, George. (1998). *The crisis of global capitalism: Open society endangered*. New York: Public Affairs.
- te Velde, Dirk W. (2011). Regional integration, growth and convergence. *Journal of Economic Integration*, 26(1), 1-28.
- Vamvakidis, Athanasios. (1998). Regional integration and economic growth. *The World Bank Economic Review*, 12(2), 251-270.
- World Bank. (2005). *World development indicators on CD-ROM*. Washington, DC: IBRD, World Bank.

## Appendix

**Table A1.** *List of Countries and Their Regional Integration Organization Memberships*

Country	Regional Integration Organization	Years
United States	Dominican Republic-Central American Free Trade Agreement	2004-present
	Asia-Pacific Economic Cooperation	1989-present
	North America Free Trade Agreement	1989-present
Canada	Asia-Pacific Economic Cooperation	1989-present
	North America Free Trade Agreement	1989-present
Bahamas	Caribbean Community	1965-present
Cuba	Latin American Free Trade Association/Latin American Integration Association	1999-present
Haiti	Caribbean Community	1998-present
Dominican Republic	Dominican Republic-Central American Free Trade Agreement	2004-present
Jamaica	Caribbean Community	1965-present
Trinidad and Tobago	Caribbean Community	1965-present
Barbados	Caribbean Community	1965-present
Dominica	Caribbean Community	1965-present
Grenada	Caribbean Community	1965-present
Saint Lucia	Caribbean Community	1965-present
Saint Vincent and the Grenadines	Caribbean Community	1965-present
Antigua and Barbuda	Caribbean Community	1965-present
Saint Kitts and Nevis	Caribbean Community	1965-present
Mexico	Asia-Pacific Economic Cooperation	1996-present
	North America Free Trade Agreement	1994-present
	Latin American Free Trade Association/Latin American Integration Association	1960-present
Belize	Caribbean Community	1965-present
Guatemala	Central American Common Market/Central American Integration System	1960-1969, 1990-present
	Dominican Republic-Central American Free Trade Agreement	2004-present
Honduras	Central American Common Market/Central American Integration System	1960-1969, 1990-present
	Dominican Republic-Central American Free Trade Agreement	2004-present
El Salvador	Central American Common Market/Central American Integration System	1960-1969, 1990-present
	Dominican Republic-Central American Free Trade Agreement	2004-present
Nicaragua	Central American Common Market/Central American Integration System	1960-1969, 1990-present
	Dominican Republic-Central American Free Trade Agreement	2004-present
Costa Rica	Central American Common Market/Central American Integration System	1960-1969, 1990-present
	Dominican Republic-Central American Free Trade Agreement	2004-present
Panama	Central American Common Market/Central American Integration System	1992-present

Table A1. *Continued*

Country	Regional Integration Organization	Years
Colombia	Andean Common Market	1969-present
	Latin American Free Trade Association/Latin American Integration Association	1970-present
Venezuela, Bolivarian Republic of	Andean Common Market	1973-2006
	Latin American Free Trade Association/Latin American Integration Association	1970-present
	Southern Cone Common Market	2012-2016
Guyana	Caribbean Community	1965-present
Suriname	Caribbean Community	1996-present
Ecuador	Andean Common Market	1969-1992, 1993-present
	Latin American Free Trade Association/Latin American Integration Association	1970-present
Peru	Andean Common Market	1969-1992, 1993-present
	Latin American Free Trade Association/Latin American Integration Association	1960-present
	Asia-Pacific Economic Cooperation	1998-present
Brazil	Southern Cone Common Market	1991-present
	Latin American Free Trade Association/Latin American Integration Association	1960-present
Bolivia	Andean Common Market	1969-1981, 1992-present
	Southern Cone Common Market (Free Trade Agreement member only)	1997-present
	Latin American Free Trade Association/Latin American Integration Association	1970-present
Paraguay	Southern Cone Common Market	1991-present
	Latin American Free Trade Association/Latin American Integration Association	1960-present
Chile	Andean Common Market	1969-1976
	Asia-Pacific Economic Cooperation	1994-present
	Southern Cone Common Market (Free Trade Agreement member only)	1997-present
	Latin American Free Trade Association/Latin American Integration Association	1960-present
Argentina	Southern Cone Common Market	1991-present
	Latin American Free Trade Association/Latin American Integration Association	1960-present
Uruguay	Southern Cone Common Market	1991-present
	Latin American Free Trade Association/Latin American Integration Association	1960-present
United Kingdom	European Free Trade Association	1960-1973
	European Union	1973-2020
Ireland	European Union	1973-present
Netherlands	European Union	1952-present
Belgium	European Union	1952-present

Table A1. *Continued*

Country	Regional Integration Organization	Years
Luxembourg	European Union	1952-present
France	European Union	1952-present
Monaco	Not a member of any regional integration organization	-
Liechtenstein	European Free Trade Association	1991-present
Switzerland	European Free Trade Association	1960-present
Spain	European Union	1986-present
Andorra	Not a member of any regional integration organization	-
Portugal	European Free Trade Association	1960-1986
	European Union	1986-present
Germany (Democratic Republic)	Not a member of any regional integration organization	-
Germany (Federal Republic)	European Union	1952-present
Poland	European Union	2004-present
Austria	European Free Trade Association	1960-1994
	European Union	1995-present
Hungary	European Union	2004-present
Czechoslovakia	Not a member of any regional integration organization	-
Czech Republic	European Union	2004-present
Slovakia	European Union	2004-present
Italy	European Union	1952-present
San Marino	Not a member of any regional integration organization	-
Malta	European Union	2004-present
Albania	Not a member of any regional integration organization	-
Montenegro	Not a member of any regional integration organization	-
Macedonia, North	Not a member of any regional integration organization	-
Croatia	European Union	2013-present
Serbia	Not a member of any regional integration organization	-
Bosnia and Herzegovina	Not a member of any regional integration organization	-
Slovenia	European Union	2004-present
Greece	European Union	1981-present
Cyprus	European Union	2004-present
Bulgaria	European Union	2007-present
Moldova, Republic of	Commonwealth of Independent States	1991-present
	Georgia-Ukraine-(Uzbekistan)-Azerbaijan-Moldova Agreement	1999-present
Romania	European Union	2007-present
Russian Federation	Asia-Pacific Economic Cooperation	1998-present
	Commonwealth of Independent States	1991-present
	Single Economic Space	2003-present
	Eurasian Economic Community	1996-present
	Central Asian Cooperation Organization	2004-present
	Sanghai Cooperation Organization	1996-present
Estonia	European Union	2004-present
Latvia	European Union	2004-present

Table A1. *Continued*

Country	Regional Integration Organization	Years
Lithuania	European Union	2004-present
Ukraine	Commonwealth of Independent States	1994-2018
	Single Economic Space	2003-2018
	Georgia-Ukraine-(Uzbekistan)-Azerbaijan-Moldova Agreement	1997-present
Belarus	Commonwealth of Independent States	1991-present
	Single Economic Space	2003-present
	Eurasian Economic Community	1996-present
Armenia	Commonwealth of Independent States	1991-present
Georgia	Commonwealth of Independent States	1993-present
	Georgia-Ukraine-(Uzbekistan)-Azerbaijan-Moldova Agreement	1997-present
Azerbaijan	Commonwealth of Independent States	1993-present
	Georgia-Ukraine-(Uzbekistan)-Azerbaijan-Moldova Agreement	1997-present
	Economic Cooperation Organization	1992-present
Finland	European Free Trade Association	1986-1995
	European Union	1995-present
Sweden	European Free Trade Association	1986-1995
	European Union	1995-present
Norway	European Free Trade Association	1960-present
Denmark	European Free Trade Association	1960-1973
	European Union	1973-present
Iceland	European Free Trade Association	1970-present
Cabo Verde	Not a member of any regional integration organization	-
Sao Tome and Principe	African Union	1975-present
Guinea-Bissau	Economic Community of West African States	1976-present
	Community of Sahelo-Saharan States	2004-present
	The Franc Zone	1959-present
	West African Economic and Monetary Union	1994-present
	African Union	1973-present
Equatorial Guinea	Economic and Monetary Community of Central Africa	1985-present
	Central African Customs and Economic Union	1966-1985; 1996-present
	The Franc Zone	1959-present
	African Union	1968-present
Gambia	Community of Sahelo-Saharan States	2000-present
	African Union	1964-present
	Economic Community of West African States	1976-present
Mali	The Franc Zone	1959-present
	West African Economic and Monetary Union	1994-present
	African Union	1963-present
	Community of Sahelo-Saharan States	1998-present

**Table A1.** *Continued*

Country	Regional Integration Organization	Years
Senegal	Community of Sahelo-Saharan States	2000-present
	The Franc Zone	1959-present
	West African Economic and Monetary Union	1994-present
	African Union	1963-present
	Economic Community of West African States	1976-present
Benin	Community of Sahelo-Saharan States	2002-present
	The Franc Zone	1959-present
	West African Economic and Monetary Union	1994-present
	African Union	1963-present
	Economic Community of West African States	1976-present
Mauritania	League of Arab States	1973-present
	African Union	1963-2008
	Economic Community of West African States	1976-2000
	Arab Maghreb Union	1989-present
Niger	African Union	1963-2010
	Economic Community of West African States	1976-present
	Community of Sahelo-Saharan States	1998-present
	The Franc Zone	1959-present
	West African Economic and Monetary Union	1994-present
Côte d'Ivoire	African Union	1963-present
	Economic Community of West African States	1976-present
Guinea	Economic Community of West African States	1976-present
	African Union	1963-2008
Burkina Faso	Economic Community of West African States	1976-present
	Community of Sahelo-Saharan States	1998-present
	The Franc Zone	1959-present
	West African Economic and Monetary Union	1994-present
	African Union	1963-present
Liberia	Community of Sahelo-Saharan States	2004-present
	African Union	1963-present
	Economic Community of West African States	1976-present
Sierra Leone	African Union	1963-present
	Economic Community of West African States	1976-present
Ghana	Community of Sahelo-Saharan States	2004-present
	African Union	1963-present
	Economic Community of West African States	1976-present
Togo	The Franc Zone	1959-present
	West African Economic and Monetary Union	1994-present
	African Union	1963-present
	Economic Community of West African States	1976-present



**Table A1.** *Continued*

Country	Regional Integration Organization	Years
Cameroon	Economic Community of Central African States	1985-present
	The Franc Zone	1959-present
	African Union	1963-present
Nigeria	African Union	1963-present
	Economic Community of West African States	1976-present
	Community of Sahelo-Saharan States	2001-present
Gabon	Economic Community of Central African States	1985-present
	The Franc Zone	1959-present
	African Union	1963-present
	Central African Customs and Economic Union	1966-1985; 1996-present
Central African Republic	Community of Sahelo-Saharan States	1999-present
	Economic Community of Central African States	1985-present
	The Franc Zone	1959-present
	African Union	1963-present
	Central African Customs and Economic Union	1966-1985; 1996-present
Chad	Economic Community of Central African States	1985-present
	The Franc Zone	1959-present
	African Union	1963-present
	Central African Customs and Economic Union	1966-1985; 1996-present
Congo	Central African Customs and Economic Union	1966-1985; 1996-present
	Economic Community of Central African States	1985-present
	The Franc Zone	1959-present
	African Union	1963-present
Congo, the Democratic Republic of the	Economic Community of Central African States	1985-present
	Economic Community of the Great Lakes Countries	1978-1984
	Southern African Development Community (1993)	1998-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	1981-present
Uganda	East African Community	1967-1977; 2001-present
	Intergovernmental Authority on Development	1996-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	1995-present
Kenya	East African Community	1967-1977; 2001-present
	Intergovernmental Authority on Development	1996-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	1981-present

**Table A1.** *Continued*

Country	Regional Integration Organization	Years
Tanzania, United Republic of	Common Market for Eastern and Southern Africa	1981-2000
	East African Community	1967-1977; 2001-present
	Southern African Development Community	1980-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	African Union	1963-present
Zanzibar	Not a member of any regional integration organization	-
Burundi	Economic Community of Central African States	1985-present
	Economic Community of the Great Lakes Countries	1978-1984
	East African Community	2007-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	1981-present
Rwanda	Economic Community of Central African States	1985-present
	Economic Community of the Great Lakes Countries	1978-1984
	East African Community	2007-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	1981-present
Somalia	Community of Sahelo-Saharan States	2001-present
	Intergovernmental Authority on Development	1996-present
	League of Arab States	1974-present
	African Union	1963-present
Djibouti	League of Arab States	1977-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	1981-present
	Community of Sahelo-Saharan States	2000-present
	Intergovernmental Authority on Development	1996-present
Ethiopia	African Union	1963-present
	Common Market for Eastern and Southern Africa	1981-present
	Intergovernmental Authority on Development	1996-present
Eritrea	Common Market for Eastern and Southern Africa	1994-present
	Community of Sahelo-Saharan States	1999-present
	Intergovernmental Authority on Development	1996-present
	African Union	1963-present
Angola	Southern African Development Community	1980-present
	African Union	1975-present
	Common Market for Eastern and Southern Africa	1981-present
	Economic Community of Central African States	1999-present
Mozambique	African Union	1975-present
	Common Market for Eastern and Southern Africa	1981-1996
	Southern African Development Community	1980-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present

**Table A1.** *Continued*

Country	Regional Integration Organization	Years
Zambia	Common Market for Eastern and Southern Africa	1995-present
	Southern African Development Community	1980-present
	African Union	1964-present
Zimbabwe	Southern African Development Community	1980-present
	African Union	1980-present
	Common Market for Eastern and Southern Africa	1995-present
Malawi	Common Market for Eastern and Southern Africa	1981-present
	Southern African Development Community	1980-present
	African Union	1964-present
South Africa	African Union	1994-present
	Southern African Customs Union	1975-present
	Southern African Development Community	1994-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
Namibia	Southern African Development Community	1992-present
	African Union	1990-present
	Southern African Customs Union	1990-present
Lesotho	African Union	1966-present
	Southern African Customs Union	1975-present
	Common Market for Eastern and Southern Africa	1981-1996
	Southern African Development Community	1980-present
Botswana	Southern African Development Community	1980-present
	African Union	1966-present
	Southern African Customs Union	1975-present
Swaziland	African Union	1968-present
	Southern African Customs Union	1975-present
	Common Market for Eastern and Southern Africa	1981-present
	Southern African Development Community	1980-present
Madagascar	Common Market for Eastern and Southern Africa	1981-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	African Union	1963-2009
Comoros	League of Arab States	1993-present
	Common Market for Eastern and Southern Africa	1981-present
	African Union	1975-present
Mauritius	Common Market for Eastern and Southern Africa	1981-present
	Southern African Development Community	1994-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	African Union	1968-present
Seychelles	Common Market for Eastern and Southern Africa	1981-present
	Southern African Development Community	1998-present
	African Union	1976-present

Table A1. *Continued*

Country	Regional Integration Organization	Years
Morocco	Arab Maghreb Union	1989-present
	Community of Sahelo-Saharan States	2001-present
	League of Arab States	1958-present
	African Union	1963-1985
Algeria	League of Arab States	1962-present
	African Union	1963-present
	Arab Maghreb Union	1989-present
Tunisia	African Union	1963-present
	Arab Maghreb Union	1989-present
	Community of Sahelo-Saharan States	1998-present
	League of Arab States	1958-present
Libya	League of Arab States	1953-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	2004-present
	Arab Maghreb Union	1989-present
Sudan	Community of Sahelo-Saharan States	1998-present
	Intergovernmental Authority on Development	1996-present
	League of Arab States	1956-present
	African Union	1963-present
	Common Market for Eastern and Southern Africa	1981-present
South Sudan	Not a member of any regional integration organization	-
Iran, Islamic Republic of	Economic Cooperation Organization	1985-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
Turkey	Economic Cooperation Organization	1985-present
Iraq	League of Arab States	1945-present
Egypt	African Union	1963-present
	Common Market for Eastern and Southern Africa	1999-present
	Community of Sahelo-Saharan States	1998-present
	League of Arab States	1945-present
Syrian Arab Republic	League of Arab States	1945-2011, 2014-present
Lebanon	League of Arab States	1945-present
Jordan	League of Arab States	1945-present
Israel	Not a member of any regional integration organization	-
Saudi Arabia	League of Arab States	1945-present
	Gulf Cooperation Council	1981-present
Yemen	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	League of Arab States	1945-present
Kuwait	League of Arab States	1961-present
	Gulf Cooperation Council	1981-present
Bahrain	Gulf Cooperation Council	1981-present
	League of Arab States	1971-present

Table A1. *Continued*

Country	Regional Integration Organization	Years
Qatar	League of Arab States	1971-present
	Gulf Cooperation Council	1981-present
United Arab Emirates	Gulf Cooperation Council	1981-present
Oman	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	League of Arab States	1971-present
	Gulf Cooperation Council	1981-present
Afghanistan	South Asian Association for Regional Cooperation	2007-present
	Economic Cooperation Organization	1992-present
Turkmenistan	Commonwealth of Independent States	1991-2005
	Economic Cooperation Organization	1992-present
Tajikistan	Shanghai Cooperation Organization	1996-present
	Commonwealth of Independent States	1991-present
	Eurasian Economic Community	1999-present
	Central Asian Cooperation Organization	1998-present
	Economic Cooperation Organization	1992-present
Kyrgyzstan	Eurasian Economic Community	1996-present
	Central Asian Cooperation Organization	1995-present
	Economic Cooperation Organization	1992-present
	Shanghai Cooperation Organization	1996-present
	Commonwealth of Independent States	1991-present
Uzbekistan	Commonwealth of Independent States	1991-present
	Eurasian Economic Community	2006-present
	Central Asian Cooperation Organization	1995-present
	Georgia-Ukraine-(Uzbekistan)-Azerbaijan-Moldova Agreement	1999-2005
	Economic Cooperation Organization	1992-present
Kazakhstan	Shanghai Cooperation Organization	2001-present
	Single Economic Space	2003-present
	Eurasian Economic Community	1996-present
	Central Asian Cooperation Organization	1995-present
	Economic Cooperation Organization	1992-present
	Shanghai Cooperation Organization	1996-present
China	Commonwealth of Independent States	1991-present
	Shanghai Cooperation Organization	1996-present
	Asia Pacific Trade Agreement	2001-present
	Asia-Pacific Economic Cooperation	1991-present
Mongolia	East Asian Economic Caucus	1990-present
	Not a member of any regional integration organization	-
Taiwan, Province of China	Asia-Pacific Economic Cooperation	1991-present
	East Asian Economic Caucus	1990-present
Korea, Democratic People's Republic of	Not a member of any regional integration organization	-

Table A1. *Continued*

Country	Regional Integration Organization	Years
Korea, Republic of	East Asian Economic Caucus	1990-present
	Asia Pacific Trade Agreement	1975-present
	Asia-Pacific Economic Cooperation	1989-present
Japan	Asia-Pacific Economic Cooperation	1989-present
	East Asian Economic Caucus	1990-present
India	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	1998-present
	South Asian Association for Regional Cooperation	1985-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	Asia Pacific Trade Agreement	1975-present
Bhutan	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	2004-present
	South Asian Association for Regional Cooperation	1985-present
Pakistan	South Asian Association for Regional Cooperation	1985-present
	Economic Cooperation Organization	1985-present
Bangladesh	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	Asia Pacific Trade Agreement	1975-present
	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	1998-present
Myanmar	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	1998-present
	Association of Southeast Asian Nations	1998-present
Sri Lanka	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	1998-present
	South Asian Association for Regional Cooperation	1985-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	Asia Pacific Trade Agreement	1975-present
Maldives	South Asian Association for Regional Cooperation	1985-present
Nepal	South Asian Association for Regional Cooperation	1985-present
Thailand	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	2004-present
Cambodia	Association of Southeast Asian Nations	2000-present
Lao People's Democratic Republic	Association of Southeast Asian Nations	1998-present
	Asia Pacific Trade Agreement	1975-present
Viet Nam	Association of Southeast Asian Nations	1996-present
	Asia-Pacific Economic Cooperation	1998-present
Malaysia	Asia-Pacific Economic Cooperation	1998-present
	Association of Southeast Asian Nations	1968-present
	East Asian Economic Caucus	1990-present
Singapore	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	Asia-Pacific Economic Cooperation	1998-present
	Association of Southeast Asian Nations	1968-present
	East Asian Economic Caucus	1990-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present

**Table A1.** *Continued*

Country	Regional Integration Organization	Years
Brunei Darussalam	Asia-Pacific Economic Cooperation	1998-present
	Association of Southeast Asian Nations	1985-present
	East Asian Economic Caucus	1990-present
Philippines	Asia-Pacific Economic Cooperation	1989-present
	Association of Southeast Asian Nations	1968-present
	East Asian Economic Caucus	1990-present
Indonesia	Association of Southeast Asian Nations	1968-present
	East Asian Economic Caucus	1990-present
	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	Asia-Pacific Economic Cooperation	1998-present
Timor-Leste	Not a member of any regional integration organization	-
Australia	The Indian Ocean Rim Association for Regional Cooperation	1997-present
	Pacific Islands Forum	1971-present
	Australia-New Zealand Closer Economic Relations Trade Agreement	1983-present
	Asia-Pacific Economic Cooperation	1998-present
Papua New Guinea	Pacific Islands Forum	1971-present
	Asia-Pacific Economic Cooperation	1993-present
New Zealand	Australia-New Zealand Closer Economic Relations Trade Agreement	1983-present
	Asia-Pacific Economic Cooperation	1989-present
	Pacific Islands Forum	1971-present
Vanuatu	Pacific Islands Forum	1971-present
Solomon Islands	Pacific Islands Forum	1971-present
Kiribati	Pacific Islands Forum	1971-present
Tuvalu	Pacific Islands Forum	1971-present
Fiji	Pacific Islands Forum	1971-2009
Tonga	Pacific Islands Forum	1971-present
Nauru	Pacific Islands Forum	1971-present
Marshall Islands	Pacific Islands Forum	1971-present
Palau	Pacific Islands Forum	1971-present
Micronesia, Federated States of	Pacific Islands Forum	1971-present
Samoa	Pacific Islands Forum	1971-present

**Table A2.** *Integration Achievement Score (Coding System)*


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1. Trade in Goods and Services
0 = No agreements made to lower tariffs and non-tariff barriers
1 = Preferential Trade Agreement
2 = Partial Free Trade Area
3 = Full Free Trade Area
4 = Customs Union
5 = No barriers among member countries

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2. Degree of Capital Mobility
0 = No agreements made to promote capital mobility
1 = Foreign Direct Investment allowed in limited form
2 = Capital withdrawal allowed
3 = Full access for foreign investment and capital withdrawal, except for national government procurement
4 = Full capital mobility expect for large scale merges and acquisitions
5 = Full capital mobility without restriction

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3. Degree of Labor Mobility
0 = No agreements made to promote labor mobility
1 = Right of movement granted for select professions
2 = Full right of movement
3 = Transferability of professional qualifications granted
4 = Transferability of pensions and other retirement devices
5 = Full freedom of movement

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4. Level of Supranational Institution Importance
0 = No supranational institutions
1 = Establishment of nominal institutions
2 = Information gathering and advisory role
3 = Ability for institutions to amend proposals
4 = Ability for institutions to veto proposals
5 = Supranational institutions operate as primary decision node

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5. Degree of Monetary Policy Coordination
0 = No monetary policy coordination
1 = Consultation regarding policy
2 = Commitment to maintain parity
3 = Coordinated interventions
4 = Regional Central Bank establishment
5 = Single currency

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6. Degree of Fiscal Policy Coordination
0 = No fiscal policy coordination
1 = Consultation regarding policy
2 = Commitments regarding deficit spending and taxation
3 = Sanctions regarding breaking commitments
4 = Uniform tax code
5 = Single budget

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**Table A3.** *Summary Statistics for Variables used in Table 1*

Variable	Observations	Mean	SD	Minimum	Maximum
GDP/capita change	5,958	7.19	15.47	-75.82	22.66
Degree	5,958	21.0	20.10	0	65
Degree Squared	5,958	857.7	1196.3	0	4225
Power Ratio	5,905	0.306	0.251	0	1.641
Power Ratio x Degree	5,905	7.29	8.403	0	85.32
Democracy Dummy	5,958	0.535	0.499	0	1
School Enrollment/capita	5,958	1875.8	644.0	110	5393
Revolutions	5,958	0.166	0.489	0	9
Fatal MIDS	5,958	0.058	0.262	0	4
Coups	5,958	0.040	0.197	0	1
Middle East	5,958	0.119	0.323	0	1
Africa	5,958	0.265	0.441	0	1
Asia	5,958	0.178	0.383	0	1
North America	5,958	0.024	0.152	0	1
South America	5,958	0.210	0.407	0	1
Europe	5,958	0.194	0.395	0	1