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On the Economics of Regional Powers: Comparing China, India, Brazil, and South Africa

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Abstract

As the conception of and debates on regional powers have been led by political science, this paper aims to contribute to the discussion from an economics perspective. Based on the discussion of different concepts of economic power—such as those of Schumpeter, Perroux, Predöhl, or Kindleberger—concepts of technological leadership, and the global value chain approaches, the paper develops a research framework for the economics of regional powers. This framework is then tested using descriptive statistics as well as regressions analysis, with a focus on the four regional powers Brazil, China, India, and South Africa. As economic power is relational, the relationship of regional powers to other nations in the region is analyzed.

According to the findings, only limited statements on the economics of regional powers are possible: a regional power can be described as an economy with a relatively large population and land area which plays a dominant role in trade within the region and in the regional governance. The regional power develops its technological capacities, and its businesses act regionally and globally with increasing strength.

Keywords: Brazil, China, economic geography, economic leadership, economic power, growth, India, investment, public goods, regional powers, regression analysis, South Africa, technological change, value chain, trade.

JEL Code: A12, B1, B29, C01, F14, F15, F23, F59

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Zusammenfassung

Zur Ökonomie regionaler Mächte:
Ein Vergleich zwischen China, Indien, Brasilien und Südafrika

Während Konzeption und Debatte über *regional powers* maßgeblich von politikwissenschaftlicher Forschung geprägt sind, leistet das Working Paper einen Beitrag zur Theorie der *regional powers* aus wirtschaftswissenschaftlicher Perspektive. Ausgehend von der Diskussion unterschiedlicher Konzepte wirtschaftlicher Macht (beispielsweise von Schumpeter, Perroux, Predöhl und Kindleberger), Konzepten zu technologischer Führerschaft und der Forschung über globale Wertschöpfungsketten wird ein Forschungsrahmen für die wirtschaftswissenschaftliche Analyse der *regional powers* entwickelt, der im Folgenden durch beschreibende Statistik und Regressionsanalyse an den Beispielländern Brasilien, China, Indien und Südafrika getestet wird. Da wirtschaftliche Macht ein relationales Konzept ist, wird die Beziehung der *regional powers* zu anderen Ländern der jeweiligen Region untersucht. Anhand der Ergebnisse sind begrenzte Aussagen über die Ökonomie der *regional powers* möglich: Eine *regional power* kann demnach als eine Volkswirtschaft mit verhältnismäßig großer Bevölkerung und Landfläche beschrieben werden, die eine dominante Rolle im Handel der Region und der regionalen *governance*-Struktur einnimmt. Die *regional power* entwickelt ihre technologischen Fähigkeiten weiter und ihre Unternehmungen agieren mit zunehmender Stärke sowohl auf regionalem als auch auf globalem Niveau.

On the Economics of Regional Powers: Comparing China, India, Brazil, and South Africa

Robert Kappel

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1 Introduction

What is a regional power? Is the United States of America a regional power? Is Germany a regional power? Can a country like Nigeria be a regional power? How far does the power of regional powers reach? How can one measure the political and economic power of regional powers?[1] What is a region? I define regions as geographical, economic, and political entities that have come into being over time and which are viewed in very different ways (Godehardt and Nabers forthcoming 2011). I assume that regions can be distinguished, from an economics perspective, by regional integration agreements; that is, there exist customs unions, free trade zones, or even joint markets and political integration. In this contribution, I use the term region in a more narrow sense: as economic and political cooperation and inte-

[1] I would like to thank Joachim Betz, Nadine Godehardt, Dirk Nabers, Detlef Nolte and Cordula Tibi Weber for their helpful comments on previous versions of this paper. Thanks also go to Toman Omar Mahmoud for the construction of the regression analyses.

gration. For the paper's empirical analysis, however, the term is interpreted in another way: as the continent where the particular power acts. More precise classifications may be necessary, but these are not pursued here (Breslin 2008; Mittelman 1996). Data on the following regional powers is included in this paper, but only the first four are discussed: Brazil, China, India, South Africa, Egypt, Indonesia, Iran, Mexico and Nigeria. They are situated in the following regions: Asia and the Pacific, Latin America and the Caribbean, the Middle East and North Africa, sub-Saharan Africa.

2 The Rise and Fall of Nations

Brazil, China, India, and South Africa have ascended to the position of important actors in global politics and the global economy. They are *regional powers* (Nolte 2010; Flemes 2010b; Nabers 2010a, 2010b; Hurrell 2007). China and India, the "Asian Drivers of Global Change," have a considerable influence on the global economy and global politics (Hsieh and Klenow 2009; Kaplinsky and Messner 2008). Due to its high level of growth, its foreign and foreign economic policy, and its integration politics in Latin America, Brazil is gaining increasing influence (Flemes 2010a; Valladão 2006). South Africa—a much smaller nation—is important in Southern Africa in terms of the formation of the security architecture, the integration of the Southern African Development Community (SADC), and the monetary integration in the Southern African Customs Union (SACU). Brazil, China, and India participate in the development of technical and economic norms and standards, in international security, in missions in conflict regions, in climate and energy politics, and in issues related to currency and the global economy. They also have an increasing influence within international organizations (WTO, WHO, UN).

The political science discourse is most advanced in terms of the conception of regional powers, the variety of approaches, and the methods; the economic criteria have not, however, been adequately explained.[2] The extent to which *economic power* is a necessary condition for holding the role of regional power remains unclear in the academic discussion. Which factors, then, enable a state to become a regional power, also in economic terms? In order to address the research gaps in this area, this paper deals with the following conceptual questions:

[2] Nolte's political science approach identifies the fundamental criteria; Nolte also identifies the indicator "share of regional GDP," but says it is an inadequate indicator for the definition of regional power (Nolte 2006, 2010). On the importance of geopolitics, see Karoline Postel-Vinay (2001, 2007). Many realists, such as Mearsheimer (2001), evaluate power primarily in terms of military power (offensive realism). This is supplemented by including GDP (economic power and population). Other authors choose economic power, human capital, and technological level as economic indicators. Ikenberry, Mustanduno and Wohlfort (2009) also draw upon economic and technological criteria as central (high-tech production, R&D expenditures, distribution of Internet servers); Nabers (2010a) describes leadership as "discursive hegemony." See Nabers 2010a, 2010b; Nolte 2010; Flemes and Lemke 2010; Hurrell 2007, 2010. Prys adds to the discussion using the term "regional hegemony," Prys 2008.

a) What relevance do the economies of regional powers have for these powers' global political ascent and regional influence? That is, what characterizes the economics of regional powers? There are only a few economics studies on this topic. K.W. Rothschild (1971: 7) writes, "Yet if we look at the main run of economic theory over the past hundred years we find that it is characterized by a strange lack of power considerations."
b) Because economic power is relational, the relationship of regional powers to other nation-states in the region should be analyzed. Are they cooperation partners? Are they competitors? Do they form a counterpole? Are they followers or free riders?
c) Which economic criteria should reasonably be drawn upon in the operationalization of regional powers' economics? What role do the size of the country (and thus the greater raw materials stockpiles in larger countries), the growth rate of the GDP or industrial production, technology or money, currency, and norm-setting play? Of what importance are "public goods"?[3]
d) How can the concept of regional powers in a networked world be conceptualized? I understand a networked world not only as one where the interchange between businesses and nations becomes stronger (for example, due to sinking transport costs and due to integration through cross-border direct investment), but also as one where transnational networks of various actors interact and develop mutual dependencies, and through their actions create norms and standards. Regional powers are also integrated into this networked world. States' room to maneuver is limited due to international organizations and *global governance*, but at the same time states also influence both of these. This interconnectedness raises the conceptual question of how the denationalization that has resulted from globalization and transnationalization can be reconciled with the simultaneous increase in the economic and political importance of regional powers (Jakobeit, Kappel, Mückenberger 2010; Subacchi 2008).

In sum, the core questions of this paper is: What contribution can the economics of regional powers make to regional powers theory.

In the following discussion, this paper will consider the discourse on the economics of regional powers and, starting from here, will conceptually investigate the above questions in order to enhance and ultimately empirically test the concept of regional powers. In this contribution I do not refer to the concepts of the BRIC nations (Brazil, Russia, India, China), "rising powers," or "emerging powers" (Wilson and Purushothaman 2003; Nolte 2006; Sgard 2008; Gaulier, Lemoine and Ünal 2009). All those studies which do so already address the shifting of economic and political power relations. In Section 3 I provide an overview of the economic discourses on the role of regional powers' influence on countries in the region. In

[3] Perkins and Syrquin (1988) identify population size as a *sine qua non* for the power status of a great power which realizes endogenous growth (physical capital, human capital and technology). Lemke (2010: 34) hypothesizes that the greater the share of capabilities held by a regional power, the more likely it is that the nation is a privileged actor (military power and economic power). See "power transition theory," Tammen et al. 2000.

Section 4 I develop a proposal for a concept regarding the economics of regional powers. This discussion is based on the review and evaluation of data, and this section summarizes the empirical results. The concluding Section 5 presents the findings on the economics of regional powers and their contribution to the existing discourse on regional powers.

3 Economic Discourse Regarding the Role of Regional Powers' Influence on Countries in the Region

As early as the nineteenth and early twentieth centuries there were economic works on the dominance of developed nation-states, which shaped the development of less developed states, such as *Friedrich List's* theory on British supremacy in Europe and in the world (List 1959). Leadership in the economic process of modern capitalism has also been analyzed by *Alois Schumpeter*. He focuses on technological revolutions and their diffusion. Entrepreneurs bring together a bundle of incremental and fundamental innovations, implement new combinations and trigger a §creative destruction" that generates growth. Innovation encompasses the following: (1) the creation of a new good or new quality of good, (2) the creation of a new method of production, (3) the opening of a new market, (4) the capture of a new source of supply, and (5) a new organization of industry (for example, the creation or destruction of a monopoly). Countries with the will to win dominate over those without an innovative dynamic. As a result of the disruptions, transitions from "the respective centre of gravity to another" occur (Schumpeter 1987: 99). Due to this outcompeting of the old powers, new combinations of production factors, which require financing with loans, prevail; authority or credit, according to Schumpeter's assessment, are the means, together with the will to win and the joy of creating, through which "leadership" comes into being (Schumpeter 1987: 127 and 138).

Major Blocks and Satellites

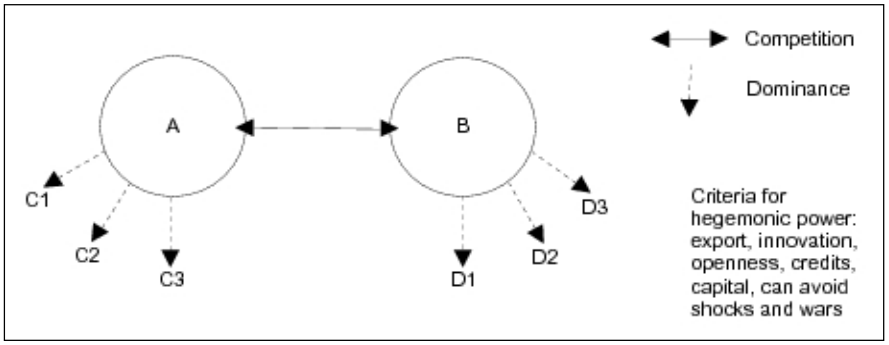
François Perroux's (1991/1950a, 1950b) economic model takes a very different approach. Perroux works from the premise that the determination of the international division of labor is always a question of the imbalanced strength of the parties involved. Perroux draws a parallel between dominant firms and dominated national economies. The dominant firm achieves a surplus and uses this surplus to consolidate its technological and commercial superiority, thus securing independence from the capital market. The surplus company is a credit company, which, in addition to the weapons of autonomous choice of price and quantity, also has at its disposal the powerful weapon of loan facilities. The dominant company is also in a position to cause a reaction on the part of the dominated firm: it develops the attraction and repulsion process.

According to Perroux, the difference between firms and national economies lies in the fact that the nation is made up of the combined effects of state and company: consumer decisions. Thus, the resulting supremacy effect cannot simply be transferred to the nation. Ac-

cording to Perroux, when a national economy owns relatively powerful oligopolies necessary for strategically important goods and services, and when the bargaining power of a country is strengthened through the government, domination between nations unfolds to the full. The decisions of the "monopolies of public power," that is, state decisions, have a lot to do with the ensuing supremacy. Dependence per se in foreign trade may not be the result, but the supremacy effect will be the rule and not the exception. In his analysis, Perroux introduces the following criteria for the determination of bargaining power: the influence of the prevailing monopolistic power over important product groups and complementary goods (for example, control of the supply of a significant good such as oil, computer chips, strategic goods, financial markets); the influence of services and credit allocation in foreign countries; the emergence of a debtor situation in the dominated Nation B; and the coordination of a supremacy policy through the state.

As a rule, relations between nation-states are not characterized by one-sided or bilateral monopolies, but rather by oligopolies or competition, such that Perroux solely develops the tendency to supremacy. Perroux does not equate the supremacy of country A with independence and the domination of Nation B with dependence. Nation B can resort to countermeasures. Major blocks (A and B), which are the dominant economies, compete simultaneously with each other and with the satellites (C and D) (see Figure 1). The effect is practiced extensively through foreign direct investment and through the volume of goods imported by the dominant economy. Instabilities in expansion and contraction can be eliminated by a "buffer policy" (currency and financial policy, adaptation of foreign investment to export surplus).

Figure 1: Major Blocks and Satellites



Source: Author's compilation.

Core, Margins, and Peripheries

The concept of a central world economy, as put forward by the German economist *Andreas Predöhl* (1971), differs from Perroux's accumulative dynamism with its theory of the emergence and expansion of the supremacy of the dominant powers. Predöhl empirically establishes a differentiation of the economy into core regions, "margin zones," and peripheries.

According to Predöhl (1971), industrial core regions are the gravitational centers of the world economy. Their strength ensues from particularly convenient conditions, for example, the existence of important resources such as raw materials and population. Resident companies are thus able to interact with suppliers. Industrial complexes may emerge: margin zones and peripheries lie within the sphere of influence of corresponding *core regions*. Core regions are characterized by a large population and high industrial density, with simultaneously occurring, intensive interindustrial interdependence and a high per capita income. Spatial forces result from the core industries of iron and steel production. Owing to high transport costs, core regions are clearly cut off from each other. Technological development—particularly in the transport and energy sectors—as well as the increasing importance of oil and electricity supports the stronger concentration of industries within the centers. *Margin zones* are characterized, above all, by labor-intensive industries. An essential aspect of Predöhl's analysis is the classification of a dynamism characterized by the expansion of existing trade and gravitational centers. Hierarchies and asymmetries emerge. Centers within the margin can develop within their dependence and finally become dominant powers themselves.

Gunnar Myrdal and *Albert O. Hirschman* argue similarly. According to Myrdal's concept of "cumulative causation," the relationships between center and periphery are strengthened through the globalization process (Myrdal 1955). The developed regions develop further through, among other things, innovative processes and research promotion; others come under incessant pressure, become dependent, and are pulled into the vortex of the developed regions' hegemony. Myrdal (ibid.) assumes that under the condition of laissez-faire there is a tendency towards polarization and imbalances on the world market. Hirschman's "induced investments" model gives rise to trickle-down effects (Hirschman 1958) on the one hand and polarization effects, which come into existence particularly through the inefficient industries in the periphery and the efficient industries in the center, on the other. Polarization also results from the migration of well-educated and mobile people from the periphery to the center. In Hirschman's linkage concept, economies of scale are of central importance. This approach can be applied to relationships between a large, dominant economy and smaller economies. Linkages between the economies of regional powers and the countries of the regions can bring about balanced or imbalanced relationships. If the ties to local markets, banks, traders, and research facilities remain marginal, a cycle of imbalance results—that is, dominance on the part of the stronger economy ensues. Through its observation of the linkage mechanisms between the economy of the regional power and those of its regional neighbors, Hirschman's concept is suited to identifying how the two entities are connected.

Stabilizers and Public Goods

In his descriptive analyses *Charles Kindleberger* connects first and foremost "power and money/finances" and "public goods." Leaders attempt to exercise dominance by making public goods available, using them to secure stability. "International public goods are produced, if at all, by the leading power, a so-called 'hegemon'" (Kindleberger 1987: 13). The hegemon is prepared to take on the costs of the public goods. Other countries profit from the leading power's initiative, for example, from reliable systems of rules. As a result of the application of standards implemented by the hegemonic state, transaction costs sink, and the sanctioning power of the hegemon makes conflicts less likely.

The hegemon is, simultaneously, a "stabilizer." The stabilizer is able "to provide a market for distress goods, a steady if not countercyclical flow of capital, and a rediscount mechanism for providing liquidity when the monetary system is frozen in panic" (Kindleberger 1981: 247). In addition, the stabilizer must steer the structure of the currency rates and administrate the coordination of domestic monetary policy. All the other states accept this because they participate and receive benefits. According to Kindleberger, small countries have no economic power and they also have no responsibility for the overall system. But when these small countries ally in "conscious parallel action" (Kindleberger 1981: 249), they can have an influence.

The danger always exists that leadership will be transformed into exploitation; that is, that the public goods provided are used one-sidedly to the benefit of the leading power. Exploitation occurs when the hegemon applies power. Kindleberger understands power as strength, but this strength must be applied effectively. Size alone (of a country or of a company) is not adequate; also necessary are "intelligence, readiness to respond, and efficiency in translating decisions into action" (Kindleberger 1970: 56). Based on this, Kindleberger defines power as follows: "Power is the strength plus the capacity to use it effectively" (Kindleberger 1970: 65).

According to Kindleberger, the exercise of power includes a nation's display of economic productivity and mobility. The advantage for the leadership is being the first to enjoy the fruits of research, which in turn gives the leader the capacity to transform. Kindleberger's contribution on regional power is therefore characterized by the terms *public goods* and *capacity to transform*, with which the relational dynamics of these interconnections are highlighted.

Susan Strange (1975) bases her structural power concept on the heterodox perspective of international political economy. She assumes the power of states and the role of transnationally active nongovernmental organizations. According to her concept, economic power is exercised on four levels (Strange 1975: 222): (1) Rich countries and their governments influence the structure of the global economy through the pattern of their investments, production, trade, and consumption. (2) They establish the framework for minimum standards for the maintenance of stability, order, and law in the global market economy. (3) National governments exercise economic power through the formulation of national laws (for factors of production, credit, and markets). The government with the biggest domestic market and the

largest number of multinational businesses (that are important in driving global production) possesses the greatest economic power. (4) Buyers and sellers, creditors, and debtors affect economic transactions at the operational level. Economic power is thus always the result of a bargaining process; that is, it is relational.

Technology and Hegemony

According to *Richard R. Nelson* and *Gavin Wright* (1992), emerging nations can initiate a catching-up process and thereby ascend to the position of technologically leading nations. This depends above all on them (a) raising the total factor productivities,[4] (b) increasing the investment and savings rates, and (c) identifying new organizational forms in industry and the "political economies." What is meant by this is that today's global society is a network society and that research can be imitated anywhere, which means that technology can become a "public good." Rising nations, such as regional powers, can use investments in education and in research and development (R&D) to more easily adapt developed countries' technology and thereby advance (Fan 2008; Altenburg, Schmitz and Stamm 2008; Nayyar 2008; Frietsch and Schüller 2010). Thus, according to Nelson and Wright, what regional powers need to develop their power status, aside from a mass-production market, is first and foremost technological leadership.

Recent studies from *Ricardo Hausmann* and *Dani Rodrik* (2003) support this view. The authors compare the technology-adaptation process of companies in developing countries directly with the innovation process in industrialized countries. They model technological adaptation as a business process that involves similar risks and costs to the innovation process. Accordingly, regional powers do not simply dominate their neighbor countries: through local technological efforts the neighboring countries in the region can increase their own productivity and develop technologically, meaning that they have something to use as leverage against the regional powers (Keller 2004).

Power Imbalances and Asymmetries

Regional powers influence neighboring states in various ways. They can make their influence felt through (a) the granting of development aid to alter the political balance in other countries, (b) the strategic granting of contracts to foreign companies, or (c) the exercise of pressure on international organizations so that "friendly governments" can receive "good deals."

Pol Antràs and *Padró i Miquel* (2009) have developed a model which is concerned first and foremost with the influence of foreign interests that aim to impact the political process in an-

[4] Total factor productivity is a variable which accounts for capital input, labour input, and technology. Technological growth and efficiency are the main components of total factor productivity. Total factor productivity can be seen as the driver of growth within an economy.

other country. A fundamental category within this approach is that of external economies. If countries are balanced in their relationship (not too great a difference in factor endowments), the reciprocal influence can lead to a strong Pareto optimum and boost the overall welfare of both countries by increasing efficiency. Antràs and Padró i Miquel demonstrate that in certain circumstances free trade can both increase as well as decrease welfare. The model also shows that the interaction of the economic power of two countries can alter trade agreements. In this respect, the authors discover that weak countries, which have already been made to accept the influence of the stronger power, can no longer move the strong country to undertake concerted action towards an agreement on the improvement of global welfare. The strong nation gains nothing and remains inactive (Antràs and Padró i Miquel 2009: 24). For our inquiry it can thus be concluded that foreign influence, for example by a regional power, leads to a backlash if the imbalances are already too great. If, on the other hand, the countries are not too unequal, regional powers can, using contracts and exchange, definitely effect welfare gains for both sides.

Power in Value Chains

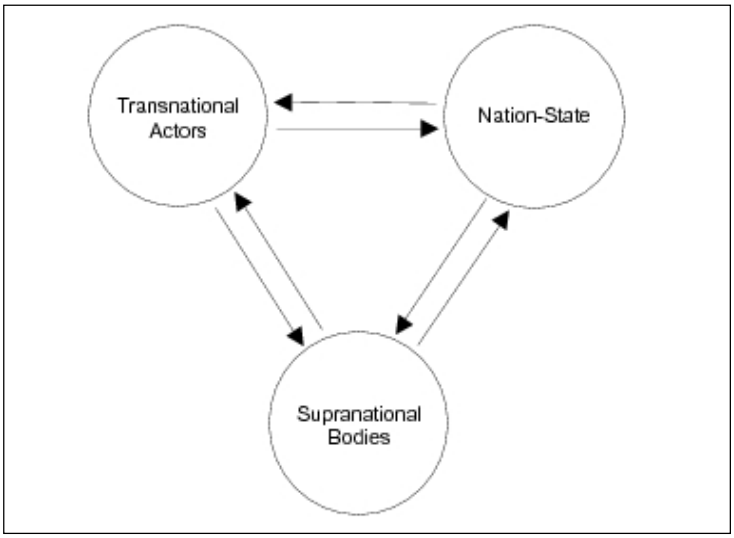
The progression of globalization, the advances in information and communications technologies, and the concurrent reduction of transfer costs have promoted international vertical cooperation in global value chains. The majority of types of vertical cooperation are characterized by an asymmetrical relationship between a *lead firm* and its suppliers. Global value chains, as defined by *Gary Gereffi* (1994, 1999), focus predominantly on the description and analysis of the current situation of value chains with regard to *governance* and input–output structure. Gereffi makes a distinction between two types of hierarchical chains (based on their governance structure): *buyer-driven value chains* and *producer-driven value chains*. *Buyer-driven value chains* are labor-intensive production chains in which the producers hold a subordinate position to the lead firms. The lead firms are, in most cases, global trade or marketing chains and brand producers. In *producer-driven value chains* multinationals (lead firms) play the dominant role. Here, dominance is a matter of capital- and technology-intensive production, for example, the manufacturing of cars, planes, and computers. The lead firms themselves handle the largest part of the capital-intensive production. Subordinate firms manufacture more labor-intensive parts. The lead firms of the chains usually belong to global oligopolies.

The value chain approaches make clear that the exercise of power in the chain is relational and that various actors shape its governance—as a cooperative process; as dominance; or even as exploitation, that is, through asymmetrical benefits. Those countries with many lead firms in value chains and with strong lead firms in value chains are able to exert influence on the enterprises of the region because they shape norms and standards (Raikes, Friis Jensen and Ponte 2000; Raff and Schmitt 2009).

The Multipolar World and Transnational Networks

Networks are exercising increasing influence. As a result of international regimes, supranational institutions, and transnational networks (TNNs), the nation-state's power is limited (see Fig. 2). Even regional powers are integrated in TNNs and supranational organizations, which can in turn also restrict power. In recent decades the state has become increasingly "destateified." The public spending to GDP ratio has decreased; public enterprises have been privatized; and the state interferes notably less often in the regulation of the market. The state is also becoming increasingly "denationalized." The nation-state has ceded numerous functions to supranational organizations, as in the case of the jointly agreed-upon rules within the framework of the WTO. The weakened nation-state is also the result of the new dynamic of globalization, within which the nation-state is just one of many actors due to transnational linkages (Risse 2004; Jakobeit, Kappel, Mückenberger 2010; Subacchi 2008).

Figure 2: States, Transnational Actors and Supranational Bodies



Source: Author's compilation.

Businesses and trade associations manage their activities together. They finalize contracts, establish norms, and agree upon long-term delivery relationships. In the event of conflicts, the businesses themselves mediate. Businesses; lobby groups; international "advocacy networks" (Keck and Sikkink 1998); human rights, environmental and consumer groups; and consulting firms engage interactively in the norm-creation process of value chains. The state often participates only peripherally in such negotiation processes.

The standardization of technical norms; the worldwide establishment of labor, environmental, and human rights standards; the codes of conduct for businesses, such as corporate social responsibility (CSR); and the expansion of public–private partnerships demonstrate transnational networks' increasing political influence. The question that results is how we can connect the concept of regional powers with a concept that incorporates globalization

and transnationalization. These fundamental and rapid processes have led to a shift in economic power relations and structures (Kappel 1996; Kappel and Brach 2009; Bartley 2007; Jakobeit, Kappel, Mückenberger 2010). A country that demonstrates a greater networking capacity may thus have better chances of developing into a regional power. As numerous studies have found, the power of states is no longer dependent only on economic and military power; it is also determined by a state's capacity to network with other states (Slaughter 2009). The state itself is becoming a "networking agent."

4 Empirics, Categorization, and Systematization of Regional Powers

A review of the literature shows that there are numerous approaches to describing power and leadership in economics. On the basis of these theoretical approaches, and the above questions, I develop criteria regarding the "economics of regional powers." Starting from the various discourses on power, I bring together some of the strands of the discussion. The purpose is to determine how regional powers exercise economic power/governance in their region.

I consider the following aspects to be particularly viable for a modeling theory and empirical investigation:

1. *Economic Dynamic*. The regional power is characterized by the size of its market (population, GDP) and its technological dynamism. It is a relatively strong industrial power, and its growth is shaped by technology, innovation, R&D and dynamic entrepreneurship. Above all else, it is the new technology that becomes a power resource. A high level of industrial growth draws investment from around the world as well as labor and supply industries (from the models of Perroux, Predöhl, and Krugman) and radiates via vertical integration into the region. The thesis is as follows: due to their economic dynamism, regional powers are attractive to foreign direct investment. Through technological advances, the rapidly growing regional power gains competitive advantages over countries that are growing more slowly.
2. *Geography*. The regional power's close proximity to the region (relatively low transport costs, historical connections) favors trade and direct investment. The thesis is that the regional power influences trade more strongly than the other countries in the region and advances regional integration overall due to its own growth. Positive relations with neighbors lead to cooperation, increases in growth, and technological spillover (Collier 2007: 53).[5] However, cut-throat competition most likely arises. The regional power can utilize trade openness better than others (from the models of Krugman and Antràs/Miquel).
3. *Vertical Networks*. In the global economy, global value chains are playing an increasingly important role. These are mostly dominated by key players from the OECD world, but leading businesses from regional powers often also take on a dominant role in hierarchi-

[5] Collier emphasizes the negative effects of "bad neighbours."

cal and quasi-hierarchical value chains. Within the value chains, the key players steer the businesses that are participating in the chain. The thesis is that technologically leading businesses from the regional powers strongly codetermine the governance in these chains and, through subcontracting and the vertical integration of businesses from the countries of the region, have a steering function in the value chain with respect to technology, technology transfer, distribution of rents, and barriers of entry (Brach and Kappel 2009; Kappel and Brach 2009; Schmitz 2004). Leadership in the global value chain is an important basis for the economic position of regional powers in the region; this leadership has to do with the technological leadership of innovative businesses in the region (from the models of Schumpeter and Sturgeon/Gereffi).

4. *Regional Integration.* Regional powers take on a key role in regional organizations—a free trade zone or a monetary union—for example, in the design of the governance. The regional power shapes the regional governance through its norm-setting contribution: the development of customs duties and nontariff trade barriers. Monetary cooperation is especially difficult because states only unwillingly relinquish their monetary autonomy. Many nation-states in the region (particularly the smaller ones) thus face a tricky choice: the autonomy of the currency, an informal alliance, or formal subordination to the strong currency of the regional power (or pegging with the United States dollar). In an agreed-upon monetary partnership, a regional power can only dominate the joint currency policy when the cooperation is reciprocal and the smaller country gains benefits through the partnership, for instance, in the form of a stable currency and compensation funds. However, at the same time the "master currency" must be imposed; without "enforcement" and sanctions—for example, in the form of threatened exclusion—the monetary cooperation would collapse. The regional power ensures the stability of the currency and the existence of compensation mechanisms. Only when the regional power is prepared to offer an anchor of stability can it secure the steadiness of the currency and financial policy in the region, be accepted by the cooperating countries, and thus possess leadership (from Kindleberger's model).
5. *Relational Power* applies to all the fields considered; that is, the regional power acts in an environment marked by competition and cooperation. Relational power means that regional powers participate in significant decisions, for example, within the regional organizations, and have the greatest influence on economic and monetary integration—despite other actors such as the large OECD countries and other countries in the region. The thesis is that regional powers possess decision-making power not only due to their economic power but also due to their networking capacity vis-à-vis their cooperation partners (from the model of Sturgeon/Gereffi 2009).

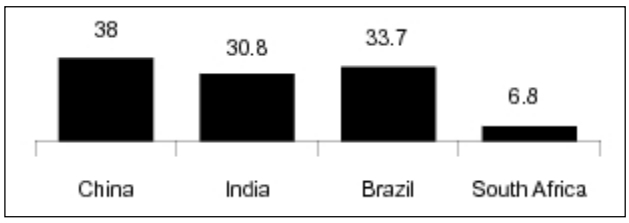
Results of Descriptive Statistics

Based on our theoretical observations and the five most important economic aspects (economic dynamic, geography, vertical networks, regional integration, and relational power) we have tested for country size, population, per capita income, growth of GDP, foreign trade, industrialization, direct investment, research and development expenditure, public goods, and institutions. The criteria for our descriptive statistics and for our regression sample are as follows: the country is located in Asia and the Pacific, Latin America, the Middle East and North Africa, or sub-Saharan Africa; the country has at least 15 million inhabitants; the regional power is located on one of the above-mentioned continents. This leaves 38 countries that fit the base specification. Some of the significant findings of the descriptive statistics are illustrated in the following nine observations.

Observation 1:

Regional powers have a very large land area and a large population in comparison to their region (see Fig. 3). India and China are the most heavily populated countries in the world. China's share of the global population is approximately 20 percent; India's is 17 percent. Brazil and South Africa are smaller in terms of population and area; however, they are relatively large in their respective regions.

Figure 3: Share of Regional Population, in %, in 2000

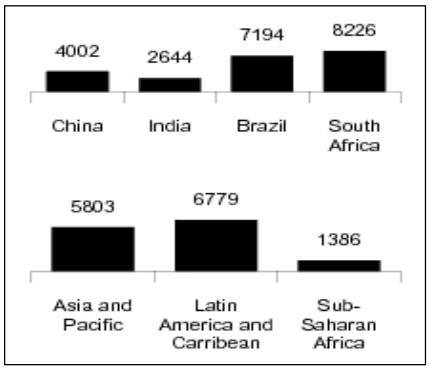


Source: World Development Indicators (World Bank).

Observation 2:

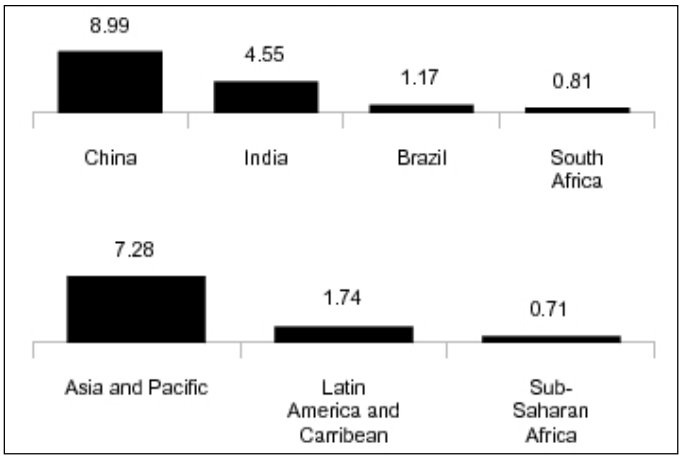
Some regional powers have a higher average per capita income than the regional average. The per capita incomes in India and China, however, are below the regional average, whereas South Africa's is significantly higher (see Fig. 4). The average growth in income per capita in the regional powers was greater than that in the respective regions in the period 1990–2008, even though some smaller countries in the regions were able to achieve much greater growth (for example, Taiwan, Singapore, and Botswana). India's average growth in per capita income for the period 1990–2008 was even lower than that of its neighboring countries (see Fig. 5).

Figure 4: Real GDP Per Capita in 2000



Source: Penn World Table (University of Pennsylvania).

Figure 5: Growth Rate of Per Capita Income, in %, 1990–2008

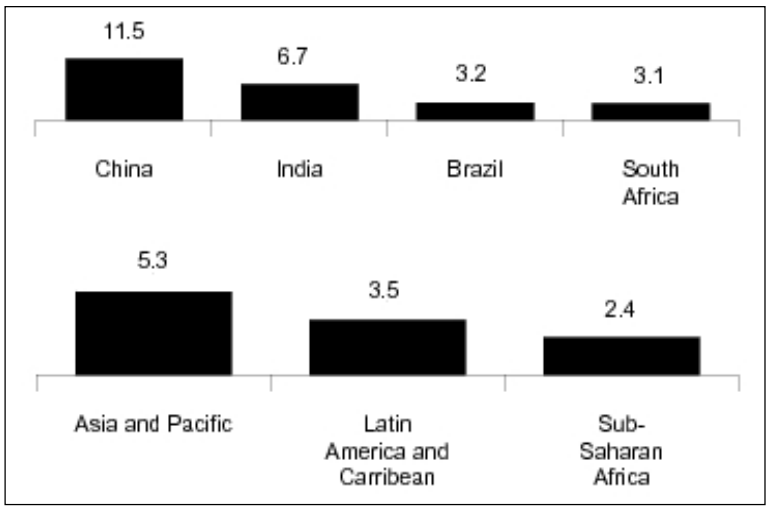


Source: Author's compilation, based on World Development Indicators 2010 (World Bank).

Observation 3:

With the exception of Brazil and South Africa, regional powers have achieved a higher average growth in GDP (1980–2000) and contribute significantly to global and regional growth (see Fig. 6). Only China and, to a lesser degree, India are of importance for the global economic situation; Brazil and South Africa, in contrast, are much less important. Both Brazil's and South Africa's average growth during the last 25 years amounted to only 2 percent; that is, due to their more limited economic dynamic they are not "motors of growth," either globally or regionally, as is often assumed. One can say of Brazil, India, and China that they have achieved the status of "global economic power," even though they continue to be viewed as developing or middle-income countries on the basis of their per capita income. That is to say that before becoming wealthy they had achieved a very large share of the world GDP (measured in purchasing power parity, 2006) due to their size and economic strength: 15 percent for China and 6.4 percent for India (Rodrik 2006; Lemoine and Ünal-Kesenci 2007: 11).

Figure 6: Average Annual Growth of GDP, in %, 1980–2000



Source: Penn World Table (University of Pennsylvania).

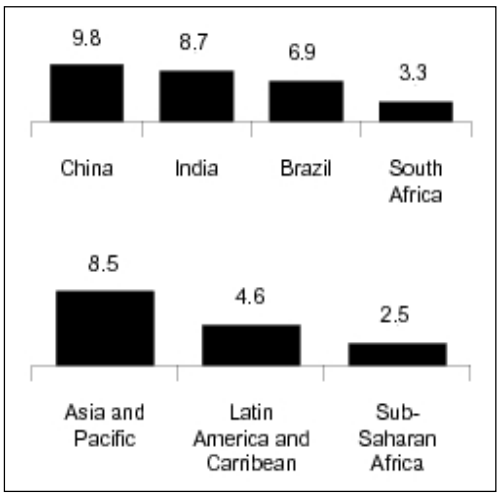
Observation 4:

The regional powers account for a significant proportion of foreign trade; however, Brazil's and South Africa's shares have declined. The comparative data show a lower anchoring in the region's trade for Brazil and South Africa at present (see Annex 1). The foreign-trade orientation (trade/GDP ratio) is low(er) and doesn't represent the size of the respective country. There are, however, major differences between the countries. India, for example, is very weakly integrated in the global economy and the region, but is catching up based on the high export growth rate (Qureshi and Wan 2008; Feigenbaum 2010; Betz 2010) and has positioned itself to focus on medium- and high-range export products (approximately 47 percent in 2007; Gaulier et al. 2010: 2). Brazil and South Africa still export mineral products and natural resource–based manufactured goods. China, in contrast, is today the most important global exporter of finished products, which are largely produced by foreign firms located in China (Lemoine 2010; Lemoine and Ünal-Kesenci 2007; Qureshi and Wan 2008; Kaplinsky and Messner 2008). China's exports show a technological level that is comparable to that of Portugal, which has an income per capita (PPP) that is three times higher, but China's exports remain heavily concentrated on low-tech-products (approximately 65 percent in 2007; Bensidou, Lemoine and Ünal 2009, see Fig. 7 on growth of exports from regional powers 1980–2000). China has a growing influence on intraregional trade in Asia and is creating new regional growth, whereas India is lagging far behind in terms of its integration in intraregional trade (Lemoine and Ünal-Kesenci 2007; Chaturvedy and Malone 2009).

The consideration of integration in value chains could be of relevance. This could show how strongly the linkages between businesses from the regional powers—also in comparison to businesses from the EU and the USA—and businesses from the region have developed. Also important in this respect is the kind of businesses. For instance, energy security and

strategic trading considerations play a large role in China's foreign trade strategy. To date, however, there has been a shortage of empirically rich studies on integration in value chains. Examples indicate that businesses from the regional powers apparently play a much greater role sectorally than foreign trade and investment statistics would lead us to believe.[6] In the SADC, South African businesses dominate the regional value chains, through, among other things, buyer-driven chains (South African department stores) or producer-driven chains (breweries, textile production) (Alden and Soko 2005; Shaw, Cooper and Chin 2009). The same is assumed of Chinese businesses, but less so of Indian businesses.

Figure 7: Export Growth, in %, 1980–2000



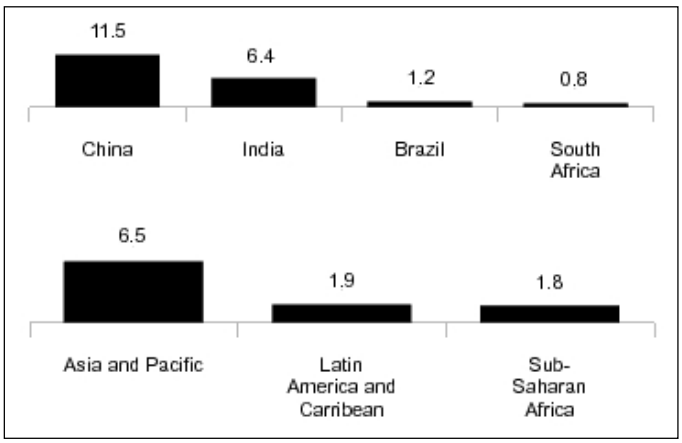
Source: World Development Indicators (World Bank).

Observation 5:

Regional powers have a more differentiated economic structure than other countries in the region. The value added of the respective processing industries is higher than in the region (see Fig. 8). Due to this technologically determined development, which is based on large markets with economies of scale, the regional power can exercise leadership. However, leadership is not identical to hegemony, let alone exploitation; rather, it can benefit development in the region. Under which conditions this occurs, however, cannot be determined using the data reviewed in this contribution. We can assume, though, that technological frontrunners generate transformation processes (diffusion of technology, advances in productivity), so that wealth spreads. If a regional power grows industrially, its appeal grows. When the countries in a region are predominantly agrarian and the differences between the regional power and the agrarian-oriented region are too great, industrial alignment is hindered, as in the case of South Africa in southern Africa or China in Southeast Asia.

[6] Sturgeon and Gereffi (2009) make clear that there are serious data gaps in the analysis of value chains.

Figure 8: Industry, Value Added and Growth, in %, 1980–2000



Source: World Development Indicators (World Bank).

In many cases backlash—for example, protectionism—arises because the power imbalances are too great. This doesn't apply, however, to neighbor countries that are smaller but capable of competing industrially—for instance, Japan, Singapore, Taiwan and Korea in Asia. The regional power's industrial strength is thus relational and does not lead to leadership or, much less so, dominance. Industrially growing regional powers[7] are in any case attractive to investors from other countries. Foreign direct investment from OECD countries in the industrial and tertiary sectors has increased significantly in recent years in all four regional powers investigated here. Together the former's share of the foreign direct investment flows to all developing countries is now almost 25 percent, with China attracting the largest proportion of this (Nayyar 2008). This means the regional powers are thereby speeding up their catching-up process, without completely diverting foreign direct investment away from the countries in the region. Foreign direct investment is increasing in these countries too, for example, in Vietnam (Kubny, Mölders and Nunnenkamp 2008).

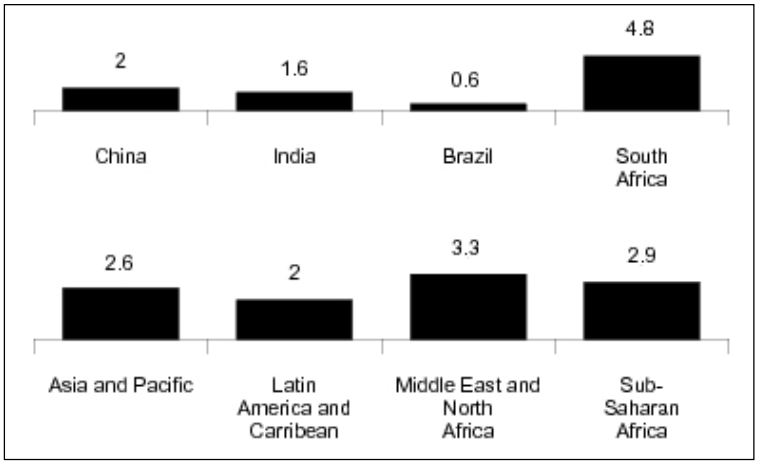
Regional powers themselves are also increasingly emerging as investors in the region. South Africa is taking on an important role in this respect, and is often the most important investor in the region. The same is also true of Brazil, whereas India's investment in the region is relatively low. China's share of investment in ASEAN is 0.3 percent; Brazil's share in MERCOSUR is 7.9 percent; South Africa's in the SADC is approximately 25 percent; and India's in the South Asian Association for Regional Cooperation (SAARC) is only 1.6 percent (Kubny, Mölders and Nunnenkamp 2008).

[7] This applies equally to advancing tertiary-sector economies such as India.

Observation 6:

In terms of human capital, regional powers have, on average, higher values than other countries in the region. However, the increase in the average length of secondary school education for the period 1980–2000 was often lower than that of the region (definitively in the case of Brazil). South Africa, in contrast, was far above the regional values (see Fig. 9).

Figure 9: Growth of Secondary School Education, in %, 1980–2000



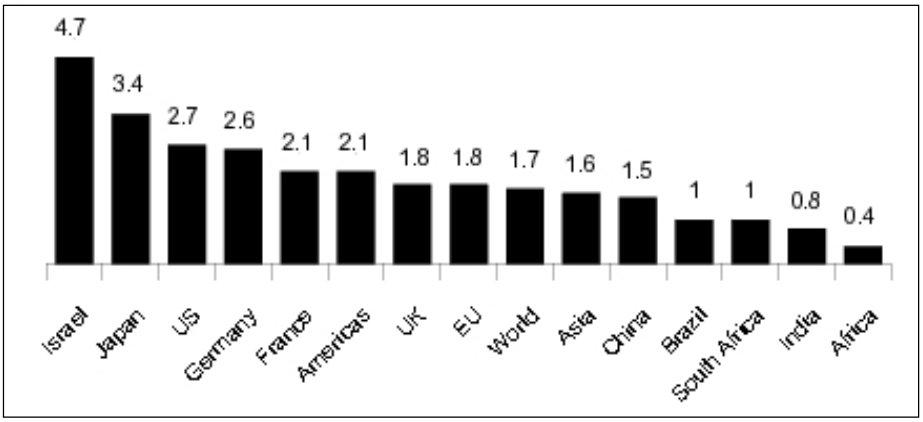
Note: Increase in average schooling in years, secondary schools.

Source: Barro Lee Dataset (Barro and Lee 2000).

Observation 7:

Regional powers demonstrate lower expenditures for R&D than the OECD world. For years they have been increasing their R&D activities and have started to catch-up. However, they are leaders in their region (see Fig. 10).

Figure 10: Gross Domestic Expenditure on R&D as % of GDP, 2007 or latest year available



Source: Author's compilation, based on UNESCO Institute for Statistics, UIS 2009.

Observation 8:

Regional powers influence the monetary and credit policies of their neighbor countries, as well as regional cooperation. They thereby exercise hegemony. Brazil, South Africa, China, and India are active and dominant in the development of regional cooperation in their respective regions to very different degrees (Kaplinsky and Messner 2008; Fritz and Mühlich 2010). Most clear is South Africa's domination of monetary integration in southern Africa through the SACU (South African Customs Union), which has existed since 1910, and the Common Monetary Area in South Africa (CMA) (McCarthy 1998 and 2008; Alden and Soko 2005). The smaller countries in the region profit from the SACU customs revenues through a compensatory mechanism. Within the CMA, Lesotho, Namibia, and Swaziland are fixed to the South African rand.[8] South Africa plays a clear leadership role within the SACU and the CMA. Brazil has made efforts to advance monetary integration within MERCOSUR; however, this integration has not proceeded very far. To date there has been no sign of a joint currency and no monetary leadership on the part of Brazil (Fritz and Mühlich 2010).

For many countries in its region China is an important trading partner, which stimulates its own exports, including those within the region, through an undervalued currency. Although China maintains free trade agreements with 10 ASEAN states, something which has led to increasing foreign trade linkages with the region (from 4 percent in 2000 to 12 percent in 2009), there is no monetary integration between China and the ASEAN states and there are no reliable compensation mechanisms (Colavecchio and Funke 2009; Zi and Jinxia 2009; Rüland and Jetschke 2008). China uses the cooperation within the CAFTA (China-ASEAN Free Trade Area) for its own trade; the low exchange rate has also contributed to its high trade surplus. At the same time, China has invested more heavily in ASEAN countries. Because of the dynamics of China's growth and the increased integration in Asia, intraregional trade is growing, for example, in ASEAN and also in East Asia. China's economic influence is increasing because of growing Chinese investment in the region (Fritz and Mühlich 2010). China is simultaneously working towards the regionalization of the renminbi and has played a stronger role in monetary integration in East Asia since the Asian financial crisis. The renminbi nevertheless remains limited as a "lead currency" (Colavecchio and Funke 2009). India's monetary importance in the region has been low to date, something that is linked to, among other things, its very limited investment and trade in the region (Nel and Stephen 2010; Betz 2010).

[8] The South African rand is also Botswana's anchor currency; the rand is the reference currency for Zimbabwe's currency, cf. McCarthy 2008; Fritz and Mühlich 2010.

Observation 9:

Regional powers do not have better institutions than the average country of the region. Their low productivity, weak capital accumulation, and marginal output per worker are determined by their weak social infrastructure—that is, institutions and the government—which influences the economic environment (Hall and Jones 1999).

The nine observations regarding the regional powers make clear that some of the regional powers are particularly strong. They demonstrate economic dynamism; they have an influence on direct investment and monetary cooperation; and, through institutions, they also have an influence within the region. This dynamism promotes regional trade. From an economic perspective, China is without doubt both a global and a regional power. This is far less the case for India. Brazil is a relatively strong economic power, but it is not particularly strongly positioned, either globally or regionally, because other countries in the region—such as Argentina, Chile and Venezuela—also play a role. South Africa does not currently have very much global importance because it only has a small population and global trade does not play a crucial role—its share of world markets is even declining. Nevertheless, the country is the only meaningful economic power in the region (and on the continent) and exercises leadership in the region with respect to investment, monetary cooperation, and institutional influence.

Regression Results

For the regressions[9] (see data in Annex 2), we used a simple probit model (dependent variable: Dummy 1 regional power /0 other country) to produce some stylized facts. The main advantage of the regression approach is that we can control for other variables and thus better evaluate the importance of selected variables. Given the fact that there are only nine regional powers in our sample, some variables cannot be tested within this framework due to the perfect-prediction problem. Another problem that we take into account is "multicollinearity," as many of the variables we would like to test are highly correlated with the basic variables. These basic variables have been chosen according to traditions in economic cross-country modeling and data availability (to avoid already reducing the sample size in the base regression). Another potential problem that we do not control for is endogeneity.[10]

The following results for this sample are robust:

1. The base specification clearly shows that sheer size (measured in both total GDP and population size) is a fundamental feature of regional powers. However, regional "superiority" is also very important, as reflected by the coefficient for the GDP per capita (measured as distance to the regional mean).

[9] This part of the paper was prepared by Toman Omar Mahmoud.

[10] Omitted variable bias is the most common illustration of what economists refer to as endogeneity. Endogenous variables are variables determined by other variables in the system, while exogenous variables are variables which can be considered external shocks to the system.

2. When basic variables are controlled for, growth of GDP per capita does not seem to be a determinant of being a regional power. This effect is almost statistically significant.
3. Exports of goods and services (percent of GDP): The share of exports in GDP does not play a role in shaping a regional power. However, compared to other countries in their respective regions, countries that have a higher share of exports in their GDP are more likely to be regional powers.
4. Industry, value added (percent of GDP): A higher GDP share of industrial value added also increases a country's chances of becoming a regional power.
5. There is no evidence that the average number of years of secondary education among the population has any influence on determining whether a country is a regional power or not.
6. Productivity does not seem to play an important role. We can even observe that countries that are more productive than other countries in the same region are less likely to be a regional power.

The overall results of the regression analysis are mixed, especially with regard to economic performance. Countries that are more industrialized and more export-oriented appear more likely to be regional powers. It appears that some of the criteria or indicators for "how to measure regional powers" need to be qualified and tested empirically.

What is the "Economic Power" of Regional Powers?

Based on the above explanations and empirical findings, we can define, in economic terms, a regional power as follows:

— The regional power is an economic power in the region which has influence and possesses the capacity for regional and global action.
— The regional power has a relatively large population and covers a relatively large area.
— The regional power realizes high economic growth—above the regional average—over a longer period of time and thus provides a growing market for the region.
— The regional power plays a dominant role in trade within the region.
— The regional power develops industrially and technologically; the state expenditures for R&D increase and come close, or overtake, the level in the OECD world.
— The regional power has regionally and globally active businesses, which are increasing in strength. These provide competition for businesses from the OECD world within the regional–global value chains and increasingly dominate the regional markets.
— The regional power increasingly provides public goods in the form of a stable currency and reliable monetary policy.
— The regional power takes on an increasing role in the governance of the region, particularly with respect to regional cooperation agreements.

5 Conclusion: What Can the Economics of Regional Powers Contribute to Regional Powers Theory?

The status of a regional power is always challenged as a result of the collective bargaining power of others, be it on the part of the EU, the USA, or the opposing powers within the region. Regional powers' radius of action is also influenced by transnational norm-building networks—for instance, as a result of norms and standards created by businesses, civil society actors and supranational organizations. There is a great need for research in this area (Jakobeit, Kappel and Mückenberger 2010).

The four regional powers observed here without doubt play a role in their regions; India, China, and Brazil also play a global role. They are heavyweights in their region in terms of trade, less so, however, in terms of their regional investment (with the exception of South Africa). They are active players in regional integration, though their monetary and integrative leadership achievements—though increasing—have been rather weak, except in the case of South Africa. As a result of their strong growth, the regional powers exert significant influence in their region, which is able to somewhat compensate for the negative effects of cutthroat competition. The extent to which development aid, investment funds, and other public goods can compensate the disadvantaged countries for the losses suffered should be tested. To date, however, China, India, Brazil, and South Africa have only taken on this duty to a limited extent.

China is a global actor and is, economically speaking, very strongly networked internationally. Its regional influence is increasing but is still low because the integration through trade and direct investment is not very intensive. China's regional leadership achievements are rather limited. India, on the other hand, is not a significant regional player (it is rather a "detached power" (Prys 2010) and a latecomer), as its low foreign trade integration and its very low investment in the region demonstrate. India is poor and has a very poorly developed infrastructure (roads, harbors, airports, electricity), and only a few sectors are competitive. Nevertheless, it is of importance because it is large and has a high rate of economic growth. Brazil is without doubt a significant economic power in Latin America, as shown by its trade, direct investment, and technological development. South Africa is globally insignificant but the leading power in its region. Its weak global role is a result of its limited economic power and, above all, the frailness of its economically weak neighbor countries.

I have focused in this contribution on the above-mentioned areas of observation. Thus only limited statements on the economics of regional powers are possible. The regressions show that the size of the country (population) and the per capita income are decisive. Other aspects, for example, the growth in per capita income, apparently do not play a particular role. The share of the GDP accounted for by the respective regional power's trade appears not to be significant; its growth dynamic, in contrast, is significant. Our analysis also shows that education level, productivities, the investment quota, population growth, migration, and the quality of institutions in regional powers appear not to be better than those in the other

countries of the respective regions. Further analyses of the regional value chains, the development aid provided, and credit allocation (indebtedness) are necessary.

What do the findings on the economics of regional powers presented here contribute to the existing discourse on regional powers? (1) The economics of regional powers are of outstanding importance for the status of the regional power in the region. (2) Because the regional powers are primarily entering higher-value growth markets, they are contributing to creative destruction in the region, thereby deepening their economic influence. (3) Being a regional power also means making advances in research, which in turn enhances the regional power's appeal. (4) If the regional powers (can) increasingly provide public goods, they gain increasing influence.

This contribution has served to identify those economic aspects that could be of relevance in the further weighting of leadership in the region. The discussion on regional powers therefore necessitates more research on the economic conditions and the development of regional-power status, beyond the political, military, and discursive factors which have primarily been considered to date.

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Annex 1: Regional Powers' Trade with Other Country Groups, in %

Brazil	Exports		Imports	
Year	2009	1995	2009	1995
Total region	17.3	20.5	14.9	18.4
EU	22.2	27.8	22.9	27.7
China	13.2	18.7	15.7	21.1
US	10.2	2.6	12.5	2.1
India	2.2	0.7	1.7	0.7
South Africa	0.8	0.6	0.3	0.3
Total exports	100	100	100	100

China	Exports		Imports	
Year	2007	1995	2007	1995
Total region	12.0	8.7	18.2	12.1
EU	20.1	12.8	11.6	16.1
US	19.1	16.6	7.3	12.2
India	2.0	0.5	1.5	0.3
Brazil	0.9	0.5	1.9	0.9
South Africa	0.6	0.4	0.7	0.5
Total exports	100	100	100	100

South Africa	Exports		Imports	
Year	2009	1995	2009	1995
SADC (members in 2009)	6.4	10.5	2.0	2.2
EU	13.5	24.3	16.7	45.4
China	5.4	0.9	7.2	1.9
US	4.7	7.5	4.2	12.0
India	2.0	0.7	1.6	0.7
Brazil	0.3	1.0	1.1	0.9
Total exports	100	100	100	100

India	Exports		Imports	
Year	2008–09	1996–97	2008–09	1996–97
Total region	9.4	7.0	11.5	2.9
EU	21.3	26.5	14.1	27.2
China	5.0	1.8	10.7	1.9
US	11.4	19.6	6.1	9.2
South Africa	1.1	0.9	1.8	0.8
Brazil	1.4	0.4	0.4	0.4
Total exports	100	100	100	100

Note: The data for India refer to the Indian fiscal year: 01/04/xx - 31/03/xy.

Source: Author's own compilation based on the Ministério do Desenvolvimento, Indústria e Comércio Exterior, Brazil; the Ministry of Commerce of the People's Republic of China; the Ministry of Commerce and Industry of India; and the South African Department of Trade and Industry.

Annex 2: Regression Results

variable name	variable label
gdp_tot_00	total gdp in 2000
pop_tot_00	Population, total in 2000
gdp_cap_dis	pwt: real gross domestic product per capita, distance to regional mean in 2000
pop_trop_ll	%pop ('95) in geographical tropics level
gdp_cap_g	pwt: real gross domestic product per capita, growth
exp_tot_g	Exports of goods and services (constant 2000 US$), growth
exp_gdp_00	Exports of goods and services (% of GDP) in 2000
exp_gdp_dis	Exports of goods and services (% of GDP), distance to regional mean in 2000
exp_val_g	Export value index (2000 = 100), growth
ind_gdp_00	Industry, value added (% of GDP) in 2000
ind_gdp_dis	Industry, value added (% of GDP), distance to regional mean in 2000
sec_edu_99	barro: average years of secondary education in 1999
sec_edu_dis	barro: average years of secondary education, distance to regional mean in 1999
prod_hj_ll	hall jones: productivity level
prod_hj_dis	hall jones: productivity, distance to regional mean
inv_gdp_00	investment share of real gross domestic product per capita in 2000
pop_gini_95	coho: geographic dispersion of the population, gini in 1995
fert_rate_00	Fertility rate, total (births per woman) in 2000
fert_rate_dis	Fertility rate, total (births per woman), distance to regional mean in 2000
mig_tot_00	International migration stock, total in 2000
mig_pop_00	International migration stock (% of population) in 2000
mig_pop_dis	International migration stock (% of population), distance to regional mean in 2000
tour_arr_00	International tourism, number of arrivals in 2000
tour_arr_dis	International tourism, number of arrivals, distance to regional mean in 2000
tour_arr_g	International tourism, number of arrivals, growth
peace_dis	coho: length of the peace period since the end of the previous civil war, distance
mil_labfor_00	Military personnel (% of total labor force) in 2000
mil_labfor_dis	Military expenditure (% of GDP), distance to regional mean in 2000
voice_acc_00	voice and accountability in 2000
voice_acc_g	voice and accountability, growth
pol_sta_00	political stability in 2000
pol_sta_g	political stability, growth
gov_eff_00	government effectiveness in 2000
gov_eff_g	government effectiveness, growth
reg_qual_00	regulatory quality in 2000
reg_qual_g	regulatory quality, growth
rule_law_00	wb kaufmann: rule of law in 2000
rule_law_g	wb kaufmann: rule of law, growth
cont_corr_00	wb kaufmann: control of corruption in 2000
cont_corr_g	wb kaufmann: control of corruption, growth

BASE SPECIFICATION

```
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll if d_oecd==0 & re-
gion1!=., robus
> t;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(3)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.7265743                        Pseudo R2     = 0.7330
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.96e-09   1.75e-09     1.82   0.068   5.2e+07  -1.5e-09  5.4e-09
gdp_t~00 |   3.81e-13   2.04e-13     2.07   0.038   2.0e+11  -1.9e-14  7.8e-13
gdp_ca~s |   .0446243   .0333962     1.93   0.054    .91036  -.020831   .11008
pop_tr~l |  -.0476522   .0726877    -0.63   0.530   .723337  -.190118  .094813
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0495103  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: The base specification clearly shows that sheer size is a fundamental feature of regional powers. However, the regional "qualitative" superiority is also very important, as reflected by the coefficient for the GDP per capita.

```
. *ECONOMIC DOMINANCE?;
.         *economic growth;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll gdp_cap_g if
d_oecd==0 & region1
> !=., robust;
Probit estimates                                          Number of obs =     81
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.2264296                        Pseudo R2     = 0.7442
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.63e-09   2.07e-09     2.02   0.044   5.4e+07  -1.4e-09  6.7e-09
gdp_t~00 |   5.05e-13   2.54e-13     2.39   0.017   2.1e+11   7.5e-15  1.0e-12
gdp_ca~s |   .0491347   .0370013     1.70   0.089   .930358  -.023387  .121656
pop_tr~l |  -.0573973   .0941607    -0.61   0.543   .727463  -.241949  .127154
gdp_ca~g |  -2.576811   1.808133    -1.55   0.122    .03381  -6.12069  .967064
---------+--------------------------------------------------------------------
  obs. P |   .1111111
 pred. P |   .0621138  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Controlling for basic variables, per capita growth does not seem to be a specialty of regional powers.

```
.         *exports of goods and services (% gdp);
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll exp_gdp_00 if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                  Number of obs =     82
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -7.7131797                Pseudo R2     = 0.7281
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.22e-09   1.90e-09     1.79   0.074   5.5e+07  -1.5e-09  6.0e-09
gdp_t~00 |   4.27e-13   2.27e-13     2.08   0.038   2.1e+11  -1.7e-14  8.7e-13
gdp_ca~s |   .0485891   .0354585     1.90   0.057   .929726  -.020908  .118087
pop_tr~l |  -.0641547   .0828157    -0.75   0.455   .718689  -.226471  .098161
exp_g~00 |   .0003287    .000924     0.36   0.721   33.6377  -.001482   .00214
---------+--------------------------------------------------------------------
  obs. P |   .1097561
 pred. P |    .056934  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: The share of exports in gdp does not play a role.

```
.         *difference to regional mean of exports of goods and services (% gdp);
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll exp_gdp_dis if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                  Number of obs =     82
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -6.7673282                Pseudo R2     = 0.7615
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   5.39e-10   8.58e-10     1.83   0.067   5.5e+07  -1.1e-09  2.2e-09
gdp_t~00 |   1.38e-13   2.09e-13     2.34   0.019   2.1e+11  -2.7e-13  5.5e-13
gdp_ca~s |    .004909   .0110117     0.96   0.335   .929726  -.016674  .026492
pop_tr~l |  -.0494809   .0639981    -1.49   0.137   .718689  -.174915  .075953
exp_gd~s |   .0345845   .0469334     1.80   0.072      .995  -.057403  .126572
---------+--------------------------------------------------------------------
  obs. P |   .1097561
 pred. P |   .0079883  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Growth of exports is important.

```
.         *growth of export value index;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll exp_val_g if
d_oecd==0 & region1
> !=., robust;
Probit estimates                                          Number of obs =     77
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -5.7219694                        Pseudo R2     = 0.7940
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.22e-09   1.52e-09     1.79   0.073   5.7e+07  -7.5e-10  5.2e-09
gdp_t~00 |   7.63e-13   5.01e-13     3.49   0.000   2.2e+11  -2.2e-13  1.7e-12
gdp_ca~s |   .0229907   .0256651     1.04   0.298   .937375  -.027312  .073293
pop_tr~l |  -.0535905   .0781496    -0.63   0.530   .700393  -.206761   .09958
exp_va~g |  -2.390526   1.472224    -2.39   0.017   .038988  -5.27603  .494979
---------+--------------------------------------------------------------------
  obs. P |   .1168831
 pred. P |   .0483308  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: The value of exports index turns its sign compared to the descriptive analysis!

```
.         *industry, value added (% gdp)
>         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll ind_gdp_00 if
d_oecd==0 & region
> 1!=., robust;
.         *difference to regional mean of industry, value added (% gdp)
>         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll ind_gdp_dis if
d_oecd==0 & regio
> n1!=., robust;
.         *average years of secondary education;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll sec_edu_99 if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                          Number of obs =     59
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -4.1462322                        Pseudo R2     = 0.8229
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |  -6.82e-11   1.91e-10    -0.25   0.803   6.8e+07  -4.4e-10  3.1e-10
gdp_t~00 |   1.59e-13   3.03e-13     1.52   0.128   2.6e+11  -4.3e-13  7.5e-13
gdp_ca~s |   .0009578   .0064022     0.21   0.837   .920129   -.01159  .013506
pop_tr~l |     -.0419   .0771042    -1.43   0.153   .702849  -.193021  .109222
sec_e~99 |   -.015202   .0238087    -0.61   0.544   1.30297  -.061866  .031462
---------+--------------------------------------------------------------------
  obs. P |   .1355932
 pred. P |   .0045801  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Secondary education is not significant and negative.

```
.         *distance to regional means of average years of secondary education;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll sec_edu_dis if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                          Number of obs =     59
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -3.7414689                        Pseudo R2     = 0.8402
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |  -1.87e-14   1.43e-13    -0.46   0.645   6.8e+07  -3.0e-13  2.6e-13
gdp_t~00 |   5.92e-17   5.03e-16     2.46   0.014   2.6e+11  -9.3e-16  1.0e-15
gdp_ca~s |   4.73e-06   .0000399     1.85   0.064   .920129  -.000073  .000083
pop_tr~l |   -.000018   .0001525    -2.20   0.028   .702849  -.000317  .000281
sec_ed~s |  -.0000193   .0001614    -1.68   0.093   .987001  -.000336  .000297
---------+--------------------------------------------------------------------
  obs. P |   .1355932
 pred. P |   6.49e-07  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Secondary education with respect to the regional mean is even negative.

```
.         *productivity;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll prod_hj_ll if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                          Number of obs =     73
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.2550415                        Pseudo R2     = 0.7339
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.71e-09   2.37e-09     1.58   0.114   5.9e+07  -1.9e-09  7.3e-09
gdp_t~00 |   7.50e-13   4.11e-13     2.32   0.020   2.2e+11  -5.5e-14  1.6e-12
gdp_ca~s |   .0601388     .04657     1.55   0.121    .94193  -.031137  .151414
pop_tr~l |  -.1461383   .1466296    -1.01   0.311   .763218  -.433527   .14125
prod_h~l |  -.2810384   .3097863    -1.08   0.282      .424  -.888208  .326132
---------+--------------------------------------------------------------------
  obs. P |   .1232877
 pred. P |   .0894406  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Productivity does not play a role.

```
.         *distance to regional mean of productivity;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll prod_hj_dis if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                          Number of obs =     73
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -6.4104691                        Pseudo R2     = 0.7648
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.14e-09   1.88e-09     2.05   0.040   5.9e+07  -1.6e-09  5.8e-09
gdp_t~00 |   4.34e-13   2.97e-13     2.59   0.010   2.2e+11  -1.5e-13  1.0e-12
gdp_ca~s |   .0813752   .0643895     3.22   0.001    .94193  -.044826  .207576
pop_tr~l |  -.0766338   .0645376    -1.06   0.287   .763218  -.203125  .049858
prod_h~s |  -.2003314   .1610964    -2.30   0.022   .962249  -.516075  .115412
---------+--------------------------------------------------------------------
  obs. P |   .1232877
 pred. P |   .0360051  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Are regional powers even less productive when compared to other countries of the region?

```
.         *investment (% gdp);
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll inv_gdp_00 if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -4.2396443                        Pseudo R2     = 0.8535
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.29e-22   3.39e-21     1.50   0.133   5.2e+07  -6.5e-21  6.8e-21
gdp_t~00 |   1.36e-25   3.54e-24     1.80   0.072   2.0e+11  -6.8e-24  7.1e-24
gdp_ca~s |   9.51e-15   2.48e-13     2.16   0.031    .91036  -4.8e-13  5.0e-13
pop_tr~l |  -1.34e-14   3.55e-13    -2.53   0.011   .723337  -7.1e-13  6.8e-13
inv_g~00 |  -4.21e-15   1.10e-13    -2.17   0.030   21.1257  -2.2e-13  2.1e-13
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   8.99e-16  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Investment share is significantly lower.

```
.         *geographic dispersion of the population, gini;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll pop_gini_95 if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                  Number of obs =     81
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -7.5325426                Pseudo R2     = 0.7334
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.58e-09   2.20e-09     1.67   0.094   5.5e+07  -1.7e-09  6.9e-09
gdp_t~00 |   4.15e-13   2.65e-13     1.74   0.082   2.1e+11  -1.0e-13  9.3e-13
gdp_ca~s |   .0543765   .0404546     1.85   0.064   .908162  -.024913  .133666
pop_tr~l |  -.0421339   .0916823    -0.45   0.652   .727463  -.221828   .13756
pop_g~95 |   .1602023   .3040564     0.52   0.601    .62963  -.435737  .756142
---------+--------------------------------------------------------------------
  obs. P |   .1111111
 pred. P |   .0617253  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: No significant agglomeration effects.

```
. *DEMOGRAPHIC DOMINANCE?;
.         *fertility;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll fert_rate_00 if
d_oecd==0 & regi
> on1!=., robust;
Probit estimates                                  Number of obs =     84
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -7.4494839                Pseudo R2     = 0.7395
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.87e-09   1.65e-09     1.62   0.105   5.3e+07  -1.4e-09  5.1e-09
gdp_t~00 |   6.19e-13   3.17e-13     2.86   0.004   2.0e+11  -3.2e-15  1.2e-12
gdp_ca~s |   .0507831   .0356541     1.79   0.073   .918007  -.019098  .120664
pop_tr~l |  -.0760314    .106215    -0.72   0.469   .714534  -.284209  .132146
fert_~00 |   .0313619   .0340759     1.05   0.294   4.12946  -.035426  .098149
---------+--------------------------------------------------------------------
  obs. P |   .1071429
 pred. P |   .0627135  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Fertility level not important.

```
.         *distance to regional mean of fertility;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll fert_rate_dis if
d_oecd==0 & reg
> ion1!=., robust;
Probit estimates                                          Number of obs =     84
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -5.1457648                        Pseudo R2     = 0.8201
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.81e-10   4.78e-10     2.17   0.030   5.3e+07  -7.6e-10  1.1e-09
gdp_t~00 |   6.94e-15   2.34e-14     0.91   0.362   2.0e+11  -3.9e-14  5.3e-14
gdp_ca~s |   .0013167   .0041472     0.55   0.581   .918007  -.006812  .009445
pop_tr~l |   -.006314   .0155511    -1.54   0.125   .714534  -.036794  .024166
fert_r~s |  -.0205667   .0546797    -2.65   0.008   1.01889  -.127737  .086604
---------+--------------------------------------------------------------------
  obs. P |   .1071429
 pred. P |   .0010122  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: However, fertility level compared to the regional level seems to make a difference.

```
. *CULTURAL DOMINANCE?;
.         *international migration stock, total;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll mig_tot_00 if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -6.4934488                        Pseudo R2     = 0.7756
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.42e-09   2.08e-09     2.04   0.042   5.2e+07  -1.7e-09  6.5e-09
gdp_t~00 |   4.20e-13   3.10e-13     1.88   0.060   2.0e+11  -1.9e-13  1.0e-12
gdp_ca~s |   .0453805   .0436241     1.89   0.059    .91036  -.040121  .130882
pop_tr~l |  -.1039997    .060936    -1.44   0.151   .723337  -.223432  .015433
mig_t~00 |  -5.82e-08   4.57e-08    -1.50   0.133    637197  -1.5e-07  3.1e-08
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0412269  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Migration stock does not play a role.

```
.         *international migration stock (% population);
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll mig_pop_00 if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                  Number of obs =     87
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -6.9602055                Pseudo R2     = 0.7595
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.26e-10   5.82e-10     1.54   0.124   5.2e+07  -1.0e-09  1.3e-09
gdp_t~00 |   3.20e-14   1.41e-13     1.71   0.087   2.0e+11  -2.4e-13  3.1e-13
gdp_ca~s |   .0044811   .0198473     1.61   0.106    .91036  -.034419  .043381
pop_tr~l |  -.0062235   .0255452    -1.10   0.271   .723337  -.056291  .043844
mig_p~00 |  -.0023751   .0082263    -0.90   0.371   5.29541  -.018498  .013748
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0024213  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0

.         *international tourism, number of arrivals;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll tour_arr_00 if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                  Number of obs =     81
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood =  -7.533864                Pseudo R2     = 0.7334
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.24e-09   1.95e-09     1.88   0.060   5.5e+07  -1.6e-09  6.1e-09
gdp_t~00 |   1.84e-13   4.01e-13     0.52   0.606   2.1e+11  -6.0e-13  9.7e-13
gdp_ca~s |   .0409834   .0363122     1.90   0.058    .92764  -.030187  .112154
pop_tr~l |  -.0788527   .0685655    -0.96   0.337   .717553  -.213239  .055533
tour_~00 |   9.76e-09   1.17e-08     0.73   0.468   2.0e+06  -1.3e-08  3.3e-08
---------+--------------------------------------------------------------------
  obs. P |   .1111111
 pred. P |   .0486402  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Not significantly more tourists.

```
.         *distance to mean of international tourism, arrivals;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll tour_arr_dis if
d_oecd==0 & regi
> on1!=., robust;
Probit estimates                                  Number of obs =     81
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -5.1133212                Pseudo R2     = 0.8190
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   5.16e-10   7.29e-10     1.53   0.126   5.5e+07  -9.1e-10  1.9e-09
gdp_t~00 |   8.41e-14   1.61e-13     1.18   0.239   2.1e+11  -2.3e-13  4.0e-13
gdp_ca~s |  -.0296892    .044459    -1.64   0.100    .92764  -.116827  .057449
pop_tr~l |  -.0151415    .029223    -0.78   0.433   .717553  -.072417  .042134
tour_a~s |   .0267663   .0344747     2.30   0.022   1.02404  -.040803  .094335
---------+--------------------------------------------------------------------
  obs. P |   .1111111
 pred. P |   .0083417  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: But significantly more tourists when compared to the regional mean.

```
.         *growth of international tourism, arrivals;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll tour_arr_g if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                  Number of obs =     78
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -6.9350229                Pseudo R2     = 0.7514
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.48e-09   2.16e-09     2.06   0.040   5.7e+07  -1.8e-09  6.7e-09
gdp_t~00 |   4.27e-13   2.24e-13     2.37   0.018   2.2e+11  -1.2e-14  8.7e-13
gdp_ca~s |   .0598324   .0437221     2.33   0.020   .916286  -.025861  .145526
pop_tr~l |  -.0187734   .0847689    -0.22   0.827   .706718  -.184917  .147371
tour_a~g |   .6579804   .3551351     2.13   0.033   .072609  -.038072  1.35403
---------+--------------------------------------------------------------------
  obs. P |   .1153846
 pred. P |   .0497896  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: More growth in tourist arrivals.

```
. *MILITARY DOMINANCE?;
.         *length of the peace period since the end of the previous civil war;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll peace_dis if
d_oecd==0 & region1
> !=., robust;
Probit estimates                                  Number of obs =     74
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -7.3422751                Pseudo R2     = 0.7319
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.64e-09   2.28e-09     1.70   0.090   5.7e+07  -1.8e-09  7.1e-09
gdp_t~00 |   6.51e-13   3.18e-13     2.38   0.017   2.1e+11   2.8e-14  1.3e-12
gdp_ca~s |   .0680725   .0456482     1.67   0.095   .953483  -.021396  .157541
pop_tr~l |  -.0596619    .116773    -0.51   0.611   .715134  -.288533  .169209
peace_~s |  -.0648602    .124916    -0.50   0.615   .987977  -.309691  .179971
---------+--------------------------------------------------------------------
  obs. P |   .1216216
 pred. P |   .0865237  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Length of the peace period not important.

```
.         *military personnel (% total labour force);
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll mil_labfor_00 if
d_oecd==0 & reg
> ion1!=., robust;
Probit estimates                                  Number of obs =     85
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -7.4398071                Pseudo R2     = 0.7409
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.37e-09   2.01e-09     2.00   0.046   5.3e+07  -1.6e-09  6.3e-09
gdp_t~00 |   4.14e-13   2.26e-13     2.07   0.039   2.0e+11  -3.0e-14  8.6e-13
gdp_ca~s |   .0565581   .0419363     2.23   0.026   .876539  -.025635  .138752
pop_tr~l |  -.0116556   .0765781    -0.15   0.882   .716827  -.161746  .138435
mil_l~00 |   .0163776    .010068     2.25   0.025   1.89651  -.003355  .036111
---------+--------------------------------------------------------------------
  obs. P |   .1058824
 pred. P |   .0494137  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Significantly more military personnel.

```
.         *distance to regional mean of military personnel (% total labour force);
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll mil_labfor_dis if
d_oecd==0 & re
> gion1!=., robust;
Probit estimates                                          Number of obs =     73
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood =  -4.011254                        Pseudo R2     = 0.8529
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   5.37e-14   3.91e-13     1.94   0.052   6.0e+07  -7.1e-13  8.2e-13
gdp_t~00 |   2.45e-17   1.72e-16     3.24   0.001   2.3e+11  -3.1e-16  3.6e-16
gdp_ca~s |   2.80e-07   2.42e-06     0.20   0.838    .91124  -4.5e-06  5.0e-06
pop_tr~l |  -5.49e-06   .0000391    -3.21   0.001   .683977  -.000082  .000071
mil_la~s |  -.0000142   .0000981    -2.81   0.005   .990568  -.000206  .000178
---------+--------------------------------------------------------------------
  obs. P |   .1232877
 pred. P |   3.85e-07  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: However, significantly less when compared to the regional mean.

```
. *INSTITUTIONAL DOMINANCE?
.         *voice and accountability;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll voice_acc_00 if
d_oecd==0 & regi
> on1!=., robust;
Probit estimates                                          Number of obs =     86
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.6913119                        Pseudo R2     = 0.7332
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.97e-09   1.79e-09     1.78   0.074   5.3e+07  -1.5e-09  5.5e-09
gdp_t~00 |   4.04e-13   2.08e-13     1.99   0.047   2.0e+11  -3.3e-15  8.1e-13
gdp_ca~s |   .0502224   .0341787     2.02   0.043   .884562  -.016767  .117211
pop_tr~l |  -.0435944   .0706765    -0.59   0.553    .72012  -.182118  .094929
voice~00 |  -.0122198   .0392987    -0.30   0.766   1.95791  -.089244  .064804
---------+--------------------------------------------------------------------
  obs. P |   .1046512
 pred. P |   .0510683  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Level of institutions does not play a role.

```
.         *political stability;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll pol_sta_00 if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.4451471                        Pseudo R2     = 0.7427
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.45e-09   1.44e-09     1.53   0.125   5.2e+07  -1.4e-09  4.3e-09
gdp_t~00 |   4.21e-13   2.16e-13     2.50   0.012   2.0e+11  -1.9e-15  8.4e-13
gdp_ca~s |    .041327   .0302575     1.93   0.053    .91036  -.017977  .100631
pop_tr~l |  -.0553903   .0635335    -0.88   0.379   .723337  -.179914  .069133
pol_s~00 |  -.0405004   .0262937    -1.58   0.114   1.89782  -.092035  .011034
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0420173  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Are regional powers even less stable?

```
.         *growth of political stability;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll pol_sta_g if
d_oecd==0 & region1
> !=., robust;
Probit estimates                                          Number of obs =     84
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.6732069                        Pseudo R2     = 0.7317
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.08e-09   1.87e-09     1.78   0.075   5.3e+07  -1.6e-09  5.7e-09
gdp_t~00 |   4.17e-13   2.17e-13     2.06   0.039   2.0e+11  -9.0e-15  8.4e-13
gdp_ca~s |   .0466301   .0359214     1.81   0.070   .929073  -.023775  .117035
pop_tr~l |  -.0497323   .0804631    -0.59   0.553   .725306  -.207437  .107973
pol_st~g |   .0974119   .1021956     0.99   0.320   .013775  -.102888  .297711
---------+--------------------------------------------------------------------
  obs. P |   .1071429
 pred. P |   .0556012  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

```
.         *government effectiveness;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll gov_eff_00 if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.6681909                        Pseudo R2     = 0.7350
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.91e-09   1.74e-09     1.71   0.086   5.2e+07  -1.5e-09  5.3e-09
gdp_t~00 |   4.65e-13   2.42e-13     2.22   0.027   2.0e+11  -8.6e-15  9.4e-13
gdp_ca~s |   .0509089   .0382953     1.88   0.060    .91036  -.024149  .125966
pop_tr~l |  -.0582427   .0753269    -0.74   0.459   .723337  -.205881  .089395
gov_e~00 |  -.0310767   .0487559    -0.67   0.503   2.08862  -.126636  .064483
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |    .054319  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Institutional levels do not play a role.

```
.         *growth of government effectiveness;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll gov_eff_g if
d_oecd==0 & region1
> !=., robust;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -3.4529987                        Pseudo R2     = 0.8807
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   5.51e-91   8.74e-89     2.26   0.024   5.2e+07  -1.7e-88  1.7e-88
gdp_t~00 |   2.57e-94   4.08e-92     2.35   0.019   2.0e+11  -8.0e-92  8.0e-92
gdp_ca~s |   2.81e-83   4.46e-81     2.30   0.022    .91036  -8.7e-81  8.8e-81
pop_tr~l |   1.40e-83   2.23e-81     1.43   0.152   .723337  -4.3e-81  4.4e-81
gov_ef~g |   7.77e-82   1.23e-79     2.33   0.020  -.007087  -2.4e-79  2.4e-79
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   1.64e-85  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

Result: Improvements of government effectiveness over time.

```
.         *regulatory quality;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll reg_qual_00 if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                  Number of obs =     87
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -7.3140101                Pseudo R2     = 0.7472
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.75e-09   1.67e-09     1.62   0.105   5.2e+07  -1.5e-09  5.0e-09
gdp_t~00 |   4.48e-13   2.03e-13     2.28   0.022   2.0e+11   5.1e-14  8.5e-13
gdp_ca~s |   .0498735   .0337891     2.02   0.043    .91036  -.016352  .116099
pop_tr~l |  -.0273634   .0767237    -0.36   0.716   .723337  -.177739  .123012
reg_q~00 |  -.0497822    .031175    -1.29   0.199   2.24621  -.110884   .01132
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0465539  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0

.         *growth of regulatory quality;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll reg_qual_g if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                  Number of obs =     84
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -6.5349829                Pseudo R2     = 0.7715
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.02e-09   1.03e-09     2.01   0.045   5.3e+07  -9.9e-10  3.0e-09
gdp_t~00 |   3.03e-13   2.46e-13     2.46   0.014   2.0e+11  -1.8e-13  7.9e-13
gdp_ca~s |   .0286693   .0234558     2.07   0.038   .929878  -.017303  .074642
pop_tr~l |   -.035387   .0472266    -0.96   0.339   .713456  -.127949  .057176
reg_qu~g |   .5987202   .4356082     2.34   0.019   .002759  -.255056   1.4525
---------+--------------------------------------------------------------------
  obs. P |   .1071429
 pred. P |   .0209053  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

```
.         *rule of law;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll rule_law_00 if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood = -7.5767693                        Pseudo R2     = 0.7382
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.74e-09   1.70e-09     1.50   0.135   5.2e+07  -1.6e-09  5.1e-09
gdp_t~00 |   4.50e-13   2.22e-13     2.18   0.029   2.0e+11   1.5e-14  8.8e-13
gdp_ca~s |    .053088    .036857     1.92   0.055    .91036   -.01915  .125326
pop_tr~l |  -.0648793   .0742382    -0.86   0.388   .723337  -.210384  .080625
rule_~00 |  -.0473704   .0532224    -0.88   0.380   2.01644  -.151684  .056944
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0531583  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0

.         *growth of rule of law;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll rule_law_g if
d_oecd==0 & region
> 1!=., robust;
Probit estimates                                          Number of obs =     87
                                                          Wald chi2(4)  =      .
                                                          Prob > chi2   =      .
Log pseudo-likelihood =  -6.784129                        Pseudo R2     = 0.7655
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.59e-09   1.47e-09     2.06   0.040   5.2e+07  -1.3e-09  4.5e-09
gdp_t~00 |   3.58e-13   2.13e-13     2.67   0.008   2.0e+11  -5.9e-14  7.8e-13
gdp_ca~s |   .0368501   .0295371     1.98   0.048    .91036  -.021042  .094742
pop_tr~l |  -.0360892   .0604434    -0.60   0.551   .723337  -.154556  .082378
rule_l~g |   .7217335     .46582     3.16   0.002    .00017  -.191257  1.63472
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0328313  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

```
.         *control of corruption;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll cont_corr_00 if
d_oecd==0 & regi
> on1!=., robust;
Probit estimates                                  Number of obs =     87
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood =  -7.453967                Pseudo R2     = 0.7424
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   1.44e-09   1.39e-09     1.52   0.129   5.2e+07  -1.3e-09  4.2e-09
gdp_t~00 |   3.79e-13   2.00e-13     2.34   0.019   2.0e+11  -1.3e-14  7.7e-13
gdp_ca~s |   .0535999   .0325695     2.01   0.045    .91036  -.010235  .117435
pop_tr~l |  -.0577413   .0707056    -0.86   0.389   .723337  -.196322  .080839
cont_~00 |  -.0684608   .0558127    -1.14   0.256   2.01805  -.177852   .04093
---------+--------------------------------------------------------------------
  obs. P |   .1034483
 pred. P |   .0436727  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0

.         *growth of control of corruption;
.         dprobit reg_power pop_tot_00 gdp_tot_00 gdp_cap_dis pop_trop_ll cont_corr_g if
d_oecd==0 & regio
> n1!=., robust;
Probit estimates                                  Number of obs =     80
                                                  Wald chi2(4)  =      .
                                                  Prob > chi2   =      .
Log pseudo-likelihood = -7.7215255                Pseudo R2     = 0.7256
------------------------------------------------------------------------------
             |               Robust
reg_po~r |      dF/dx   Std. Err.      z    P>|z|     x-bar  [    95% C.I.   ]
---------+--------------------------------------------------------------------
pop_t~00 |   2.50e-09   2.17e-09     1.83   0.067   5.6e+07  -1.7e-09  6.7e-09
gdp_t~00 |   4.92e-13   2.50e-13     2.04   0.042   2.1e+11   2.5e-15  9.8e-13
gdp_ca~s |   .0571013   .0404358     1.92   0.055   .928523  -.022151  .136354
pop_tr~l |  -.0619785    .095325    -0.63   0.526   .699156  -.248812  .124855
cont_c~g |   .0972092   .9841981     0.10   0.922  -.002346  -1.83178   2.0262
---------+--------------------------------------------------------------------
  obs. P |      .1125
 pred. P |   .0680575  (at x-bar)
------------------------------------------------------------------------------
    z and P>|z| are the test of the underlying coefficient being 0
```

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