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WORKING PAPER

Regional Integration Agreements and Rent-Seeking in Africa

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Regional Integration Agreements and Rent-Seeking in Africa*

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Abstract

This paper explores the motives behind the formation of intra-African regional integration agreements (RIAs). We aim to see whether rent-seeking can be identified as a statistically significant driving force of African integration. The traditional reason for economic integration, the static and dynamic effects, predict no or even a negative effect on welfare. Moreover, many of the new regionalism theories are conditional on strong economic integration. Two exceptions are rent-seeking behavior and the regime boosting hypothesis. Not only can they credibly explain the proliferation of African trade agreements in the absence of a positive effect on welfare, they can also account for the lack of progress in clearing away the many obstructions to regional trade.

Because most African agreements involve more than two partner countries, the decision to enter a RIA cannot be analyzed by examining agreements between pairs of countries. Instead, we propose regressing whether a country is a member of a certain agreement on the characteristics of both country and agreement. We find that corruption does have an effect on the willingness to join RIAs, but that it is strongly dependent on the level of GDP. Moreover, for a given level of GDP the effect of corruption is non-linear.

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1 Introduction

Regional integration has been very popular in Africa over the last 50 years. Every country is part of at least one regional integration agreement (RIA), and on average an African country is member of four agreements (The World Bank, 2005). Yet, it is hard to reconcile this enthusiasm for regional integration with its results. Practically all indicators (apart from the number of agreements) show that African economies are barely integrated at all. Tariff reduction schemes are backlogged, rules of origin are extremely restrictive and cross-border transportation facilities are either inadequate, or missing altogether. As a result, the level of intra-regional trade of most African RIAs barely exceeds 10% (relative to around half of all trade in NAFTA or the EU-27), and in some cases it even fell after signing the agreements (UNU-CRIS, 2006).

What is especially confusing is that the reasons for African integration have never been very compelling to begin with. First of all, most African countries do not produce any of the products that are of interest to neighboring countries. The bulk of African trade is with developed economies, in particular the European Union. The African trade patterns are not

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complimentary and static analysis warns that this will most likely result in trade diversion and hence lower welfare.

The dynamic effects of RIAs are also unlikely to be strong. Creating a unified African market means circumventing or breaking down many barriers to trade: a deficient transportation network, different legal systems, different languages, etc. Even in the best case scenario, the costs of unifying these markets outweigh the benefits in the short and medium-long term (Yeats, 1998). All of this makes it difficult for traditional economic theory to explain the proliferation of African free trade agreements. Similarly, most of the theories lumped together under the banner of new regionalism lack persuasiveness: locking in reform, raising policy credibility and strengthening regional stability all require strong economic integration or are impeded by the lack thereof.

The regime boosting hypothesis (Söderbaum, 2004) and rent-seeking behavior are two exceptions. They can account for the strong interest in integration in the absence of a positive effect on welfare, as well as for the failure in breaking down the barriers to trade. The former states that governments in a tenuous political position will use the act of signing RIAs as a way to gain legitimacy abroad and attract funding. The latter affirms that regional integration can also be used to set up *domestic* rent extracting mechanisms. The agreements bestow extensive powers on the negotiating parties, which combined with the absence of an increase in welfare creates an ideal environment for lobbying and bribery.

Bringing corruption into the analysis means that the government can no longer be seen as a monolithic actor trying to maximize social welfare, but rather as a collection of agents with their own objectives. Grossman and Helpman (1995) provide a useful framework for studying the negotiations of international agreements in such a setting. In the first stage, the government agents interact with domestic power groups in order to form the policy preference set. Those preferences are then played out against each other internationally. The corollary of their model is that the more corrupt the government is, the more RIAs it will try to close in order to maximize rent extracting capabilities.

While there exist ample examples of RIAs being misused this way, the evidence of rent-seeking being a driving force of integration remains largely anecdotal. The goal of this paper is to see whether it can be identified as a statistically significant influence on the decision to enter a free trade agreement in Africa. In doing so, it builds on papers by Mansfield, Milner, and Rosendorff (2002), Baier and Bergstrand (2004), Endoh (2006), Wu (2006) and Márquez-Ramos, Martínez-Zarzoso, and Suárez-Burguet (2009) that try to determine the reasons behind the formation of regional integration agreements.

This paper differs from those listed above mainly in two ways. Firstly, this paper is centered on intra-African integration attempts and problems that are particular to this continent. Secondly, with the exception of Wu (2006), the papers above study regional integration in a bilateral setting, focusing on agreements between country pairs. However, the structure of African RIAs does not lend itself to be analyzed in this way since most agreements involve more than two partner countries. Moreover, the bilateral approach ignores the problem of overlapping agreements. As a solution, we propose using a multilateral approach: regressing whether or not a country x is member of agreement z on the characteristics of both. This means looking at integration from the point of view of an individual country trying to decide whether to join a certain RIA.

2 Irrational exuberance

A logical place to start examining the potential reasons behind the formation of regional integration agreements are the respectively short and long term static and dynamic effects. In recognition of the fact that the advantages and disadvantages of forming RIAs go beyond changes in trade patterns, the analysis is then further expanded to cover the effect of integration on regional cooperation, political stability, reform credibility and negotiating power.

2.1 Static effects

In his seminal work, Viner (1950) states that lowering the barriers to trade on an imported good only for a specific group of partner countries will have two conflicting effects on domestic welfare: trade creation and trade diversion. Whether a RIA will raise or lower welfare depends on the relative size of these two effects over all sectors covered by the RIA.

Trade creation will be higher when (i) the countries traded a lot before the agreement, (ii) domestic trade was higher before agreement and (iii) the export structure of both countries is compatible. The latter entails that they export, or are capable of exporting different goods to each other (McCarthy, 1994). Baier and Bergstrand (2004) add to this reasoning that when transportation costs are taken into account, the relative distance to the rest of the world also plays a role. The higher the transportation costs to the rest of the world, the lower the opportunity costs of forming a RIA and the smaller the probability of trade diversion.

The problem with African integration is that current and historical trade patterns indicate high trade diversion and almost no trade creation. With the exception of South Africa and a few other more developed nations, exports are focused on primary goods, while imports are for the most part manufactured goods. The non-complementarity in African trade is high and even under the most favorable assumptions not likely to change rapidly (Yeats, 1998). Export infrastructure is aimed at the developed world, and local trade infrastructure is either missing or inadequate, suggesting that the distance with the rest of the world in terms of transportation costs is relatively small (Yang and Gupta, 2007).

African countries trade little with each other, both before and after integration. Nevertheless, a number of authors find that African countries do not trade *too* little. Foroutan and Pritchett (1993) find that, given their level of development, distance from each other (both physically and in terms of trade costs) and a number of other factors, the predicted trade of African countries does not deviate significantly from actual trade. In other words, the lack of trade potential can completely explain the low degree of intra-African trade. However, Iapadre and Luchetti (2010) show that African intra-regional trade is much higher than simple measures of intra-regional trade make seem. Furthermore, using a corrected measure of intra-regional trade (the regional trade introversion index) they find that African trade is increasingly becoming inward-oriented. Nevertheless, this reorientation is *"not so much the result of successful integration policies as the unavoidable outcome of problems in extra-regional trade"* (Iapadre and Luchetti, 2010, p.8).

2.2 Dynamic effects

As shown in the last section, static analysis predicts no, or even a negative effect of integration on welfare. However, this was broadly recognized from the onset. The argument for African integration was centered on the dynamic gains, notably the economies of scale induced by creating an intra-African market (McCarthy, 1994). However, this argument is not without its flaws.

"Imagine subdividing Belgium into forty-something independent countries, each with its own isolated goods and factor markets, a different public administration, currency, language, fiscal and monetary authorities, army, plus a very inefficient inter-country transportation network. Economists would contend that the welfare of individuals would surely be reduced." (Foroutan, 1993, p.234)

While at first glance the quote from Foroutan reads like an argument in favor of regional integration, it also encapsulates the two biggest problems with this idea. First of all, even if we were to unite all sub-Saharan markets, the combined GDP would still be small, especially given the size of the African continent. For instance, in 2009 the combined GDP of all sub-Saharan countries roughly equaled that of the state of New York. Secondly, in order to fully integrate, a slew of problems would have to be conquered: different languages, currencies, rules and regulations, practically non-existent transnational transportation facilities... Circumventing or breaking down these barriers to trade is extremely expensive in time, money and human capital.

The cost of attaining the level of integration that

is needed to produce economies of scale greatly outweighs its benefits in the short and medium-long term. The question then becomes: *"do African countries really have the option of favoring high cost relatively inefficient regional exports over the next two or three decades in the hope that local industries will eventually become internationally competitive, and the export base will expand?"* (Yeats, 1998, p.75)

To exacerbate the problem, the distribution of the benefits of bilateral trade liberalization is highly uneven. Most agreements are dominated by a *hegemon*: a country whose GDP is the multiple of that of other members, that is more industrialized, has higher tariff rates and often is the sole producer (Carrere, 2004). As a result, trade diversion will be high with most benefits accruing to the hegemon, leaving the smaller partner countries to pay for its increase in welfare. Moreover, the location theory developed by Krugman and Venables (1989) predicts that removing barriers to trade in this setting will lead firms to relocate to the biggest market. Especially when those barriers are taken down gradually. Combining distributional effects with the limited impact on trade and growth means that regional integration in Africa becomes a near zero-sum game. That these distributional problems are not without consequences, was all too clear in the East African Community (EAC) where they led to its dismantlement in 1977.

The negotiations of more recently formed RIAs have been centered on these distributional problems. Various compensation mechanisms have been concocted, but finding an efficient, non-distortionary system is not an easy task (Foroutan, 1993). Additionally, rules of origin and exemption clauses are increasingly used to prevent regional competition and often end up negating the benefits of trade liberalization altogether. This was especially noticeable in the Southern African Development Community (SADC), where the initially simple rules of origin have become ever more convoluted as more and more sectors sought protection (Flatters, 2002).

An issue closely related to these distributional problems is the fact that trade taxes are an important source of government income: on average they account for 30%, going as high as 50% of total government revenue (Cadot, de Melo, and Olarreaga, 1999). While switching tax base is an obvious solution, its implementation is far from simple. The informal economy is estimated to be very large: up to 60% for the entire African continent (HDR, 1994). Given the fact that detailed information on population is often missing as well, the successful shift to income or consumption taxes seems unlikely in the short term. Baunsgaard and Keen (2010) for example found no evidence that low income countries were able to replace the revenue lost from trade liberalization.

2.3 New regionalism theories

The new regionalism theories list other possible reasons for integration that go beyond advantages to trade. A first one is that RIAs can help bring peace to the war-struck African continent. Undoubtedly inspired by the European successes, this argument nevertheless falls somewhat short. First of all, the pacifying effect of the European Union is build on the fact that its member countries have strong economic ties, which would make a third war *"not only unthinkable, but materially impossible"* (Schuman, 1950). However, seeing that in African integration this economic deterrent is missing this amounts to nothing more than promising to talk over international disputes. Secondly, in sub-Saharan Africa domestic forces are often a much bigger threat to political stability than international ones. Historically speaking, the probability of revolutions, coups and civil wars is a far greater than an all-out war between nations; A fact illustrated by the recent splitting up of the Republic of the Sudan (Söderbaum, 2004).

Another often cited effect of regional integration is that it can strengthen policy credibility and help lock in domestic reform (Maggi and Rodríguez-Clare, 1998; Mansfield et al., 2002). By being self-enforcing or allowing compensating action or punishment, a RIA can raise the perceived legitimacy of domestic reform programs. However, finding a strong enough enforcement mechanism is not an easy task. Case in point is the serious backlog in most reform programs and the increasing use of (informal) non-tariff barriers aimed at protecting against regional competition (Khandelwal, 2004). Credibility is not an exogenous

characteristic, but depends on the economic success of the arrangement (Winters, 2001).

Regional integration and cooperation naturally reinforce each other. However, in the short term, there is a trade-off between cooperation and integration. As the negotiations of RIAs are time-, effort-, and expertise-consuming, they crowd-out the negotiations of possible cooperation schemes. Additionally, if for example distributional problems impair the trust between the partner countries, this could threaten cooperation in the long run as well. As Schiff and Winters (2002, p.25) point out: *"given the potential for distortion that trade preferences entail, the negotiating effort required to form a regional integration agreement would almost certainly be better spent directly on the resource issue at hand if that were all the RIA is intended for."*

Finally, the success of the European Union and NAFTA has been a force driving African integration. The fear of being marginalized both in the global economy and in global politics has prompted African nations to work more closely together (de Melo, Panagariya, and Rodrik, 1993).

3 Rent-seeking as a driving force of integration

Explaining integration in the absence of a positive effect on social welfare means abandoning the assumption of a benevolent government. In the regime boosting hypothesis the government's main worry is strengthening its political power. It states that governments in tenuous domestic political situations will use regionalism to strengthen their position. By attending regional summits, signing protocols, etc., the government seeks recognition of its legitimacy abroad, which it then uses to attract foreign aid and support. Söderbaum (2004) gives the example of SADC where national projects were often disguised as regional ones and got funded with donor money.

Besides capturing international rents, RIAs can also be used to appropriate domestic rents. They have a big impact on a substantial part of the economy, and their negotiations bestow extensive powers to politicians and bureaucrats. They can be used to influence market structure, conditions that have to be met to import or export goods, etc. Furthermore, the complexity of the agreements allows corrupt officials to easily hide their actions. This combined with the near zero-sum-game outcome of integration creates an ideal breeding ground for political lobbying, corruption and bribery.

Take for example the Economic Community of West African States (ECOWAS), where the regional cooperation tax had been set up to compensate countries for the loss of tariff revenues on intra-regional trade. The system set up turned out to be highly discriminatory, providing opportunities only for firms working in the formal sector. It also led to fraudulent behavior because the compensation computations were based on highly unreliable data (M'Bet, 1997).

A similar situation could be found in the Central African Monetary and Customs Union (UDEAC) with the single tax (*tax unique*). The official goal of this tax was to foster and protect intra-regional production by limiting domestic and import taxes relative to extra-regional goods. Selected goods from membership countries were taxed once when crossing the border at their respective single tax rate and would then be exempt from all other indirect taxes and import duties. Again, this set up resulted in an extremely discriminatory system, where not only each firm, but also each good within a firm could be subject to its own tax rate. As a result, the setting of each tax rate was subject to numerous strategic considerations and had little to do with economic considerations (Decaluwe, Njinkeu, and Cockburn, 1997).

Institutions can also be misused in more direct ways. Decaluwe et al. (1997) provide the example of UDEAC where participants in missions and reunions were so well compensated that civil servants in the member states started submitting dossiers on any pretext in order to guarantee their attendance at these gatherings. Agendas would be littered with items that allowed so called experts to attend the head-of-state summits, even though those studies were often of poor quality. Besides wasting money that could otherwise have been spent on more productive goals, this also severely impeded

with the workings and decision making capabilities of the UDEAC institutions.

When rent-seeking becomes an underlying force of integration, things that seemed random and irrational from the perspective of the country as a whole can be explained by rational actions of profit maximizing individuals. First of all, closing weak and overlapping trade agreements allows for more rent extraction, because it complicates international trade relations. Corrupt officials prefer closing agreements that act as a barrier to trade over improving the existing ones, since the latter might cut off their access from certain sources of rent. Secondly, despite the fact that more limited forms of cooperation might be easier to set up and would certainly be beneficial to both sides, corrupt officials prefer regional integration because it allows them greater powers over the economy as a whole, while being complex enough to hide their actions. Location effects, which would normally prevent smaller countries from wanting to enter into a trade agreement with bigger ones, will be less of a deterrent since government officials care more about rents than growth. Moreover, during later integration attempts they were often granted additional powers to stop industries from moving abroad, giving them even more opportunities to extract rents.

Rent-seeking is also used as an explanation for the lack of progress in regional integration. Vested interests in the informal economy -which often surpasses national boundaries- oppose formal treaties that would undo many of the transnational inefficiencies and disparities that are lucrative to them (Söderbaum, 2004). However, given the potential for profitable opportunities, rent-seeking can just as well be a force driving integration agreements. Grossman and Helpman (1995) work out a model where the sectors that stand to lose and those that stand to gain both lobby the government and seek to influence its policy decision using political contributions. In the next section we briefly outline their model and discuss its implications for African integration.

3.1 Theoretical framework

Grossman and Helpman (1995) analyze the political pressure on a government as it considers entering in a free trade agreement (FTA). In doing so, they split up the negotiating process in two distinct stages. In the first stage, the interaction between government officials and domestic power groups determines the set of government policy preferences. In the second stage these different sets of preferences are played out against each other in order to determine the international equilibrium.

While their model was set up with FTAs between developed countries in mind, it also fits state of affairs in developing countries. First of all, it concerns small countries that even when in a coalition, will not be able to influence prices on the world market. Secondly, the model mostly ignores labor supply issues and keeps wages fixed; a situation resembling a country with a high degree of (hidden) unemployment. Lastly, because of sector specific inputs, the benefits of production accrue to a small elite and production technology markedly lacks substitution possibilities, both attributes that also apply to a lot of African economies.

Crucial to their model is that they forgo the assumption of the government being a benevolent social planner. Instead, the government maximizes the weighted sum of average voter welfare (W) and political contributions (C_i): $G \equiv \sum_{i=1}^{n} C_i + a*W$. Average voter welfare is the sum of total labor income, the total (gross) profits of specific factor owners, import tariff revenue, and consumer surplus. The weighting factor $\frac{1}{a}$ can be seen as a measure of rent-seeking in the government.

All $n+1$ goods are produced with constant returns to scale and (except for the numeraire, good 0) they all require labor and a specific sector input. While labor is supplied perfectly elastically, the supply of the specific sector input is fixed and its ownership is limited to a small fraction of the total population. With perfect competition on the goods market and constant wages, the total rewards accruing to the specific sector input only depend on the price of the good: $\Pi_i(p_i)$.

Prices on the international goods market are normalized to 1. However, the government levies an import tariff of $\tau - 1$, bringing the domestic prices of imported goods to τ. The tariff revenue is subsequently transferred to the consumer in the form of a

lump-sum payment.

The owners of each specific sector input are able to overcome collective action problems and form lobbies. These lobbies try to influence government policy by offering political contributions conditional on specific policy choices. Their goal is to maximize their profit net of contributions: $\max_{C_i} \Pi_i(p_i) - C_i$.

A coalition-proof unilateral stance favoring the FTA will exist when:

$$\sum_{i=1}^{n} \Pi_{i,F} + aW_F \geq \sum_{i=1}^{n} \Pi_{i,N} + aW_N;$$

the subscripts F and N symbolizing the situation under the FTA and under uniform tariffs, respectively.

Grossman and Helpman work out the case where the joint production of the two countries is fixed at X. In a fraction s of all industries, country A supplies θX, and country B produces $(1-\theta)X$, while the opposite holds true in the remaining fraction $1-s$. In other words, by raising θ or s we can increase the imbalance in output per sector, or the imbalance in potential export industries, respectively.[1]

Demand functions are assumed to be linear: $D_i(p_i) = D - bp_i$. In addition, the initial most-favored-nation import tariffs are set strategically, rising as the size of the sector (X_i), or the rent-seeking in the government ($\frac{1}{a}$) goes up, and falling as the size of the marginal effect of price on demand $|-b|$ increases: $\tau_i = 1 + \frac{X_i}{ab}$ (Grossman and Helpman, 1994). Assuming that X is too small to satisfy all demand in any one country, the FTA would not affect domestic prices (a situation they call *enhanced protection*).

In every sector the entire production X will be diverted to the country with the highest external tariffs and hence highest domestic prices: to country A in all sectors in s, and to country B in the remaining fraction $1-s$. While this does not affect the profits of the importing country's firms, average voter's welfare will still fall since the corresponding tariff revenue is lost. For country A [B], this means that in all the importing sectors s $[1-s]$ the effect of an FTA is:

$$\begin{aligned} \Delta\Pi_i^j &= 0 \\ \Delta W_i^j &= -(\tau_i^j - 1) * X_i^k(\tau_i^j) \\ &= -\frac{\theta(1-\theta)X^2}{ab} \end{aligned}$$

with $(j,k) = (A,B)$ $[B,A]$.

The exporting country increases its welfare, first of all because of the higher price its exports get. Secondly, it now has to imports everything from the rest of the world, which raises its tariff revenue. The effect of an FTA in country A [B] on sectors $1-s$ $[s]$ becomes:

$$\begin{aligned} \Delta\Pi_i^j &= \Delta\Pi_i^j(\tau_i^k) - \Delta\Pi_i^j(\tau_i^j) \\ &= \frac{(2\theta-1)(1-\theta)X^2}{ab} \\ \Delta W_i^j &= \Delta\Pi_i^j + (\tau_i^j - 1) * X_i^j(\tau_i^j) \\ &= \frac{\theta(1-\theta)X^2}{ab} \end{aligned}$$

with $(j,k) = (A,B)$ $[B,A]$.

Because of the symmetry in this example, the increase in welfare perfectly compensates the loss in the partner country[2]. Nevertheless, the condition for a coalition-proof unilateral stance can still be fulfilled for both countries. Filling in the effects on welfare and profits we get the following conditions for country A and B:

$$A: \quad (1-2s)\tfrac{\theta(1-\theta)X^2}{ab} + (1-s)\tfrac{(1-\theta)(2\theta-1)X^2}{ab} \geq 0;$$

$$B: \quad (2s-1)\tfrac{\theta(1-\theta)X^2}{ab} + s\tfrac{(1-\theta)(2\theta-1)X^2}{ab} \geq 0.$$

While country B's condition is entirely tautological[3], the validity of country A's condition depends on its parameter values. Reworking it gives us a boundary value on s (labeled β), expressing the maximum size of the imbalance in potential export sectors that would still allow a FTA to be formed:

$$s \leq \frac{1}{2} + \frac{\theta - \frac{1}{2}}{2\theta - 1 + 2a\theta} \equiv \beta.$$

[1] Within the bounds: $\frac{1}{2} < \theta \leq 1$; and $\frac{1}{2} \leq s \leq 1$.

[2] In other words, even with compensating transfers between the two countries (which is ruled out in this model), a Pareto improving FTA would not be possible.

[3] $2s \geq 1$ and $2\theta > 1$ making both parts of the sum nonnegative

The implication is that the more the government cares about rent-seeking (the lower a), the higher the political viability of a FTA agreement ($\frac{\partial \beta}{\partial a} < 0$). Secondly, the greater the sectoral imbalance θ, the higher the increase in profits, the more likely the agreement is ($\frac{\partial \beta}{\partial \theta} > 0$).

Grossman and Helpman's model can explain the desire to form RIAs even in the absence of a positive effect on welfare. At the same time, it offers a clear testable hypothesis: governments characterized by strong rent-seeking behavior are more likely to close RIAs, but the strength of this effect will depend on its relative GDP.

3.2 Investigating corruption and integration

This model inspired a number of authors to look at the influence of corruption on the decision to enter a RIA, both theoretically and empirically.

Ornelas (2005) expands the model of Grossman and Helpman (1995) by adding a rent-destruction effect. He argues that RIAs lead to more competition between countries, which reduces the returns to high external tariffs for the import competing industries. Because lobbies take this into account when deciding whether or not to support a FTA, the viability of welfare-reducing free trade agreements is severely impaired. The higher the government's preference for rents, the stronger this rent-destruction effect will play. As a result, welfare-reducing RIAs are only possible at intermediate levels of corruption. If social welfare was the only thing of importance, the government would never consider closing welfare-reducing FTAs. With high preference for rents the rent-destruction effect dominates and lobbies would not support the FTA.

Maggi and Rodríguez-Clare (1998) on the other hand see RIAs purely as a way for the government to limit the power of lobbies and eliminate certain sources of rents. In their model, the preference of the government for contributions versus welfare also has a non-monotonic effect on the likelihood of entering into an agreement. The government would only join a RIA if they care about welfare as well as rents. If they care too much about rents, they would never consider entering into an agreement. On the other hand, if the government was not concerned about rents at all the lobbies would not be able to exert any pressure to start with.

Endoh (2006) works out a model detailing the effect of changes in the quality of governance on the formation of RIAs and tests its implications. While his model is also based on Grossman and Helpman (1995), the effects of a change in governance is reversed: better governance raises the probability of closing a RIA. The main reason for this is that he uses a different government objective function: $G \equiv \alpha W + \alpha(C + \tau)$. Arguing that the inability to tax is also a sign of weak governance, import tariffs are treated the same as contributions for lobbyists. Nevertheless, the derivative of governance (α) is not parameter independent and its sign is unclear.

Following Mansfield et al. (2002) and Baier and Bergstrand (2004), Endoh tests his hypotheses in a strict bilateral setting. A dataset of over 6000 country-pairs is compiled, listing whether or not those countries are in a RIA and a number of shared characteristics: combined GDP, difference in GDP, sum of the governance indicators, on what continent both countries lie, etc. Using this dataset in logit regressions, he finds confirmation of the posited positive effect of quality of governance on the likelihood of closing a RIA.

Wu (2006) examines the determinants of deep regional integration. To do this, she creates a variable listing the deepest level of integration a country is engaged in per year[4]. Using an ordered probit estimation procedure, this variable is then regressed on measures of trade, political, business, and price uncertainty and various other country specific characteristics.

As one of the measures of political uncertainty, she uses corruption, reasoning that countries marked by high corruption will use RIAs *"to end trade risks brought about by the capricious behavior of domestic government representatives"* (Wu, 2006, p.167). In other words, she posits a positive correlation between corruption and the level of integration. Re-

[4]The ranking goes: (0) no cooperation (1) sectoral cooperation, (2) FTA, (3) customs union, (4) economic union and (5) supranational nation.

gressing the latter on Transparency International's corruption perceptions index (TI) produces a coefficient with the right sign, but it is small and insignificant. However, when she subsequently collapses the dependent variable to a dummy variable, the coefficient on corruption rises both in absolute value and in significance.

While these results reject Wu's premise, they fit within the rent-seeking hypothesis. According to the latter, government officials use RIAs to attract and extract rents, leading to more agreements. However, they oppose deep integration since that might cut of their access to certain sources of rents. Combining both leads to a non-linear effect of corruption on the level of integration, but a positive effect on the number of agreements.

4 Econometric specification

Two econometric approaches can be found in the literature to determine the factors that drive regional integration attempts.

Wu (2006) uses a *unilateral approach*: she regresses whether or not country x entered a RIA in year t on the characteristics of that country in that year. This can be used for example to test whether landlocked nations or relatively more corrupt governments are more likely to join a RIA. Its main drawback is that the characteristics of the partner countries cannot be taken into account.

Mansfield et al. (2002), Baier and Bergstrand (2004), Endoh (2006) and Márquez-Ramos et al. (2009) on the other hand use a *bilateral approach*. This entails regressing whether or not two countries have formed a RIA on a number of shared characteristics of both countries. For example, it allows you to test whether differences in level of development or their distance from each other of them will influence the decision to form a RIA.

The problem with the bilateral approach is most of the intra-African trade agreements involve more than two partner countries. Treating these as if they are a collection of bilateral agreements is an oversimplification that leads to a measurement error and spatial correlation among the error terms. For example, it implies that you analyze the decision of Rwanda and Burundi to join the CEPGL, while disregarding the fact that the Democratic Republic of Congo is also a partner in the agreement. Furthermore, the bilateral approach has no way to deal with overlapping agreements, a problem that is endemic in African integration.

The *multilateral approach* is a straightforward solution to the issues of both approaches. Instead of looking at country-country pairs like the bilateral approach, it studies country-RIA pairs instead. The dependent variable is a dummy variable indicating whether or not a certain country x is a member of RIA z. It can be regressed on information that is country-specific (e.g. the level of corruption in the candidate country), RIA-specific (e.g. the average size of member countries) or both (e.g. the fraction of countries with a similar colonial history).

In order to see how much this influences the results, we set these three approaches against each other in section six.

5 Data

5.1 Regional integration

In order to test the link between corruption and integration, data was collected on the founding of, and accession to regional integration agreements in Africa. This was done using the Regional Integration Knowledge System (UNU-CRIS, 2006), and the webpages of the regional trade agreements themselves. The thirteen FTAs and customs unions incorporated are: AMU, CEN-SAD, ECOWAS, GAFTA and UEMOA in the West and North of Africa; CEPGL, UDEAC, ECCAS, EAC in central Africa; and COMESA, SACU, RIFF and SADC and in the South and East of Africa.[5] Taken together, they

[5] AMU: African Maghreb Union; CEN-SAD: Community of Sahel-Saharan States; CEPGL: Economic Community of the Great Lakes; COMESA: Common Market for Eastern and Southern Africa; EAC: East African Community; ECCAS: Economic Community of Central African States; ECOWAS: Economic Community of West African States; GAFTA: Greater Arab Free Trade Area; RIFF: Regional Integration Facilitation Forum (formerly the Cross Border Initia-

cover 53 African countries.

This dataset was used to create three dependent variables to be used in the unilateral, bilateral and multilateral regressions, respectively:

- $RIAuni_{x,t}$ indicates whether country x signed an agreement in year t or any of the previous four years;
- $RIAbi_a^b$ signals whether country a and country b are currently members of the same agreement;
- $RIAmulti_x^z$ is one when county x has joined RIA z and zero otherwise.

5.2 Measuring corruption

The two best known subjective indicators of corruption are the Corruption Perceptions Index (CPI) created by Transparency International (2008) and the Control of Corruption index (CoC) constructed by Kaufmann, Kraay, and Mastruzzi (2010) The problem with both composite indices is that they only go back to the mid-nineties at best.[6] In addition, their earliest estimates are based on a limited number of sources and are therefore much more uncertain than their more recent ones. How much this matters can be seen from the CoC index that reports an estimate of its measurement error: the average prediction error for the African continent drops to half its value from 1996 to 2008 (Kaufmann et al., 2010).

While the CoC index covers every African country from 1998 onwards, the initial estimates of CPI suffer from a strong selection bias. As Treisman (2007) points out, the first corruption surveys were aimed at countries that were important to the international markets. Small and/or highly corrupt countries were less likely to be surveyed. In order to test whether this is indeed the case, we regressed whether or not a country is covered by the corruption indicator on its level of corruption as measured by the CoC index[7]. Table 1 clearly shows that the CPI index suffers selection bias. To avoid this problem, we used the values of the first year where all 53 countries were covered: 2007. Lastly, it should be remarked that the way the CPI index is constructed does not allow for comparisons over time. This means that it should not be used in the unilateral analysis framework.

Table 1: Selection bias in corruption estimates

	Missing values of		
	CPI 1998	CPI 2003	ICRG 1984
CoC	-7.4575	-3.3542	5.0596
	(3.0097)**	(3.5994)	(3.7561)
GDP	-0.0730	-0.7567	-0.9647
	(0.0396)*	(0.2357)***	(0.3408)***
constant	3.9893	3.8407	-0.3931
	(1.3086)***	(1.6353)**	(1.3511)
observations	50	50	50
Pseudo R^2	0.236	0.506	0.420

Logistic regression of the availability of various corruption measures on the CoC index and GDP. *,**,*** signals significance at 10, 5 and 1%, respectively.

A third indicator of corruption is that of the International Country Risk Guide (ICRG). Its main advantage over CPI and CoC is that it goes back to 1984, allowing the use of pre-dated values in order to avoid endogeneity problems. While it does not cover 16 African countries, the selection does not appear to be influenced by the level of corruption (cf. table 1).

For all three the indices, high values correspond to low levels of corruption. In other words, the rent-seeking and regime boosting hypotheses predict a negative sign for the coefficient on the corruption variables. To facilitate comparability, all indices are rescaled so that their worldwide values range from 0 to 1[8]. In order to check for the non-linear effects of corruption their squared values are also used ($Corr^2$).

In some of the bilateral regressions, corruption is controlled for using the average level of the two countries ($Corr\ av$). The multilateral regressions also incorporate the average over all the members of the agreement ($Corr\ RIA$).

Apart from using predated values (when possible) we also control for endogeneity using several instruments for corruption and institutional develop-

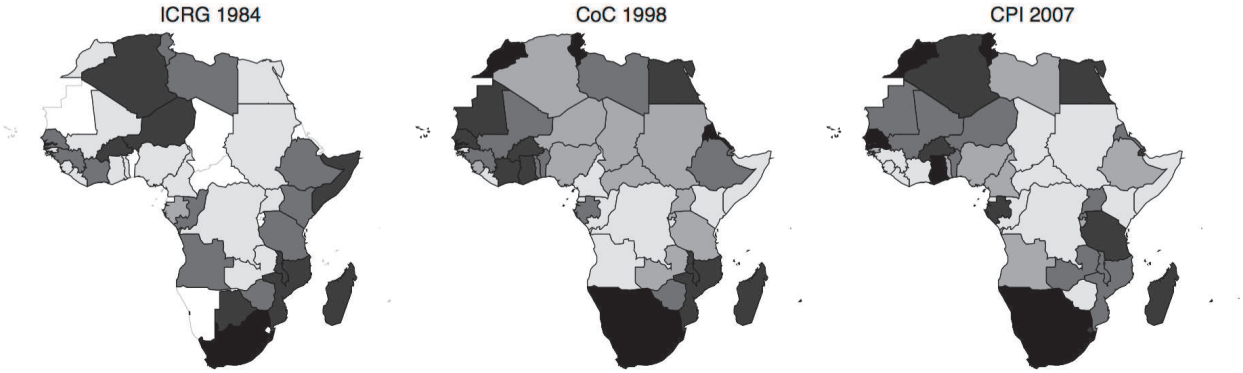
tive); SACU: Southern African Customs Union; SADC: Southern African Development Community; UDEAC: Customs and Economic Union of Central Africa; UEMOA: West African Economic and Monetary Union.

[6] 1996 for the CoC index and 1998 for the CPI index.

[7] For the ICRG index, the CoC values of 1998 were used.

[8] $Corr = (Corr^\star - world\,min)/(world\,max - world\,min)$.

Figure 1: Map of the used corruption values, ranging from dark (little corruption) to light (heavy corruption).



ment: tropics and primary export intensity (Sachs and Warner, 1995), slave exports (Nunn, 2009), settler mortality (Acemoglu, Johnson, and Robinson, 2001) and ethnolinguistic fractionalization (Mauro, 1995).

5.3 Control variables

Several control variables are taken into consideration, most of them coming from the aforementioned papers studying the determinants of regional integration. Table 2 summarizes their characteristics. They can be divided into three groups: geographical, economic or political.

The geographical variables are the following:

- *Landlocked* is expected to have a positive sign, since the countries that are cut off from the world markets would be more willing to close RIAs.
- The more *remote* countries are from the rest of the world, the lower the opportunity cost of them signing a RIA. The variable is computed as described in Baier and Bergstrand (2004).
- The remaining two geographical variables are indicators of the geographical distance between countries. For each variable, we expect that the closer the countries are, the stronger their inclination to form a RIA is. *Natural* is the inverse of the distance between capitals. In the multilateral regressions it is calculated as the inverse of the minimum distance to the capital of a member of the RIA. In the bilateral regressions, *adjacent* indicates whether the two countries neighbor one another. In the multilateral regressions, it expresses if the country neighbors any members of the RIA.

There are two types of economic variables:

- The first economic variable is the difference in the capital-labor ratios between countries (DKL). The bigger the difference, the higher the expected trade creation effects, and the more likely an agreement is. The data comes from the Extended Penn World Tables 4.0 (Marquetti, 2011). To control for endogeneity we use the 1981 values.
- Similar to the remoteness variable, we also include the difference in capital-labour ratios with the rest of the world ($DKLW$). The way it is calculated is also taken from Baier and Bergstrand (2004).
- The other economic variables measure the size of the economy of the country or region. *GDP* is included because the distributional effects of RIAs indicate that larger economies stand to

Table 2: Summary table data

	mean	st. dev.	min	max	obs. uni	obs. bi	obs. multi
Dependent variables							
RIAuni	0.3270	0.4699	0	1	318	-	-
RIAbi	0.5138	0.5000	0	1	-	1378	-
RIAmulti	0.1350	0.3419	0	1	-	-	689
Geographical variables							
Natural	-8.0363	0.6998	-9.1885	-1.7432	-	1378	689
Remote	8.1847	0.1297	7.9153	8.5598	-	1378	689
Adjacent	0.3309	0.4709	0	1	-	1378	689
Landl	0.2830	0.4512	0	1	318	1378	689
Land area	554.2379	622.2875	0.4600	2381.7400	318	-	-
Economic variables							
DKL	0.3213	1.5993	-4.1371	5.0102	-	1225	650
DKLW	1.8076	0.6871	0.1453	3.5624	-	1225	650
GDP	0.0091	0.0189	0.0001	0.0999	298	1275	663
GDP/cap	2.3938	3.6460	0.0001	30.4982	298	-	-
GDP diff	-0.0011	0.0270	-0.0998	0.0991	-	1275	
GDP RIA	0.0868	0.0600	0.0047	0.2222	-	-	689
Population	13.9761	20.5987	0.0663	149.4841	318	-	-
Political variables							
Polity	-4.7358	4.9339	-10	9	303	1176	689
Colony	0.2580	0.2674	0	1	-	1378	689
ICRG	0.4124	0.1690	0	1	221	630	468
CoC	0.3818	0.1211	0.0928	0.6910	159	1378	689
CPI	0.2766	0.1083	0.0876	0.5945	121	1378	689

gain more from a RIA. Moreover, Grossman and Helpman (1995) find that the effect of corruption differs depending on the relative size of the economy. We capture this by using an interaction term between corruption and GDP ($GDP * Corr$). In the bilateral regressions we use average and difference in GDP. Finally, Wu (2006) includes *GDP/cap* to control for the level of economic development.

Lastly, two political variables, apart from the level of corruption, are taken into consideration:

- In the bilateral regression, *colony* is a dummy variable that is one when the countries have an identical colonial background. In the multilateral regressions, it represents the fraction of countries in the RIA with the same colonial background. Colonial history is also highly correlated with the official language of a country and could be interpreted as a proxy for it.
- *Polity* indicates the level of democracy versus autocracy in a country: -10 being a completely totalitarian regime and 10 a completely democratic one. Mansfield et al. (2002) find that it has a positive effect on the likelihood to enter a RIA. The data comes from the Polity IV dataset (INSCR, 2010).

Because the composition of some RIAs has changed over time (SADC and COMESA among others), we use the characteristics of the RIA *at the time of joining* when computing the characteristics of the trade agreement. Take as example the average GDP of a RIA. If country x is a member of the RIA z, the average is computed over all members of the RIA at the time of joining, excluding x. On the other hand, if country x has never been a member, the average is computed over all countries that are, or have been

a member. This rule is applied when computing the minimum distance to a member of the agreement, whether a country is adjacent to a member, the average level of corruption, the fraction of countries with the same colonial history and the average difference in capital-labor ratios.

6 Empirical results

6.1 Unilateral analysis

$$\begin{aligned} p(RIAuni_{x,t}) &= \beta_1 Corr_{x,t} + \beta_2 Corr_{x,t}^2 \\ &+ \beta_3 GDP_{x,t} + \beta_4 (Corr_{x_t} * GDP_{x,t}) \\ &+ \beta_5 Z_{x,t} + \epsilon_{x,t} \end{aligned} \quad (1)$$

In the unilateral analysis $RIAuni$ is regressed on the average value of corruption in the preceding five years and a number of controlling variables. We reproduced the regressions of Baier and Bergstrand (2004) using a fixed effects logistic estimator (table 3, columns 1 and 3). Additionally, we also estimate a model similar to that of Wu (2006) using random effects because many variables are time-invariant (columns 2 and 4).

However, the signs on the corruption variables switch depending on model estimated and none of them are significant. Moreover, the likelihood ratio (LR) test also rejects joint significance. The coefficients on the controlling variables follow a similar pattern. Most of them are insignificant and a many have signs that run counter to what was expected. This is probably caused by the fact that the characteristics of the RIA and the partner countries are not taken into account. Once we start taking the characteristics of the partner country into account, the results change drastically.

Table 3: Unilateral regressions

Corr[(a)]:	ICRG		CoC	
	(1)	(2)	(3)	(4)
Landlocked		-0.1508		-0.8568
		(0.3694)		(0.4775)*
Land Area		0.0002		0.0002
		(0.0003)		(0.0004)
Island		0.3358		-0.6155
		(0.9140)		(0.8710)
GDP	0.0018		0.0701	
	(0.0217)		(0.1881)	
GDP/cap		-0.0439		-0.1425
		(0.0671)		(0.0920)
Polity		-0.0087		0.0013
		(0.0089)		(0.0124)
Population		0.0018		-0.0019
		(0.0083)		(0.0099)
Corr	-0.5865	1.1565	-21.4668	1.5762
	(4.2268)	(3.6389)	(17.5539)	(11.3430)
Corr^2	3.2624	0.4419	33.8012	-2.5975
	(5.0992)	(4.2835)	(23.0961)	(13.8587)
GDP * Corr	-0.044	-0.01	-0.6909	0.0024
	(0.0542)	(0.0158)	(0.6097)	(0.0200)
Constant		-1.3425		-0.757
		(0.8668)		(2.3242)
Observations	210	209	99	149
Number of countries	36	36	33	50
loglikelihood	-83.88	-127.95	-31.22	-80.61

Columns 1 & 3 are fixed effects and 2 & 4 are random effects logistic regressions of RIAuni on corruption and controlling variables. Standard errors in parentheses. *, **, *** indicate significance at 10%, 5%, and 1%.

[(a)] Corruption is measured by the ICRG index in columns 1-2 and by the CoC index in columns 3-4.

6.2 Bilateral analysis

$$\begin{aligned} p(RIAbi_a^b) &= \beta_1 (Corr_a + Corr_b) \\ &+ \beta_2 (Corr_a + Corr_b)^2 \\ &+ \beta_3 Z_a^b + \epsilon_a^b \end{aligned} \quad (2)$$

There are two ways of estimating the effect of corruption in the bilateral regressions. Similar to the approaches used in Baier and Bergstrand (2004), Endoh (2006) and Márquez-Ramos et al. (2009) we can control for the average level of corruption and GDP (eq. 2). The underlying assumption is that an increase in corruption has the same effect regardless of the characteristics of the partner country. As a result, this method cannot test whether the effect of corruption differs depending on the relative size of the country.

This model was estimated using a two-step instrumental variable (IV) probit estimator (Newey, 1987). The first stage results are not presented to save space, but are available upon request. Their lowest R^2 was

Table 4: Bilateral regessions

Corr[(a)]:	ICRG		CoC		CPI	
	(1)	(2)	(3)	(4)	(5)	(6)
Natural	2.1460***	2.1333***	2.5520***	2.4331***	2.4330***	2.4719***
	(0.259)	(0.279)	(0.243)	(0.252)	(0.234)	(0.253)
Remote	9.2136***	9.7333***	5.3469	6.4460**	8.9774***	9.3100***
	(1.428)	(1.390)	(3.572)	(3.006)	(2.323)	(1.662)
Adjacent		0.3958		0.6721		0.1057
		(0.518)		(0.554)		(0.461)
Landlocked		0.1994		-0.5646		-0.1489
		(0.250)		(0.441)		(0.244)
GDPav	19.4195*	32.2268**	13.0293	9.4796	13.6846	6.7298
	(10.889)	(14.434)	(13.515)	(12.290)	(9.190)	(7.815)
GDPdiff	-5.9887*	-7.7268**	-0.9133	-1.7719	-9.2563*	-8.5790**
	(3.301)	(3.611)	(5.765)	(4.710)	(5.084)	(3.771)
DKL	-0.1384**	-0.1289*	-0.1752**	-0.1264**	-0.1766**	-0.1331**
	(0.071)	(0.074)	(0.073)	(0.055)	(0.083)	(0.067)
DKLW	0.8046***	1.0517***	1.1660**	1.4031**	1.0201*	0.8202*
	(0.266)	(0.374)	(0.510)	(0.679)	(0.534)	(0.454)
Colony		-0.3309		-0.2432		-0.0099
		(0.240)		(0.224)		(0.187)
Polity (av)		-0.0680		-0.0768		0.0073
		(0.048)		(0.053)		(0.039)
Corr (av)	25.7378*	30.5205**	126.1165**	85.3379**	159.5037***	115.7678**
	(14.087)	(13.062)	(56.998)	(40.342)	(60.921)	(49.676)
Corr^2 (av)	-29.4940**	-34.9681***	-149.4393**	-98.7470**	-285.2482***	-213.0870**
	(13.851)	(13.135)	(66.119)	(47.030)	(97.526)	(83.329)
Constant	-64.6407***	-70.8745***	-50.5873**	-53.0453***	-76.7211***	-72.3073***
	(9.627)	(10.140)	(21.972)	(18.223)	(14.861)	(10.830)
Observations	319	319	526	524	526	524
wald test[(b)]	0.155	0.0424	0.0149	0.0580	6.46e-05	0.00130
Endogenous variables	Corr (av) and Corr^2 (av).					
Instrumental variables	Tropics (av), Ethnolinguistic fractionalisation (av), Slave exports (av), Settler mortality (av) and Primary export intensity (av).					

IV probit regression of RIAbi on corruption and controlling variables using Newey's two-step procedure (Newey, 1987). Standard errors in parentheses. * indicates significance at 10%; ** at 5%; and *** at 1%.
[(a)] columns 1-2 use the ICRG index, 3-4 the CoC index and 5-6 use the CPI index of corruption.
[(b)] p-value of the wald test of exogeneity; H_0: exogenous.

.45 and most were significantly higher. Furthermore the F-test confirmed the joint significance of the instruments for each of the endogenous variable. Moreover, the overidentification χ^2-test confirmed their exogeneity (Lee, 1992). Finally, the results of the Wald test (table 4) affirm the need for IV: the exogeneity of corruption is rejected in all specifications except for the first one.

Regardless of the indicator used, we find that corruption has a positive sign and its squared values a negative sign, most of them significant at the 5% level. In order to better understand what this implies for the probability of joining a RIA, we plotted the marginal effects of changes in GDP and corruption in figure 2. These plots are clearly in line with the predicted non-linear effect of changes in corruption. Initial increases in the level of corruption raise the probability of a RIA, but as corruption approaches the median value this effect is reversed.

The coefficients on the geographical control variables have their expected sign. The closer countries are and the more remote they are from the rest of the world, the higher the likelihood that they have signed a trade agreement. Neighboring countries are

also more likely, but this effect is not significant.

The economic and political control variables on the other hand display a number of surprising results. The signs on DKL and DKLW imply that as the benefits of closing an agreement decrease, the country couple is significantly more likely to have signed an agreement. Similarly, countries that were subjugated by the same colonizer are found to be less likely to have signed trade agreements, but this variable is not significant.

A possible explanation for these counterintuitive findings is that we are ignoring the influence of the other partner countries. For example, if a lot of smaller countries with roughly the same capital-labor ratios have joined a RIA to facilitate trade with a larger country whose capital ratio does differ, this would bias the coefficient on DKL downwards. If so, the multilateral analysis should resolve this inconsistency.

Finally, as the difference in GDP increases, the probability of joining falls. A result that is in line with the theoretical predictions.

6.2.1 Separate

$$\begin{aligned} p(RIAbi_a^b) &= \beta_1 Corr_a + \beta_2 Corr_a^2 \\ &+ \beta_3 GDP_a + \beta_4 (corr_a * GDP_a) \\ &+ \beta_5 Corr_b + \beta_6 Corr_b^2 \\ &+ \beta_7 GDP_b + \beta_8 (corr_b * GDP_b) \\ &+ \beta_9 Z_a^b + \epsilon_a^b \end{aligned} \quad (3)$$

The second way in which corruption can be added is by including the corruption index of both countries separately, similar to how Mansfield et al. (2002) treat the level of democracy (eq. 3). It also allows us to include the interaction term with GDP for both countries. Once again, this model was estimated using Newey's two-stage IV probit estimator (table 5).

We ordered the countries in such a way that country A is the country with the highest GDP of the country-couple. In other words, differences in the effect of corruption between country A and B can be attributed to differences in size. As before, we plotted out the marginal effect of corruption and GDP on the probability of entering into a RIA (figure 3).

Including the corruption indicators separately produces more ambiguous results. Only the plots of the CPI index resemble those where the averages were used. Even though many of the corruption variables are insignificant, the LR test rejects that they are jointly insignificant at 1% for all specifications but the last one. When using the ICRG index, we find that countries with a high GDP will be more likely to close a RIA when their level of corruption increases. A finding that is in line with the predictions of the model of Grossman and Helpman. However, when GDP is low the pattern the probability of there being a trade agreement is lowest at intermediate values, which runs contrary to what Maggi and Rodríguez-Clare and Ornelas predict. The pattern displayed when using CoC index on the other hand matches the predictions of both models.

The signs and significance of the control variables closely follow those of the previous model. In particular, DKL is still negative although not always significant anymore and shared colonial history is still negative. The sign on the DKLW variable on the other hand changes depending on which corruption indicator is used.

6.3 Multilateral analysis

$$\begin{aligned} p(RIAmulti_x^z) &= \beta_1 Corr_x + \beta_2 Corr_x^2 \\ &+ \beta_3 GDP_x + \beta_4 (Corr_x * GDP_x) \\ &+ \beta_5 Z_x^z + \epsilon_x^z \end{aligned} \quad (4)$$

The multilateral framework combines both the unilateral and bilateral analyses by regressing whether or not a country is a member of a certain RIA on the characteristics of that country and the agreement. This model was estimated using a logistic regression model with the standard errors corrected for multiple clusters at the country and RIA level (Cameron, Gelbach, and Miller, 2006). While we initially used an IV probit estimator, the Wald test could not reject the exogeneity of any of the corruption indicators (table 6).

Figure 4 illuminates the interaction effect between GDP and corruption. The results are fairly similar over all three corruption indicators. Countries

Table 5: Bilateral regessions

	(1)	(2)	(3)	(4)	(5)	(6)
Corr[(a)]:	ICRG		CoC		CPI	
Natual	2.1848***	2.2803***	2.1033***	2.2042***	2.3957***	2.5361***
	(0.267)	(0.335)	(0.235)	(0.219)	(0.233)	(0.271)
Remote	11.0392***	10.9183***	13.6980***	9.1344***	11.2294***	8.8408***
	(1.573)	(1.869)	(4.074)	(1.586)	(1.806)	(1.865)
Adjacent		0.0681		0.0598		-0.0970
		(0.631)		(0.445)		(0.465)
Landlocked		-0.4982		0.2158		-0.1319
		(0.757)		(0.239)		(0.318)
GDP a	64.1321**	64.0317**	24.9325	52.3238*	17.5372	19.6807
	(24.901)	(26.038)	(44.524)	(27.275)	(18.326)	(24.212)
GDP b	87.8126	210.9004	-235.9856	-192.3904	74.8137	74.8931
	(148.233)	(209.790)	(185.115)	(158.287)	(126.125)	(144.008)
DKL	-0.1295	-0.2057	-0.3222**	-0.3495***	-0.2319*	-0.2059
	(0.142)	(0.294)	(0.138)	(0.111)	(0.133)	(0.136)
DKLW	0.2830	0.1111	-0.5202	-0.2549	0.3922	0.8184**
	(0.298)	(0.584)	(0.833)	(0.585)	(0.368)	(0.405)
Colony		-0.1285		-0.0488		-0.0526
		(0.282)		(0.226)		(0.193)
Polity a		0.0434		-0.0122		-0.0250
		(0.042)		(0.029)		(0.038)
Polity b		0.0279		0.0976**		0.0112
		(0.094)		(0.047)		(0.041)
Country a						
Corr	-9.8783	-7.3348	0.5841	3.3018	18.3128	27.5877
	(7.921)	(8.013)	(11.408)	(10.312)	(25.831)	(31.181)
$Corr^2$	13.8939	12.9418	-8.0822	-3.5080	-34.0285	-42.9646
	(8.514)	(8.852)	(20.058)	(15.102)	(41.150)	(50.673)
GDP * Corr	-133.9710**	-147.4119**	-69.1087	-119.2102**	-41.5823	-34.8461
	(53.879)	(60.061)	(96.195)	(55.653)	(67.250)	(81.002)
Country b						
Corr	-3.1621	-8.8893	25.5837	18.9577	37.4529	0.5258
	(7.442)	(18.196)	(49.518)	(31.999)	(28.295)	(26.333)
$Corr^2$	2.0827	11.1780	-54.8379	-38.5652	-81.2913	-6.5905
	(8.468)	(25.198)	(71.691)	(44.207)	(49.956)	(44.160)
GDP * Corr	-198.6355	-494.4065	609.7981	524.4518	-302.2516	-267.9895
	(339.830)	(495.080)	(501.073)	(433.445)	(493.384)	(560.432)
Constant	-70.7715***	-68.2372***	-93.9774**	-57.8743***	-78.9531***	-56.8682***
	(11.045)	(16.192)	(38.211)	(14.700)	(13.780)	(10.378)
Observations	319	319	701	699	526	524
Wald test[(b)]	0.0587	0.0452	1.16e-07	5.79e-07	1.34e-05	0.000243
Joint significance Corr[(c)]	0.0032	0.0064	0.0040	0.0000	0.0100	0.0640
Endogenous variables	Corr, $Corr^2$ and GDP * Corr for country A and B					
Instrumental variables	Tropics, Ethnolinguistic fractionalisation, Slave exports, Settler mortality and Primary export intensity for country A and B					

IV probit regression of RIAbi on corruption and controlling variables using Newey's two-step procedure (Newey, 1987). Standard errors in parentheses. * indicates significance at 10%; ** at 5%; and *** at 1%.
[(a)] columns 1-2 use the ICRG index, 3-4 the CoC index and 5-6 use the CPI index of corruption.
[(b)] p-value of the wald test of exogeneity; H_0: exogenous.
[(c)] p-value of the LR test of the joint significance of all corruption variables.

marked by high corruption have a higher probability of joining a RIA and this effect only becomes stronger the higher GDP is. Moreover, there is evidence that in the extremely corrupt countries the rent-destruction effect starts to play and the effect of a marginal increase in corruption becomes negative again. The level of corruption of the potential partner countries has a comparable effect. The more corrupt the partner countries are, the higher the probability that the country will join the RIA. However, at very high levels of corruption the effect of an increase in corruption is reversed and becomes negative. LR tests could not reject the joint significance of all corruption variables (at 1%).

The distance between countries remains an important factor in trying to explain African integration, in particular whether a country is adjacent to (other) members of agreement. While the difference in capital-ratios is still negative in some regressions, it has become insignificant, resolving in part the aberration found in the bilateral regressions. Landlocked countries on the other hand remain significantly less likely to enter into RIAs, which is something Márquez-Ramos et al. (2009) also found. However, contrary to what Mansfield et al. (2002) found democratic countries are less likely to enter into free trade agreements.

7 Conclusion

This paper explores the motives behind the proliferation of regional integration agreements in Africa. We focus on rent-seeking behavior and the regime boosting hypothesis because they are able to explain both the growth of African agreements as well as their lack of progress in liberating intra-African trade. Static and dynamic analysis on the other hand predict high welfare reducing effects, and most new regionalism theories rely on strong economic integration.

Empirical evidence of rent-seeking and regime boosting as driving forces has been mostly anecdotal, and the goal of this paper is to find out whether it could be identified as a statistically significant force in African integration. Past studies have estimated the motives for integration in two ways: unilaterally, from the point of view of an individual country, and bilaterally, looking at agreements between pairs of countries. However, these approaches cannot fully take into account the characteristics of the partner countries, which could lead to spatial correlation in the error terms. We avoid this problem by analyzing African trade agreements multilaterally: using country-RIA pairs. This framework is able to deal with agreements between more than two counties as well as overlapping agreements.

We find that initial increases in corruption raise the probability of signing a RIA, especially if GDP is high. However, once corruption becomes too high this effect is reversed. This relation is less clear for countries with limited GDP. Nevertheless, most of our estimates find a similar, but smaller non-linear effect. These results are in line with the theoretical predictions of Grossman and Helpman (1995) and Ornelas (2005). They also provide a more tentative support for Maggi and Rodríguez-Clare (1998), whose model does not account for any interaction with GDP.

While these results confirm that corruption has had a significant impact on the decision African to join RIAs, they cannot differentiate between the different motivations for the agreements: whether they were closed to aid or combat corruption. While it might not be possible to separate them statistically, future research could look at how the level of corruption is affected by trade agreements. While it cannot gauge the motives of RIAs, it can answer which theory prevailed ex post. More importantly, finding out what the effect of RIAs on trade agreements is, would have important implications for development policy.

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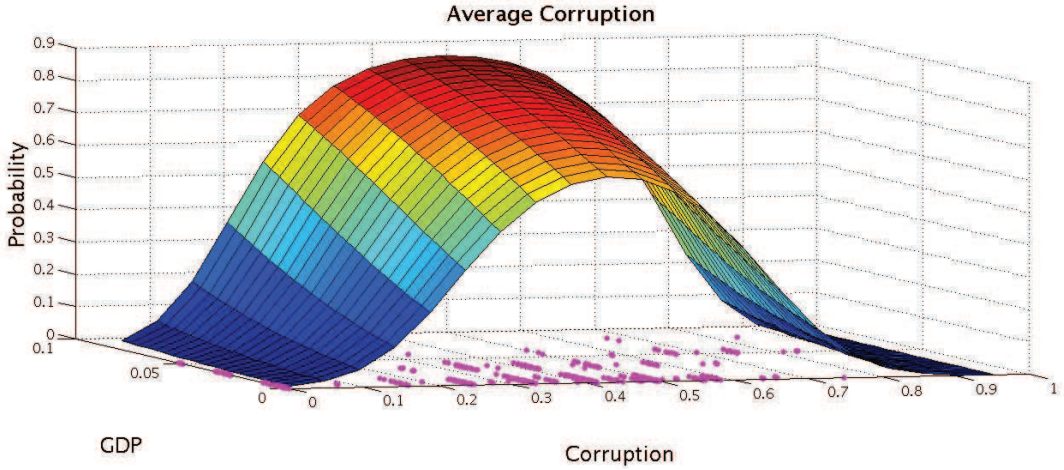
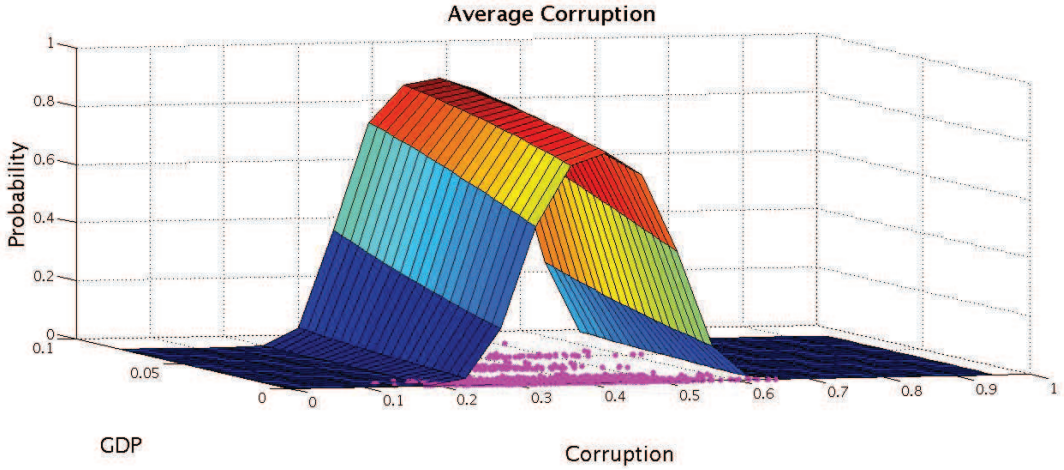
Figure 2: Bilateral analysis: interaction effects between corruption and GDP

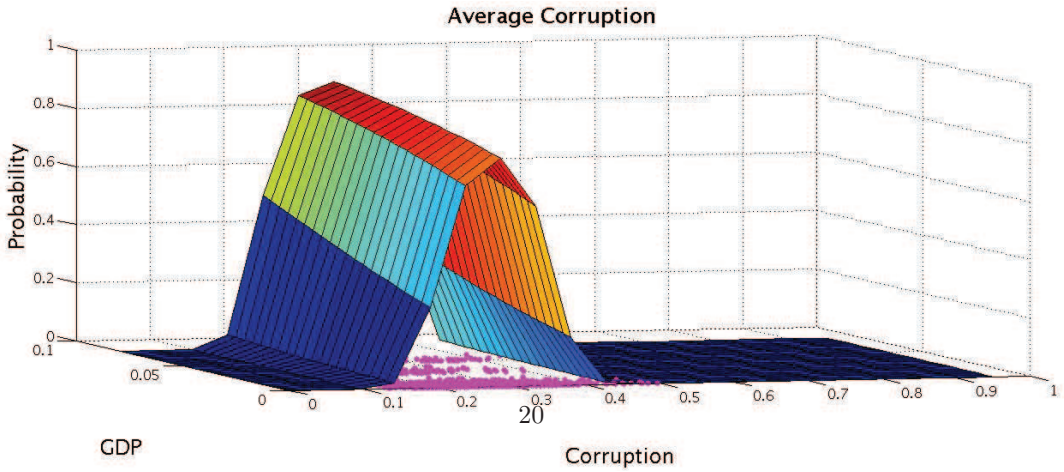
a. ICRG



b. CoC



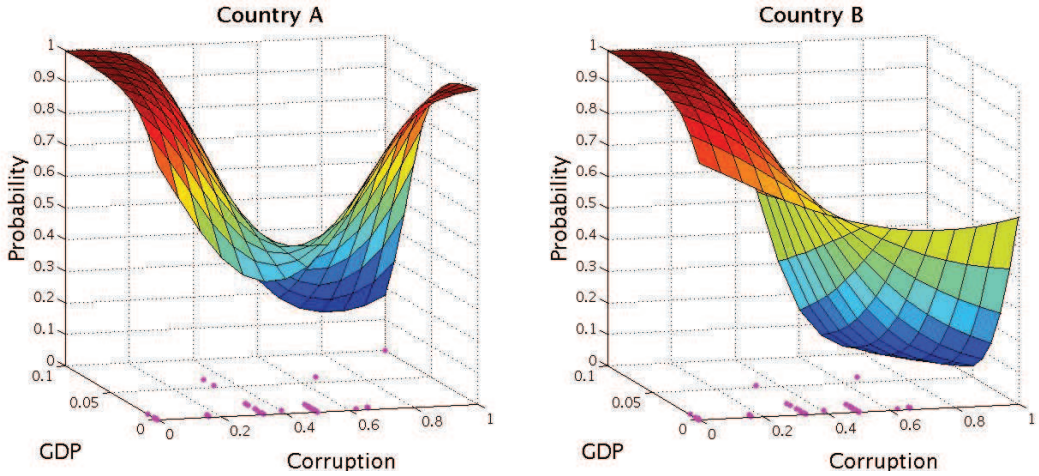
c. CPI



Surface plots of the marginal effect of changes in GDP and Corruption on the probability of joining a RIA, keeping all other variables at their mean values. Dots on the z=0 plane represent the combinations of GDP and Corruption present the dataset.

Figure 3: Bilateral analysis: interaction effects between corruption and GDP

a. ICRG



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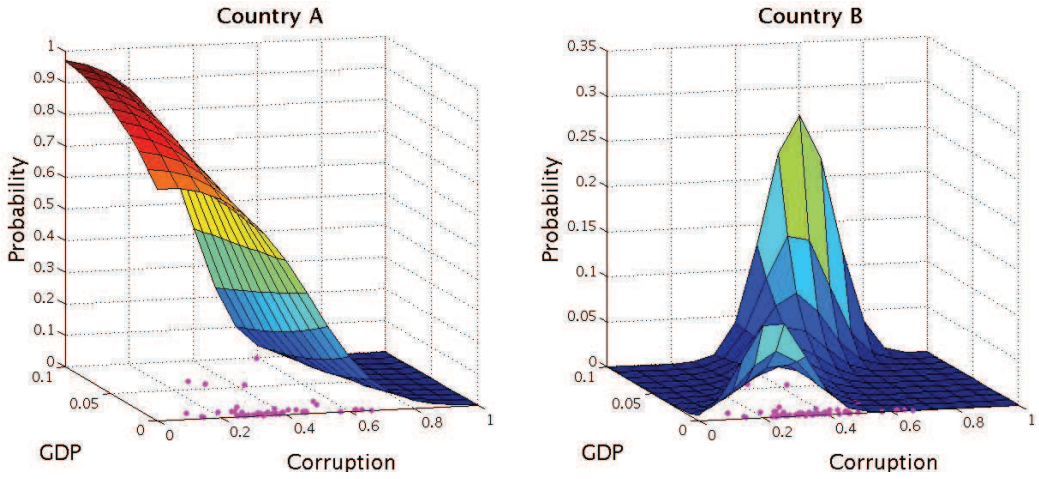
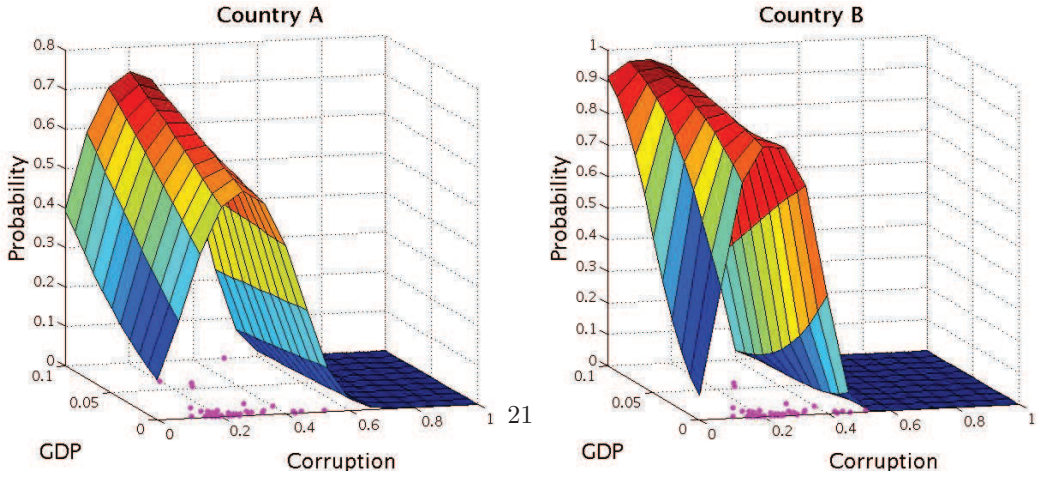


c. CPI



Surface plots of the marginal effect of changes in GDP and Corruption on the probability of joining a RIA, keeping all other variables at their mean values. Dots on the z=0 plane represent the combinations of GDP and Corruption present the dataset.

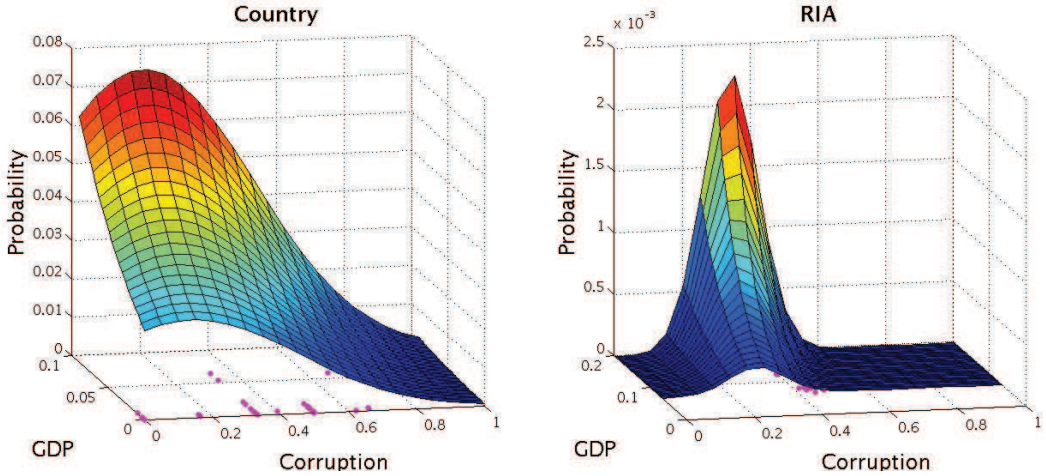
Table 6: Multilateral regressions

Corr[(a)]:	ICRG		CoC		CPI	
	(1)	(2)	(3)	(4)	(5)	(6)
Natural	0.7200**	0.1556	0.7380***	0.1651	0.6893***	0.1693
	(0.303)	(0.218)	(0.276)	(0.211)	(0.246)	(0.216)
Remote	-6.7339	-9.4456	-11.4349**	-14.0204**	-2.6590	-5.0264
	(6.092)	(6.038)	(5.815)	(6.582)	(5.270)	(5.190)
Adjacent		2.5271***		2.6051***		2.3355***
		(0.663)		(0.649)		(0.502)
Landlocked		-0.3994***		-0.7326***		-0.6847
		(0.121)		(0.198)		(0.473)
GDP	11.8341*	4.2919	36.0196*	23.3247	40.4691*	19.5211***
	(6.399)	(9.151)	(19.250)	(16.087)	(21.096)	(6.484)
GDP RIA	-3.0373	-0.5998	60.6240*	33.4737	113.8920***	93.3031***
	(10.161)	(8.403)	(36.507)	(35.276)	(38.433)	(35.698)
DKL	0.2165	0.1310	-0.1316	-0.1753	-0.2493	-0.1797
	(0.219)	(0.219)	(0.186)	(0.227)	(0.225)	(0.238)
DKLW	0.5316	0.4221	-0.3994	-0.3292	-0.5902	-0.6814
	(0.535)	(0.480)	(0.492)	(0.439)	(0.556)	(0.526)
Colony		0.7576		0.4313		0.6373
		(0.956)		(1.101)		(0.757)
Polity		-0.0313*		-0.0290***		0.0302
		(0.019)		(0.010)		(0.049)
Country						
Corr	1.4167	2.5447	6.1626***	8.0203***	17.8648*	22.2970**
	(3.673)	(3.475)	(2.238)	(2.001)	(9.871)	(9.047)
$Corr^2$	-5.0889	-7.3265*	-4.2928	-4.2615	-24.4390*	-32.6604***
	(3.273)	(4.196)	(4.769)	(6.466)	(13.179)	(11.785)
GDP * Corr	5.3669***	8.2665***	-66.1074*	-60.1491*	-111.1925	-88.7496
	(1.613)	(2.564)	(39.546)	(30.998)	(76.727)	(80.977)
RIA						
Corr	36.6765	43.8413*	173.7291***	180.1080***	123.7638	130.9893
	(26.505)	(24.081)	(58.737)	(61.753)	(101.919)	(92.746)
$Corr^2$	-73.9741***	-76.5041***	-180.4862***	-191.7096***	-151.5856	-168.7115
	(26.477)	(25.826)	(65.179)	(67.649)	(171.281)	(150.147)
GDP * Corr	67.4286*	62.9000**	-176.6692**	-101.8002	-468.1963***	-376.7371**
	(34.993)	(31.980)	(83.699)	(79.368)	(162.152)	(149.734)
Constant	45.1841	59.5616	58.5815	72.7205*	2.2401	15.7924
	(44.557)	(44.039)	(39.271)	(43.196)	(34.659)	(33.193)
Observations	454	454	454	454	454	454
Loglikelihood	-139.6	-122.1	-129.0	-113.1	-139.3	-125.1
Wald test[b]	0.743	0.841	0.524	0.486	0.830	0.863
Joint significance Corr[(c)]	0.0000	0.0001	0.0018	0.0284	0.0004	0.0058

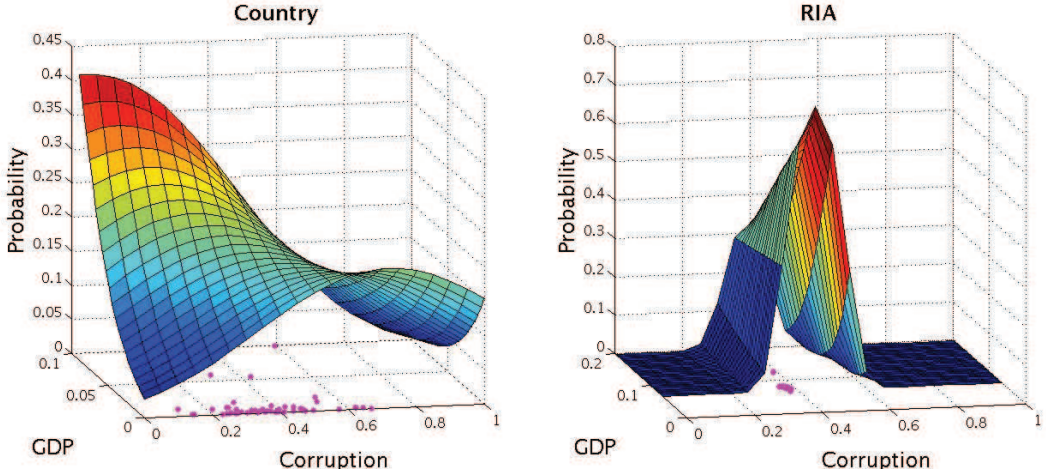
Logistic regression of RIAmulti on corruption and controlling variables. Standard errors (in parentheses) are corrected for non-nested clusters at the country-level. * indicates significance at 10%; ** at 5%; and *** at 1%.
[(a)] columns 1-2 use the ICRG index, 3-4 the CoC index and 5-6 use the CPI index of corruption.
[(b)] p-value of the wald test of exogeneity of the corruption variables; H_0: exogenous.
[(c)] p-value of the LR test of the joint significance of all corruption variables.

Figure 4: Multilateral analysis: interaction effects between corruption and GDP

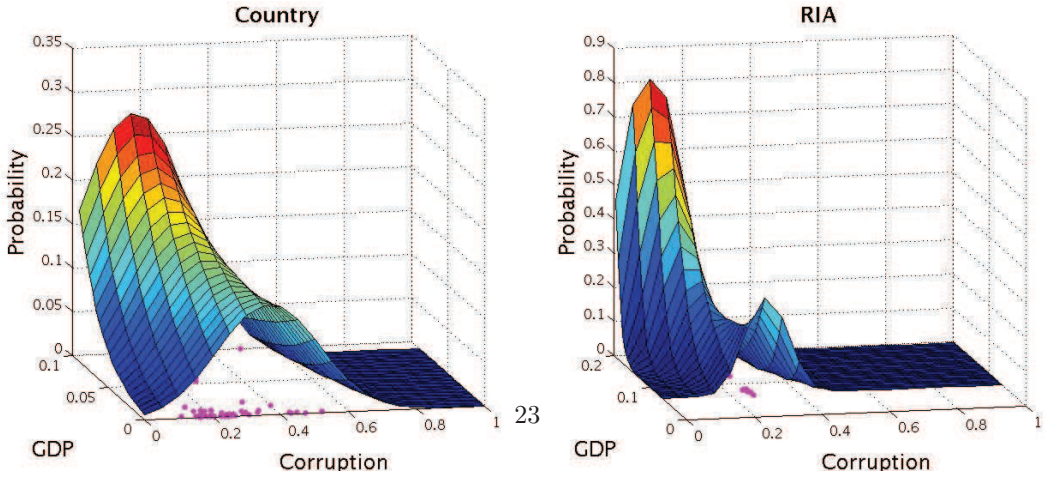
a. ICRG



b. CoC



c. CPI



Surface plots of the marginal effect of changes in GDP and Corruption on the probability of joining a RIA, keeping all other variables at their mean values. Dots on the z=0 plane represent the combinations of GDP and Corruption present the dataset.