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## Rural-urban inequality in Africa: A panel study of the effects of trade liberalization and financial deepening

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Zentrum für Europäische Integrationsforschung  
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Mina Balamoune-Lutz, Stefan H. Lutz

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**RURAL-URBAN INEQUALITY IN AFRICA: A PANEL STUDY OF THE EFFECTS  
OF TRADE LIBERALIZATION AND FINANCIAL DEEPENING**

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## **RURAL-URBAN INEQUALITY IN AFRICA: A PANEL STUDY OF THE EFFECTS OF TRADE LIBERALIZATION AND FINANCIAL DEEPENING**

### **Abstract**

*Using panel data from 39 countries, this paper examines the effects of financial deepening and openness to trade and foreign capital (FDI) on rural-urban inequality in Africa. Four estimations were performed—OLS pooled cross-section, GLS pooled cross-section, fixed-effects model and an adjusted fixed-effects specification with regional dummy terms. We have developed an alternative measure of rural-urban inequality, namely the ratio of growth in agricultural output to growth of manufacturing output. Overall, the econometric results show that openness to trade seems to contribute to reducing rural-urban inequality. However, the empirical evidence does not unambiguously delineate the nature of the impact FDI and financial deepening have on the rural-urban gap. The findings imply that there may be some support for the so-called offsetting-trend in inequality (OTI) hypothesis.*

## I. INTRODUCTION

A large number of African countries have undertaken significant reforms including privatization, deregulation and elimination of price controls, financial reforms and trade liberalization. While such reforms are, in general, expected to improve society's welfare, they may not do so for everyone. In particular, trade liberalization may lead to adverse effects on agricultural (rural) regions. The structural adjustment programs of the 1980s resulted in major budget cuts and reduction or elimination of subsidies, many of which had benefited farmers in the pre-adjustment period. It is thus very important to explore whether rural welfare has improved or worsened relative to urban welfare as African countries liberalized their markets and developed their financial sectors. Another reason why this study is pertinent is described in Eastwood and Lipton (2000) and concerns the so-called *offsetting trends in inequality* (OTI) hypothesis. This proposition maintains that falling rural-urban inequality tends to offset the increase in intra-sectoral inequality and this will, obviously, impact the overall change in national inequality levels.

Aside from studies that have focused on a very limited number of individual African countries (Ghana, Ethiopia and South Africa) work on rural-urban inequality in Africa is quite scant. The remainder of the paper is organized as follows. Section II discusses the relationship between economic growth, liberalization and inequality. In section III the data, methodology and estimations are described. In section IV we discuss the different empirical results. Concluding comments are presented in the last section.

## **II. LIBERALIZATION, GROWTH AND INEQUALITY**

Since the 1980s many developing countries have pursued trade liberalization and financial reforms with the perspective to enhance their integration in world trade and financial markets, and strengthen financial deepening. These reforms have, in general, been found to be associated with higher economic growth in other world regions (Asia in particular). On the other hand, economic growth was shown to be associated with increased regional inequalities (for example in China) especially in the current wave of globalization. Thus, it is important to explore directly the link between trade liberalization and financial reforms, and regional inequality. In particular, it is useful to focus on a type of regional inequality that has not received much attention in the empirical literature; rural-urban disparities in Africa.

The effect of economic growth on inequality has been the subject of many debates ever since the seminal work of Kuznets in 1955. A large body of the empirical literature researched the impact of growth and trade liberalization on inequality. For example, Fischer (2001) looked at the effect of trade liberalization on inequality and did not find conclusive results in a comparative study of Asian and Latin American countries. Birchenall (2001) shows that structural reforms in Colombia in the 1980s have caused inequality to increase due to the introduction of skill-biased technologies. On the other hand, Deinenger and Squire (1996) did not find any evidence to support the proposition that growth leads to higher inequality.

Another strand of the empirical literature has investigated the claim that inequality causes growth to fall. In general, the empirical literature shows that inequality leads to slower economic growth (Alesina and Rodrick [1994] and Ravallion [1998]). Yet, a number of studies have shown that higher income inequality is associated with higher growth or that the results are, at best, inconclusive (Aghion *et al.*, 1999).

Globalization has been hailed by many as a major factor of growth in a good number of developing countries and has caused many developing countries to undertake some reforms. However, globalization seems to have asymmetric effects on different parts of the world as well as on different sectors and regions within the same country. This spatial dimension of inequality has not been satisfactorily explored in the empirical literature. In general, empirical studies focus either on cross-sectional studies of income inequality or time series analyses of inter-country inequality. Spatial inequality in developing countries has begun to be tackled seriously only recently, and work on the linkages between reforms and spatial inequality (particularly rural-urban inequality) in Africa remains limited.

Recent studies on spatial inequality that have also explored the rural-urban dimension include Bourguignon (1998) and Dercon (2002). Other recent work focused on the effect of location (see for example, Jalan and Ravallion [1997], Anderson and Pomfret [2002], and Velde and Morrissey [2002]). The work of Michael Lipton (1977) provided important contributions to the literature. Research on spatial inequality in general provides useful insights that could help to understand the urban-rural dimension since one of the major elements in the urban-rural gap is location relative to infrastructure, public and private services, and resource endowments.

The waves of reforms and liberalization undertaken by many developing countries since the mid-1980s are widely believed to have benefited urban areas more than they did rural regions. Table 1 displays indicators of rural-urban disparities in poverty and illiteracy rates for selected countries. Except in China, inequality in poverty has either increased or remained unchanged in the 1990s. Similar conclusions can be drawn with respect to inequality in literacy. In all but two countries the decline in rural illiteracy rates was smaller in magnitude relative to the fall in urban rates, hence the rise in inequality. The two countries where this was not the case are China and Egypt. However, whereas in China illiteracy has declined for both urban and rural (but faster in rural) areas Egypt's fall in the gap is due mainly to a sharp increase in urban illiteracy in the 1990s; which could be explained (at least partially) by the strong migration from rural to urban regions. It is interesting to note that North Africa, in general, has lower inequality in illiteracy (in the 1990s) than most other developing countries. However, both urban and rural illiteracy rates in North Africa are very high.

\*\*\*Table 1 Here\*\*\*

Both the theoretical arguments and the empirical findings regarding the effects of reforms and liberalization on the rural-urban gap point to divergent conclusions. On the theoretical front there are two propositions. The first argues that reforms and liberalization are associated with an increase in rural-urban inequality (rural areas are worse off). The rationale for this claim is quite straightforward. As argued by Eastwood and Lipton (2000), urban residents are more educated and better informed of economic opportunities. There may also be a strong urban bias manifested in the share of endowments, infrastructure and



political representation. In addition, liberalization programs also included deregulation. Deregulation however targets formal sectors. Given that formal sectors are mainly in urban areas, most benefits from deregulation tend to accrue to urban residents. The second proposition claims that policy reforms, and price and trade liberalization have more positive effects on rural standards of living. For example, Krueger *et al.* (1995) argue that price distortions against tradables are often harmful to agricultural products; thus when prices are liberalized such distortions are eliminated. This should cause rural-urban inequality to fall (improvement in rural welfare).

On the empirical front the findings also point to conflicting conclusions. Eastwood and Lipton (2000) report that China has experienced a substantial increase in rural-urban inequality since the mid 1980s, while the rural-urban gap in Brazil and Honduras fell in the 1990s. Similarly, in India rural-urban inequality declined in 1990-97. Eastwood and Lipton (2000) also claim that in Africa there was an increase in rural-urban inequality (in the 1990s) in Tanzania and Uganda, while in Morocco there was a slight rise in the rural-urban (poverty) gap in the early 1990s. On the other hand, the authors find that in Cote d'Ivoire rural-urban poverty fell in the late 1990s.

In view of the divergent findings, it is important to further examine whether reforms and liberalization cause rural-urban gaps to widen.

### **III. MODEL, DATA AND METHODOLOGY**

This study uses panel data from 39 African countries and includes averages from three periods. These periods are the 1970s, 1980s, and 1990s. For each country there must be

complete data for the year (period) to be considered, otherwise that year (period) is dropped. The resulting unbalanced panel contains 85 observations.

Most studies (for example, Eastwood and Lipton [2000] and Jha [2000]) have measured urban-rural gaps by treating inequality as rural poverty relative to urban poverty or in terms of Gini coefficients. This paper uses a different measure for two reasons. First, data on African Gini coefficients decomposed into rural and urban are unavailable for most countries in the group and for at least two distinct decades. Second, comparing income inequalities from two groups does not provide consistent information on whether the standard of living has improved in one of the groups. A better measure would be to compare changes in education levels (or literacy rates), income per capita, and health indices. Unfortunately data on such indicators are not available in any satisfactory frequency. Thus, we resort to the use of an alternative measure. The dependent variable in the model is defined as the ratio of growth in agriculture value added to growth in manufacturing value added. Manufacturing is primarily an urban activity. The idea is to try to capture inequality by considering the relative growth of the main activity in rural areas (agriculture). Since our goal is to study the impact of financial liberalization (specifically financial deepening) and openness to international trade on rural-urban inequality we need to use a set of explanatory indicators that either reflect or constitute outcomes of these policies. The first explanatory variable is openness to international trade, defined as the ratio of exports plus imports to GDP (%). With increased trade openness manufacturing tends to expand and become more export oriented. Thus, we would expect a positive relationship between trade liberalization and manufacturing. However, the impact on rural-urban inequality is not necessarily

unambiguous. As explained earlier, trade and price liberalization may benefit farmers. In addition, the expanding manufacturing sector may create new demand for agricultural products. Migration to urban regions could also reduce unemployment rates and increase wages in rural areas. Therefore, an increase in the ratio of growth in agriculture relative to growth of manufacturing would indicate that the rural-urban gap has narrowed down. Figure 1 depicts the relationship between openness and the share of agriculture (value added) in GDP in 1999. It is shown that higher openness indices are associated with lower share of agriculture in GDP.

\*\*\*Put Figure 1 Here\*\*\*

The second explanatory variable is inward foreign direct investment (FDI) as a percent of GDP. This variable captures openness to foreign capital. Inward FDI tends to have an urban bias and may be expected to increase the rural-urban gap. The last variable is money and quasi money as a percent of GDP. This indicator measures financial deepening and is a measure of financial development. As the economy develops, monetized transactions expand. To the extent that rural areas are excluded, a rise in financial depth would be associated with an increase in rural-urban inequality. It is important to point out that in most African countries the use of credit cards is still very limited. What banks often do is issue *debit* cards which assume that one has money in his or her checking account. Thus M2/GDP remains an appropriate indicator of financial deepening.

When we examine African countries in general, we often observe major cross-country differences. Thus, any attempt to study the effects of reforms and liberalization must take country-specific effects into account. Panel estimation using fixed effects models is consistent with this view. To get an idea of what the results would like when this is ignored, we first conduct pooled least-squares estimation where we include a common intercept; then we use a standard fixed effects model. However, due to the large loss in the degree of freedom caused by the estimation of 38 (N-1) separate country effects, we also estimate a panel data model with regional dummies. This process is based on random-effect estimation with dummy variables for distinct regions. The basic fixed effects model is as follows

$$y_{it} = \alpha_i + \beta'X_{it} + \epsilon_{it} \quad (1)$$

Where  $\alpha_i$  is the individual (country) effect. The fixed effects estimation treats  $\alpha_i$  as a country specific intercept. This is in contrast to the random-effects model which views  $\alpha_i$  as a country specific disturbance. The vector  $X$  includes the explanatory variables defined above. All data used in the empirical estimation are from the World Bank Economic Indicators CD ROM. Table 2 displays relevant descriptive statistics.

\*\*\*Put Table 2 Here\*\*\*

#### IV. DISCUSSION OF EMPIRICAL RESULTS

Empirical estimates are reported in Tables 3-6. The results shown in Table 3 are from estimating a pooled least-squares model using OLS method. The statistics show that if one uses this model, the findings would indicate that there is no influence of any of the indicators

of reforms and liberalization on rural-urban inequality since all coefficients are found to be insignificant. However, as mentioned earlier, there are substantial disparities among countries which requires one to account for heteroscedasticity and for country-specific (or at least region specific) effects. Table 4 displays estimates from a pooled least-squares model using GLS (Generalized-Least Squares) method. The GLS estimation is quite appropriate when the pattern of heteroscedasticity is unknown. The estimates suggest that only openness has an influence on rural-urban inequality since the coefficient on this variable is statistically very significant. More specifically, the results imply that increased openness to trade reduces the rural-urban gap.

\*\*\*Put Table 3 Here\*\*\*

\*\*\*Put Table 4 Here\*\*\*

Next, we try to account for country specific effects. Table 5 reports the result from a fixed-effects estimation. At the 1-percent level of significance, the coefficients on openness, FDI and M2/GDP turn out to be significant. However, while the effects of openness and financial deepening are beneficial, FDI seems to cause rural-urban inequality to rise. The country-constant terms (not shown) are statistically significant.

A major problem in estimating fixed-effects models when the number of countries is large and the time period is fairly small is the loss in degrees of freedom caused by estimating the separate country effects. A method that has been used in recent empirical literature calls for the use of regional dummy variables. Table 6 reports the results associated

with the estimation of an *adjusted* fixed-effects model where we have included a dummy for North Africa and a dummy for the southern region in Africa. Another model (results not shown) divided Africa into north, south, east, west and other. However, only the dummy for ‘south’ turned out to be significant. The results shown in Table 6 indicate that the model is statistically significant. Interestingly, the coefficient on FDI has become positive while the coefficient associated with financial deepening is no longer significant. The results shown in Table 6 indicate that increased openness to trade and foreign capital contributes to reducing the rural-urban gap. However, the effect seems to be mitigated in southern Africa since the coefficient on the dummy variable for this region is negative and statistically very significant. The coefficient on the dummy for North Africa, while positive, is not significant.

\*\*\*Put Table 5 Here\*\*\*

\*\*\*Put Table 6 Here\*\*\*

## V. CONCLUSIONS

This paper uses panel data to explore the effects of reforms and liberalization on rural-urban inequality in Africa. Based on a set of empirical tests, we may conclude that openness to trade can contribute to reducing rural-urban inequality. On the other hand, the estimates yield ambiguous evidence regarding the role of FDI and financial deepening. A possible explanation for the statistically significant and robust role of openness to

international trade stems from the fact that in many African countries agricultural products constitute the bulk of exports.

The econometric evidence associated with the role of financial deepening in the present study is, in general, consistent with the findings in the empirical literature; that the effects of reforms on rural-urban inequality are not unequivocal or uniform. Perhaps more insight could be gained from using household-level survey data from individual countries. Such data however are only available for a limited number of African economies. Furthermore, the findings imply that there may be some support for the so-called *offsetting-trend in inequality* (OTI) proposition. It seems that falling rural-urban inequality tends to offset the increase in intra-sectoral inequality in Africa. Thus, as countries proceed with more trade liberalization and enhance their integration in world markets, further research to explore the impact of these developments on rural-urban gaps and on the overall change in national inequality levels should provide useful insight.

The results derived in the present paper have two important policy implications. First, to the extent that inward FDI is export enhancing, policies that promote FDI could also contribute to narrowing the rural-urban gap. Second, financial deepening has, in general, been shown to promote economic growth. In this paper, the empirical tests fail to yield conclusive evidence on this issue. Perhaps policymakers should emphasize the role of financial deepening in rural areas. This can be done through, for example, promoting banking operations in rural regions. Access to financial services tends to be quite costly for Africa's rural residents. Farmers in many African countries often have to travel to urban areas to gain access to bank services. This increases transaction costs for the rural sector.

We believe our paper contributes to the literature in at least three areas. First, we employ four alternative econometric specifications to explore the links between openness, FDI and financial deepening, and rural-urban inequality. Second, we use panel data from Africa over three time periods 70s, 80s and 90s. Third, we tried to overcome the limitations of the data and the lack of an adequate measure of rural-urban inequality with any satisfactory frequency, by developing an alternative measure of inequality, namely the ratio of agriculture growth to manufacturing growth.

Obviously, the issue of the direction of causality and potential feedback effects does arise. A smaller rural-urban gap may reflect a higher level of development, and thus may imply that the country is better equipped to embark on reforms and liberalization programs. In that case, causality would be from rural-urban inequality to trade liberalization and financial development. Further research on these questions is warranted.



## ENDNOTES

<sup>1</sup> Eastwood and Lipton (2000) provide an excellent discussion of the different arguments.

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Table 1  
Rural-Urban Gaps for Selected Countries

	Population below poverty line (%)						Illiteracy rates (%)					
	Pre-1990			Post-1990			Pre-1990			Post-1990		
	Rural	Urban	Ratio	Rural	Urban	Ratio	Rural	Urban	Ratio	Rural	Urban	Ratio
Algeria	16.6	7.3	<b>2.27</b>	30.3	14.7	<b>2.06</b>	81.1	58.8	<b>1.38</b>	71.2	42.9	<b>1.66</b>
Egypt				23.3	22.5	<b>1.04</b>	70.6	19.7	<b>3.58</b>	68.7	40.1	<b>1.71</b>
Morocco	18.0	7.6	<b>2.37</b>	27.2	12.0	<b>2.27</b>	88.5	61.3	<b>1.44</b>	79.3	41.1	<b>1.93</b>
Nigeria	49.5	31.7	<b>1.56</b>	36.4	30.4	<b>1.20</b>						
Tunisia	29.2	12.0	<b>2.43</b>	21.6	8.9	<b>2.43</b>	75.4	49.5	<b>1.52</b>	60.0	31.9	<b>1.88</b>
Bangladesh	46.0	23.3	<b>1.97</b>	39.8	14.3	<b>2.78</b>						
Cambodia	43.1	24.8	<b>1.74</b>	40.1	21.1	<b>1.90</b>						
China	7.9	<2	<b>3.95</b>	4.6	<2	<b>2.30</b>	37.8	17.6	<b>2.15</b>	26.2	12.0	<b>2.18</b>
India	43.5	33.7	<b>1.29</b>	36.7	30.5	<b>1.20</b>	73.6	40.1	<b>1.84</b>	55.3	26.7	<b>2.07</b>
Nepal				44.0	23.0	<b>1.91</b>	81.3	52.6	<b>1.55</b>	64.2	35.8	<b>1.79</b>
The Philippines	53.1	28.0	<b>1.90</b>	50.7	21.5	<b>2.36</b>	21.3	7.2	<b>2.96</b>	10.3	2.7	<b>3.81</b>
Thailand				15.5	10.2	<b>1.52</b>	22.9	12.3	<b>1.86</b>	7.5	3.3	<b>2.27</b>
Brazil				32.6	13.1	<b>2.49</b>	40.6	14.4	<b>2.82</b>	31.1	10.7	<b>2.91</b>
Bolivia							55.3	16.0	<b>3.46</b>	36.1	8.9	<b>4.06</b>
Guatemala	71.9	33.7	<b>2.13</b>				68.6	28.2	<b>2.43</b>	47.8	16.8	<b>2.85</b>
Peru	67.0	46.1	<b>1.45</b>	64.6	40.4	<b>1.60</b>						
Uruguay							11.0	5.2	<b>2.12</b>	6.6	2.9	<b>2.28</b>

Source: Data on poverty is from the Bank Development Indicators (World Bank, 2002). Data on illiteracy are from UNESCO, Statistical Yearbooks for various years (1970-1998).

Table 2  
Descriptive Statistics

	Openness	FDI	M2/GDP	Inequality Measure
Mean	64.398	1.308	25.635	0.6215
Median	58.510	0.637	20.620	0.550
Maximum	176.20	28.917	77.190	29.12
Minimum	31.35	-3.265	7.4200	-38.42
Standard deviation	25.998	3.328	15.864	5.75

Table 3  
Pooled Least-Squares *OLS* Estimation

Dependent variable: (agriculture growth/manufacturing growth)

	<i>Coefficient</i>	<i>t-statistic</i>
Constant	-1.5760	-0.8144
Openness	0.0277	1.0641
FDI	0.0489	0.7842
M2/GDP	0.0015	0.9473
Number of observations	85	
Adjusted R <sup>2</sup>	0.015	
F-test	0.431	

\*\*\* indicates significance at 0.01.

Table 4  
Pooled Least-Squares *GLS* Estimation

Dependent variable: (agriculture growth/manufacturing growth)

	<i>Coefficient</i>	<i>t-statistic</i>
Constant	-1.4447	-10.229***
Openness	0.0252	19.517***
FDI	0.0282	0.867
M2/GDP	0.0038	0.770
Number of observations	85	
Adjusted R <sup>2</sup>	0.86	
F-test	177.85	

\*\*\* indicates significance at 0.01.

Table 5

Fixed-Effects (GLS) Estimation<sup>a</sup>

Dependent variable: (agriculture growth/manufacturing growth)

	<i>Coefficient</i>	<i>t-statistic</i>
Openness	0.0169	31.641***
FDI	-0.0132	-32.146***
M2/GDP	0.0495	50.391***
Number of observations	85	
Adjusted R <sup>2</sup>	0.99	

\*\*\* indicates significance at 0.01.

<sup>a</sup> White heteroscedasticity-consistent standard errors and covariance

Table 6

*Adjusted* Fixed-Effect (GLS) Estimation<sup>a</sup>

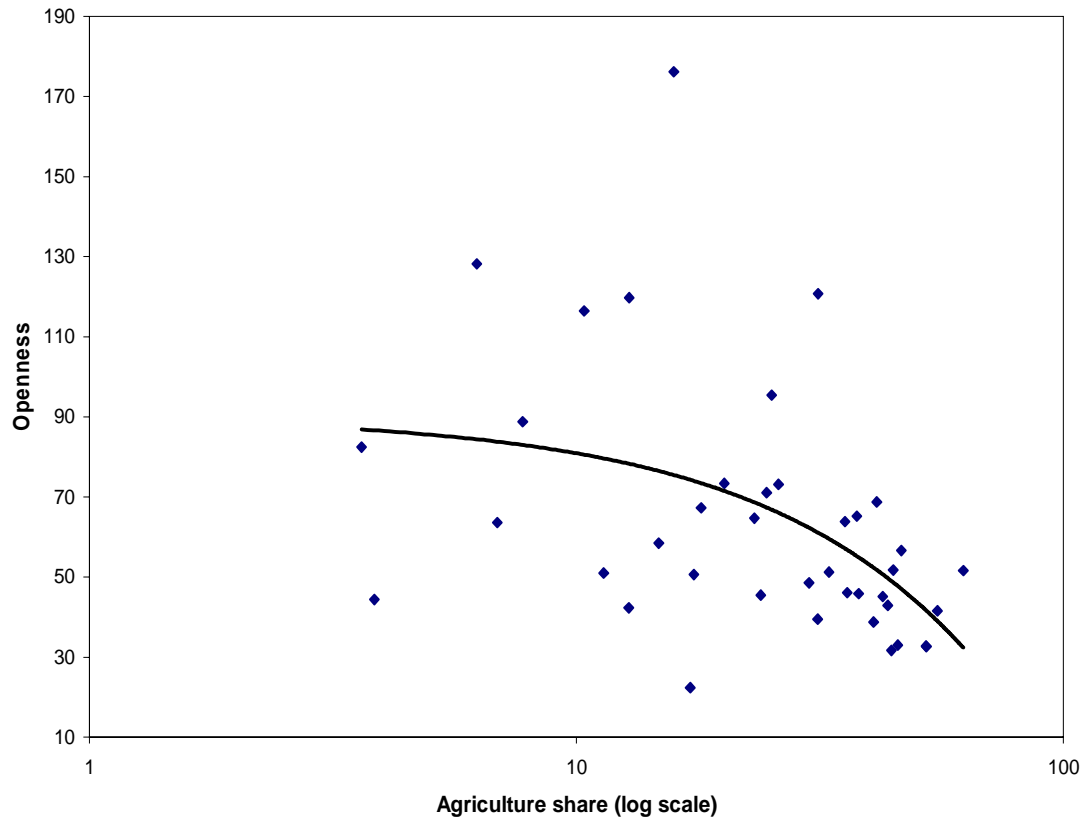
Dependent variable: (agriculture growth/manufacturing growth)

	<i>Coefficient</i>	<i>t-statistic</i>
Openness	0.0089	19.111***
FDI	0.0222	4.071***
M2/GDP	0.00006	0.005
Northern Africa Dummy	0.0775	1.043
Southern Africa Dummy	-0.3032	-6.788***
Number of observations	85	
Adjusted R <sup>2</sup>	0.436	
F-test	17.26***	

\*\*\* indicates significance at 0.01.

<sup>a</sup> White heteroscedasticity-consistent standard errors and covariance

**Figure 1. Openness and agriculture share of GDP (value added) in 1999**



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