

# Foreign Aid Ethic Division

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## Abstract

Whether foreign aid can stimulate economic growth is one of the most debated questions in economics. However, empirical studies don't seem to give a clear answer to it, even if they control for specific categories of aid or for aid effectiveness dependence on policy and geographical environment (see, for example, Rajan and Subramanian [2005]). In this paper we investigate one of the possible causes of this ambiguity. Specifically, we analyze the relationship between growth effects of foreign aid and ethnic fractionalization in the recipient countries.

Empirical studies indicate that ethnic diversity tends to be associated with low GDP growth rates (see Easterly and Levine [1997], Alesina et al. [2003], Alesina and La Ferrara [2005] for that point). One of the explanations of this fact is the “common pool” problem that separation of power between distinct groups may lead to. Foreign aid directed to highly fractionalized countries characterized by the existence of multiple powerful groups, that have access to a pool of common resources, might be not effective. We show both theoretically and empirically that unless a recipient country has built institutions that mitigate the influence that ethnic groups have in allocating resources (and foreign aid), international assistance may be prone to appropriation by distinct groups. As foreign aid disbursements are usually anticipated by recipient's country groups, we also provide novel analysis how such anticipation affects group behavior and find that both anticipated and unanticipated aid components are prone to appropriation by multiple powerful groups.

We build a common property model of growth extended to include international assistance. Building on Tornell and Lane [1998] we introduce foreign transfer into growth model with multiple powerful groups that can have access to aggregate capital stock that is accumulated in the economy.<sup>1</sup> Having defined a dynamic non-cooperative game, we characterize Markov perfect equilibria of this economy and show that foreign aid is less effective than predicted by standard representative agent growth model. Specifically, for

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<sup>1</sup> Our benchmark model is equivalent to that of Lane and Tornell [1998]. However, we show that the solution they obtain is not entirely correct. We provide the proper solution to that model and extend their analysis by studying the role of anticipation of external resources. We provide analytical solution to the model modified this way, what was not possible with the benchmark model results obtained by Lane and Tornell [1998] (as one couldn't analytically derive the value of the objective function). Finally our approach differs in that we explicitly concentrate on foreign aid in our analysis.

a wide range of parameter values, along the interior equilibrium the impact of foreign aid on growth is a decreasing function of number of groups in the economy.

Acknowledging a recent debate on variability and predictability of foreign aid (see for example, Bulir and Hamann [2003], Arellano et al. [2005], Pallage and Robe [2001]), in the dynamic setting described above, we analyze the effectiveness of a transfer that is fully anticipated by all the groups in the economy. We look for Markov perfect equilibria and show that mere anticipation of foreign aid induces negative growth effects magnified by high ethnic fractionalization.

In the empirical part of the paper we test the prediction of the benchmark model as well as the version that considers the role anticipated transfer. To this end we use data from the recent paper by Rajan and Subramanian [2005] and apply difference-GMM and system-GMM technique. The extensive robustness analysis is also provided.

Our theoretical and empirical results have three novel implications. First, we introduce ethnic fractionalization as a characteristic upon which the effects of foreign aid might depend. In contrast to most of the existing theoretical literature on aid-growth relationship, which uses representative agent models of economic growth to assess the impact of foreign assistance, we base our considerations on the growth model with several powerful groups. We believe that this approach is more suitable for the aid effectiveness analysis, as most of developing countries are highly fractionalized and ethnic diversity is an important factor effecting economic outcomes. Second, the extension of the model we propose deals with another limitation of traditional approach, i.e. with treating foreign aid as a shock in capital accumulation equation. The approach taken in this paper is different in that we assess the effectiveness of a transfer that is anticipated by the recipient country (i.e. by all groups in that country). Finally, in the empirical analysis we distinguish between anticipated and unanticipated aid components. This decomposition was neglected in the previous studies.

The theoretical model we consider predicts that the positive impact of foreign aid on growth can be undermined when the recipient country is characterized by high ethnic fractionalization, measured in the number of distinct groups that have access to common resources accumulated in that country. This result, however, holds only in the economies that lack institutions protecting the country's resources from appropriation. The first best analysis indicates that once such institutions exist, high ethnic fractionalization is not detrimental for aid effectiveness. For standard parameter values the model predicts that, a 1 percentage point increase in the ratio of aid to GDP increases the growth rate by 0.32 percent in countries populated with two ethnic groups. If there are 5 groups, the increase in the GDP growth rate is only 0.2, while for 8 groups, this number is 0.11.

The extension of the benchmark model we consider, suggests that foreign assistance that is anticipated by the powerful groups in the recipient country, might be less effective than the transfer that is not expected. This is so because the negative effects of anticipated assistance manifest themselves even before actual aid disbursements take place.

In the empirical part of our paper, we test the main hypothesis that the positive impact of foreign aid on growth can be undermined when the recipient country is characterized by high ethnic fractionalization by estimating the coefficient of the cross term  $(\text{Aid/GDP}) \times (\text{Number of ethnic groups})$  in standard growth regression. For system—and difference—GMM method, the cross term is statistically significant with an expected, negative sign. Aid effectiveness coefficients reported in this paper are smaller compared to other studies, estimates (see Rajan and Subramanian [2005], Clemens et al. [2004], Dalgaard et al. [2004], Hansen and Tarp [2001]) and are close to those predicted by the theoretical model. These results hold irrespectively whether the fractionalization is based on ethnic or language criteria.

We check the robustness of our results, by perturbing our benchmark specification in a number of ways. In particular, we conduct sensitivity checks of the specification by: using Fearon [2003] data for the number of ethnic groups in the recipient country; adding quadratic terms for foreign aid to control for possible non-linearities; restricting the sample to include only Sub-Saharan Africa countries; using ethnic fractionalization index (constructed by Alesina et al. [2003]) and polarization index (constructed by Reynal-Querol [2002]) instead of the pure number of ethnic groups. Estimated aid effectiveness evaluated at different levels of fractionalization is reasonably insensitive to a number of sensitivity checks. However, aid terms are significant only jointly, both aid and the cross term  $(\text{Aid/GDP}) \times (\text{Number of ethnic groups})$  are not statistically significant separately.

We use an endogenous growth model with multiple powerful groups developed by Lane and Tornell [1998] to investigate the relationship between growth effects of foreign aid and ethnic fractionalization in the recipient country. We propose an extension of this model that allows us to study the role of aid flows that are anticipated by the competing ethnic groups. We find that the effectiveness of both anticipated and unanticipated aid as well as the effectiveness of the actual assistance is adversely affected by the number of ethnic (and linguistic) groups living in the country, unless the recipient builds institutions that protect common resources from appropriation. This qualification is crucial. It should be stressed, that our results do not imply that aid should be given selectively on the basis of the ethnic fractionalization observed in the recipient country. The donor community should rather encourage recipients to build mechanisms that prohibit appropriation, competition and conflict between ethnic groups — in such case, diversity might prove beneficial for the recipient country, and for the aid's growth impact. A theoretical model we develop clearly suggests that once such

a mechanism is at work, foreign aid effectiveness will not be affected by the ethnic fractionalization in the recipient country.

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