Globalization, Exclusion, and Ethnic Inequality*

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Abstract

Recent research efforts have revealed that socioeconomic inequality between individuals in developed countries has been increasing since the 1970s. Yet, less is known about trends in inequality between ethnic groups. This is a serious gap in the literature, because between-group or "horizontal" inequality may reinforce individual-level inequality and has been shown to cause various bad outcomes, including limited public goods provision and armed conflict. To overcome previous data limitations, we estimate ethnic inequality with the help of night lights emissions from time-varying satellite data from 1990 through 2013. The general trend in the data appears to be toward a decrease of ethnic inequality but the pattern is not uniform across world regions. In particular, politically marginalized groups in Asia have been able reduce the difference to wealthier groups in their respective countries. In contrast, excluded groups in Sub-Saharan Africa have been falling further behind. To account for these differences, we study how the effect of globalization is channeled by the state, postulating that neopatrimonial states block the potential inequality-reducing effects of increasing integration into the world economy whereas more developmental regimes facilitate the catch-up of politically and economically marginalized groups.

Far from being merely an esoteric topic animating scientific controversy, inequality has in recent years become the focal point of intense policy debates. Even in the US, where interest in distributional politics is usually dismissed as "class warfare," politicians can no longer entirely ignore the causes and consequences of inequality. Of course, the great

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economic crisis that broke out in 2008 helps to explain why issues of fairness and equality have become such salient topics.

Advances in data collection have also contributed to this shift of attention, as illustrated by Thomas Piketty's (2014) *Capital in the 21th Century*. This best-selling book uses historical tax records in several developed countries to show that socioeconomic inequality has been increasing since the 1980s and has now reached levels not seen since the 1920s preceding the Great Depression. Beyond showing that inequality is on the rise, Piketty suggests that this development is dangerous and that something needs to be done about it.

Despite the well-deserved attention that Piketty and his colleagues have attracted, the debate triggered by this research program is too narrowly construed in at least two crucial respects. First, current mainstream research on inequality typically says little about trends beyond the Western world. This is a major limitation because those who are the most severely affected by inequality live in underdeveloped countries, often devoid of the safety net of the western welfare state and thus exposed to hunger, disease and other existential dangers. As argued by Michael Doyle and Joseph Stiglitz (2014), the eradication of "extreme inequality" should therefore become a top priority in development. Second, a full diagnosis of inequality requires analysis of how it affects entire groups rather than merely individuals. In a recent op-ed article, the US economist Adam Posen (2014) argues that "we should care about inclusion, which means recognising that many individuals are still excluded from economic security—let alone wealth—because of race, region, ethnicity or gender. In short, noticing who is actually hurt, and how, is left out of the current inequality furore."

There are several good reasons to be concerned by group-level inequalities, especially those between ethnic groups. From a normative standpoint, inequality should become disturbing even to free-market critics of leftists' cherished "equality-of-outcomes" aspirations if it can be shown to undermine their own "equality-of-opportunity" ideal. Of course, to a large extent, this dilemma applies to inherited wealth among individuals and families, as shown by Piketty, but the problem becomes even more vexing if entire groups are disadvantaged. Inequality seems more tolerable if it is a direct consequence of individuals' skills and performance, rather than being linked to one's skin color or religious beliefs.

Furthermore, it has been convincingly argued that "categorical inequality" (Tilly, 1999) or "horizontal inequality" (Stewart, 2008) are especially durable, not the least because ethnic identities are usually "sticky" in the sense that they are ascriptive and therefore cannot easily be changed through individual choices (see e.g. Horowitz, 1985). This implies that ethnic inequality can create a poverty trap that locks in aspiring individuals, thus fatally undermining the principle of equality-of-opportunity and turning Kuznets' (1955) transitory development periods of unequal distribution into stable patterns that

permanently block growth for large parts of a country's population.

Finally, as if this were not bad enough, recent research shows that ethnic inequality is associated with various deleterious consequences, such as underdevelopment (Alesina, Michalopoulos and Papaioannou, 2015), bad governance (Kyriacou, 2013), deficient public goods provision (Baldwin and Huber, 2010), and even civil war (Cederman, Weidmann and Gleditsch, 2011). As existing work remains silent on the trends in, and causes of, ethnic inequality, it is difficult to make policy recommendations on how to alleviate inter-group disparities. In this context, we propose a new argument that accounts for the levels and changes in ethnic inequality.

Our theory explains developments in ethnic inequality in two steps: first, we link inequality to changes in country-specific patterns of integration into the world economy. Second, our argument posits that the distributional effects of globalization crucially depend on preexisting domestic institutions and policies. Specifically, ethnic power relations strongly affect inter-group inequality. Long-term political marginalization increases relative poverty. Next to its direct effect, ethnic exclusion reduces the equalizing effect of globalization. In weak states that lack an autonomous bureaucracy, increasing integration into the global economy benefits those groups represented in the national government more than excluded ones. In contrast, excluded groups catch up to the national average in states where impersonal, autonomous, and capable bureaucracies are in place.

Despite the previous efforts to measure ethnic inequality, we know relatively little about how it has developed over time. Explaining global trends in ethnic inequality requires us to confront formidable data challenges. It is notoriously difficult to arrive at comparable measures of between-group inequality with wide coverage. Moreover, the task of extending these cross-sectional data to time-varying panels increases the level of difficulty even further. Our solution is to rely on night lights data from remote-sensing satellites as a proxy for economic performance. Fortunately, these data are available for the entire globe annually since 1992, thus allowing us to measure time series since the end of the Cold War. While the historical depth of these data fall well short of Piketty's *longue durée*, it surpasses most existing attempts to measure such group-level trajectories.

To preview the results briefly, we find that in contrast to Piketty's pessimistic findings in terms of individual-level inequality in the Western World, the picture looks considerably more promising when the attention shifts to intergroup comparisons. In fact, at the global level, our analysis shows that there is a modest but steady decline of ethnic inequality among poorer groups, allowing these to somewhat reduce the wealth gap. While especially strong in Asia, this convergence effect does not apply to all parts of the world. In particular, politically marginalized groups in Sub-Saharan Africa are trapped by extreme inequality far below the respective country average. In these cases, the development paths are diverging rather than converging.

Using multilevel analysis helps us to distinguish between structural differences between

groups and countries and within-group changes as explanations of the trends in ethnic inequality. Our findings generally suggest that increasing integration into the global economy drives a catch-up effect, although the continental differences alluded to above indicate that this effect cannot be proposed as a universal explanation. More concretely, we postulate that the Asian convergence process results from broadly distributed public goods investments while the African poverty trap can be attributed to neopatrimonialism (see e.g. Englebert, 2000). Using two indicators that capture developmental policies, namely government effectiveness and investment share of GDP, we go beyond simple geographic differences and demonstrate that positive examples of catch-up are present in some African states that distribute the opportunities associated with an opening of the economy evenly.

Trends in Economic Inequality and Their Causes

Economic inequality has been a central concern of policy-makers and social scientists at least since Karl Marx' writings in the second part of the 19th century. Until recently, the lack of high-quality time-series data have made it difficult to describe trends over time, let alone explain them. Generally, the literature distinguishes between individual and country-level inequality (see, e.g., Bourguignon, 2015).[1] At the most basic level, former measures compare the incomes of individuals and households within countries while the latter applies to differences in the average income of entire states.[2]

With respect to individual-level income inequality, recent efforts to collect new data and harmonize existing sources in developed countries reveal a striking trend of growing divergence between those at the very top of the income pyramid and the rest of the population (Piketty, 2014; Morelli, Smeeding and Thompson, 2014). Starting in the 1980s, this trend contrasts with declining or stable levels of inequality in the post-World War II period. For developing countries, it is harder to discern a clear pattern because data availability is still far from perfect. The available evidence suggests a moderately increasing aggregate trend in national Gini coefficients since 1980 that flattens out or even goes into reverse in the first decade of the 21st century (Alvaredo and Gasparini, 2014). However, this pattern masks substantial differences between developing countries and regions (United Nations, 2013). In Central Europe and Asia, inequality has steadily increased from relatively low levels since 1990. The Middle East and North Africa experienced a modest decline in individual inequality. Experiencing no clear trend at all, Latin America and Sub-Saharan Africa remain the most unequal world regions. While inequality in Sub-Saharan Africa has remained remarkably constant since 1990, inequality soared in

[1] For another excellent review, see Atkinson and Bourguignon (2015). A more recent literature studies regional inequality within countries (see, e.g., Kanbur and Venables, 2005).

[2] Some studies also look at individual inequalities in wealth (e.g. Saez and Zucman, N.d.) or land ownership (e.g. Vollrath, 2007). For the sake of brevity we restrict the discussion to income differentials.

Latin America in the late 1980s and 1990s and then declined in the 2000s (Alvaredo and Gasparini, 2014).

Turning to developments in between-country inequality yields a different picture – especially, when income estimates are weighted by country population. From the Industrial Revolution onward, a small club of Western countries that was later joined by Japan achieved continuously faster economic growth than the rest of the world. The global long-run pattern until the 1980s is thus one of increasing disparities (De Long, 1988). Since then, the trend has almost been completely reversed. Led by massive growth in China and India, between-country inequality has declined markedly in the past thirty years (Firebaugh and Goesling, 2004; Sala-i Martin, 2006). A similar conclusion is reached by scholars who study global inequality, that is, income differences between individuals around the world (Sala-i Martin, 2006; Milanovic, 2013; Bourguignon, 2015).

These global developments are closely related to intensifying and expanding globalization in the past three decades. The entry of India, China, and the former Soviet Union into the world economy provided an almost unlimited pool of unskilled labor, thereby making skilled labor and capital relatively scarce. As a result, those in the middle and lower end of the income distribution in developed countries saw their wages stagnating or even declining, while those at the higher end saw their income increasing. Most unskilled and even some skilled workers in the developed world are now competing with workers in the developing world, while global managers are seeking the highest salaries by moving between countries. Unskilled workers in developed states have been the losers of this process, but at the same time the emergence of a middle class in several developing countries helped reduce wealth differentials between states.

Whether these global developments induce or reduce overall inequality overall and in specific cases remains hotly contested. According to proponents of global free markets, liberalization of goods and capital flows is the optimal strategy to achieve economic development and reduce global poverty. Basing their claims on standard neoclassical models of trade such as the Heckscher-Ohlin model and the Stolper-Samuelson theorem, globalization optimists point to the differences in the relative abundance of capital and labor in developing and developed countries. These models predict increases in international trade to lead to specialization in the relatively abundant factor. Due to the abundant supply of labor in the developing world, individual inequality should decrease in these countries (see e.g. Harrison, McLaren and McMillan, 2011). Since the developing world also accounts for the vast majority of the world's population, global inequality should fall and evidence of decreasing between-country seemingly supports this view (Dollar and Kraay, 2002).

In contrast, globalization skeptics claim that "global markets are inherently disequalizing" and reference increasing individual inequality within states as evidence for their proposition (Birdsall, 2006, 18). These pessimists expect the market to reward already well-endowed countries and individuals, to expose particular poor and vulnerable seg-

ments of the world population to economic fluctuations and uncertainty, and to unravel pre-existing social safety nets and regulatory standards (Birdsall, 1998; Rudra, 2002; Easterly, 2007). Stressing factors such as technology and market imperfections, recent theoretical work predicts international trade to result in an ever-increasing skill-premium and rising inequalities (see e.g. Thoenig and Verdier, 2003; Aghion et al., 2005).[3]

Explaining ethnic inequality with these models is not straightforward, not least because existing theories differ widely in their predictions and assumptions as discussed above. The application of any of these models to ethnically divided societies would require that the "ethnic division of labor" (Horowitz, 1985) within a multi-ethnic country adequately reflects its overall economic structure. The crucial assumption here is that in unskilled labor-abundant countries, relatively poor ethnic groups are even more abundant in unskilled labor than their richer counterparts. Yet most ethnically divided societies are characterized by cross-cutting economic cleavages that complicate the application of existing trade-inequality models to the group-level. Although existing theoretical models based purely on economic factors are not directly applicable to ethnic inequality, they correctly highlight the distributional consequences of globalization. Missing from these models are domestic, political considerations, specifically ethnically-based clientelism and state policy towards development.

Explaining Ethnic Inequality

Building on existing inequality research, we argue that the distribution of gains from increased trade and financial transactions affects ethnic inequality. Which ethnic groups benefit from globalization depends on two political factors. We first trace the role of clientelism, that is, the distribution of benefits by government officials to selected supporters in exchange for political support in ethnically divided societies. Secondly, our account highlights the roles of bureaucratic effectiveness and political elites who promote broadly-based development in overcoming clientelistic practices.

It is almost a stylized fact that clientelism is endemic to most multi-ethnic societies (Lemarchand, 1972; Olzak, 1983; Clapham, 1996; Chandra, 2007; Arriola, 2009). Political economists even argue that those in power highlight the salience of their ethnic identity to exclude ethnic others from government rents (Bates, 1974; Posner, 2005). Clientelistic elites channel spending and local public goods towards their ethnic constituency (Burgess et al., forthcoming). Access to lucrative positions in government, the state bureaucracy, and the armed forces will typically also be granted selectively (Horowitz, 1985; Quinlivan, 1999). The same applies to the protection of property rights, contract enforcement and fair treatment of citizens by the state's executive and judicial branches more generally

[3]For useful review articles see Harrison, McLaren and McMillan (2011) and Goldeberg and Pavcnik (2007).

(Sanchez de la Sierra and Mutakumura, 2015). Recent empirical work demonstrates that ethnic favoritism is a highly prevalent phenomenon, especially in Sub-Saharan Africa (Kramon and Posner, 2012; Franck and Rainer, 2012; Burgess et al., forthcoming). In their global analysis, De Luca et al. (2015) present evidence suggesting that ethnic favoritism is a worldwide "axiom of politics" – observed even in advanced democracies such as Canada. These studies show why ethnic groups excluded from government power are poorer than included groups.

Clientelism is thus a widely occurring phenomenon in open and in closed economies alike. Yet where increasing integration into the world economy provides governments with large revenues, the distributional effects of globalization are magnified. Custom duties on agricultural produce and profits from primary commodity exports such as petrol or metals that the state directly controls are among the most important source of revenue for many developing states. In particular, governments that lack effective taxation systems and have low state capacity in general draw much of their budget from controlling trade. In such states the gains from trade are captured by powerful social groups. According to Rudra and Jensen (2011, 647),

> preexisting domestic institutions may ensure that the gains from trade, labor, and capital flows are captured by a small population of political and economic elites. Indeed, what has been largely ignored in international economic models is how increasing global demand for natural resources can have distributional consequences beyond those transmitted through the returns on factors of production. The broader literature in political science has recognized this tension and that the final economic and political outcomes ultimately depend on if and how domestic institutions mediate distributional conflicts caused by globalization.

In a classic study, Evans (1989) distinguishes between "predatory states" where elites appropriate a large amount of the economic surplus for private consumption and "developmental states" where elites foster long-term investment of revenues into public goods. Predatory states are also commonly known as *neopatrimonial* regimes (Bratton and Van de Walle, 1994; Englebert, 2000; Erdmann and Engel, 2007) or *limited access orders* (North, Wallis and Weingast, 2009). According to Rodrik (1999), the absence of "conflict-management institutions" enables pervasive rent-seeking, which in turn enhances ethnic inequality in line with the distribution of political power. Using Weberian terminology, Evans (1989) conceptualizes neopatrimonial states as those polities without an autonomous and effective bureaucracy (also see Fukuyama, 2014). In practice, this leads to political elites exploiting their privileged access to power and material resources as if it was just another form of private property. Authority is based on trading material benefits

for loyalty in patron-client networks that span from the very top to the bottom of political hierarchy (Jackson and Rosberg, 1984).

Especially in times of fiscal crisis, government elites curtail their spending and limit transfers to their core supporters. Where access to social insurance and other compensatory policies is restricted to politically represented groups, the detrimental effects of increasing uncertainty and changing factor returns fall disproportionately on the shoulders of individuals from excluded groups. The targeting of education and infrastructure spending towards home regions of dominant groups will have a similar effect. Finally, where export revenues are concentrated in a small number of commodities or goods that are easily monopolized by political and economic elites, the benefits from globalization are likely to perpetuate or increase pre-existing economic discrepancies (Rubinson, 1976; Van de Walle, 2009). Taken together, this suggests that the gains from deepened integration into the world economy primarily accrue to politically included groups whereas the more detrimental repercussions of economic globalization tend to more heavily affect marginalized groups. Thus, while poor excluded and rich included groups can be expected to diverge from their country's average income, poor included and rich excluded groups will converge toward the mean.

Yet not all developing countries fit into the framework of the neopatrimonial state. The integration of India, China, and a number of other Asian states into the world economy since the 1980s has lifted hundreds of millions of people out of poverty, and reduced inequality between the developing and the developed world substantively (Bourguignon, 2015, Ch. 3). Many observers credit relatively impersonal and autonomous state bureaucracies in these countries with creating the basis for reducing ethnic inequality (Johnson, 1982; Evans, 1989; Wade, 1990). According to Fukuyama (2014, 326), who summarizes a long literature on state-driven development, the developmental state is characterized (i) by a competent and autonomous bureaucracy or an effective state apparatus, and (ii) leaders who give preference to policies that further long-run economic development, specifically industrialization (see also Vu, 2007, 28).[4]

Effective and autonomous bureaucracies provide public goods that do not discriminate along ethnic lines, thereby reducing inequality. Birdsall (2006) stresses the importance of the state when it comes to investing in infrastructure and human capital. Only where education and physical infrastructure are available to broad segments of a country's population, international trade and capital flows will lead to shared growth or even decreasing inequalities. Kasahara (2013, 3) characterizes the distributional goals of developmental regimes: "The developmental state is also committed to resolving conflicts in the ongoing process of social restructuring as it tends to induce winners and losers. Conflict

[4]Others stress the importance of the diversification and strengthening of the agricultural sector in the first place to accumulate enough capital to bring about industrialization (Van Donge, Henley and Lewis, 2012).

management in this regard involves ensuring that the benefits, or expected benefits, of the process are widely shared." Rule-based decision making by an impersonal and autonomous bureaucracy goes a long way towards ensuring that the gains from globalization benefit individuals regardless of their ethnic identity.

Yet state capacity itself is likely to be insufficient in bringing about development that is advantageous for different ethnic constituencies. Vu (2007, 47) stresses the agency of political elites as an integral ingredient to successful and widely-shared development: "Successful developmentalism depends as much on state structure as on the willingness and technical capacity of state leaders to perform developmental roles effectively." Evans (1989), building once more on Weber, identifies competitive recruitment into the bureaucracy as crucial to weaken patron-client relationships and to strengthen technocrats who transcend ethnic boundaries. As a result, bureaucrats have the autonomy to implement development programs that are explicitly designed to benefit peripheral and otherwise marginalized ethnic minorities (see e.g. Kang and Imai, 2012, 529-30).

Finally, the active political support for industrialization by state elites and the related diversification of the goods produced often leads to economic decentralization. As opposed to immobile economic factors such as land, industrial production can move into impoverished areas of the state. Since early industrial activities are not skill-intensive, ethnic differences such as linguistic cleavages do not constitute an insurmountable barrier for employment. Under such conditions, peripheral regions are able to provide relatively abundant and cheap labor. At the same time, there are fewer obstacles blocking migration of workers from ethnically distinct, peripheral areas to the large industrial centers, from where they can send remittances to their home regions.

In sum, state weakness and endemic clientelism account for large and increasing inequalities between the ethnic insiders and outsiders of clientelist networks where political elites appropriate the gains from trade and transfer part of the profits to their co-ethnics (Van de Walle, 2009). In ethnically exclusionary neopatrimonial regimes where entire groups lack access to the patronage system, ethnic inequality is rampant. Moreover such regimes are unlikely to provide the political and institutional basis for excluded groups to benefit from increasing economic openness. In contrast, regimes with more rational bureaucratic forms of organization limit the scope for ethnic favoritism and provide incentives for more long-term oriented investment. In such systems, marginalized groups stand a much better chance to gain from economic liberalization. Proactive development policies that are ethnically neutral, or even embrace "affirmative action," contribute to enabling poor politically excluded groups to reap the benefits of economic globalization.[5] We summarize our theoretical argument in two hypotheses:

[5]This is exactly what Kanbur's (2000) brief discussion of the Malaysian case suggests: inter-group redistribution has contributed to the country's miraculous economic success in the 1980s and 1990s.

Hypothesis 1 *Increasing trade openness widens the gap in income between excluded and included poorer groups in neopatrimonial regimes.*

Hypothesis 2 *Increasing trade openness narrows the gap in income between excluded and included poorer groups in developmental regimes.*

Data

Estimating trends in horizontal inequality represents a formidable measurement challenge, as conventional sources do not allow us to track these trends at the level of groups with a sufficiently precise temporal resolution. This section describes our spatial approach to estimating these trends that relies on night light emissions. After introducing the global dataset of ethnic groups, we describe the computation of ethnic inequality.

Ethnic groups and their settlement areas. Our analysis uses a global sample of politically relevant ethnic groups provided by the 2014 version of the Ethnic Power Relations (EPR) project.[6] Ethnic groups are considered politically relevant when group members make political claims on behalf of the group in the national political arena, or when the state discriminates against the group politically by, for example, denying voting rights to members of that group.[7] Conversely, social and economic discrimination alone do not warrant inclusion into the sample. For each ethnic group EPR codes the level of power access at the center between 1946 and 2013. Most importantly, it distinguishes "included" from "excluded" groups by assessing meaningful access to executive power, which can change over time.[8]

As described in detail below, we use a spatial estimation method to measure horizontal inequality between groups over time. More precisely, this approach involves combining data on night light emissions with information on groups' settlement regions. The latter comes from a companion dataset of EPR, the "GeoEPR" dataset (Wucherpfennig et al., 2011). For each EPR group, GeoEPR provides a rough approximation of the group's settlement region in an electronic format suitable for processing in a Geographic Information System (GIS). Group regions are given as vector polygons, where each polygon indicates the primary settlement region of that group. These polygons are time-variant, as settlement regions can change due to mass migration, forced resettlement, or modifications of country borders.

Ethnic inequality. In order to estimate ethnic inequality between groups over time, we combine the settlement regions with global maps of night light emissions data. In recent

[6]The most recent version of EPR is available via the GROWup portal (`http://growup.ethz.ch`). For an introduction to the dataset, see Cederman, Wimmer and Min (2010).

[7]EPR explicitly excludes recent migrant groups from its sample.

[8]Token inclusion of group representatives into a cabinet or military junta does not justify an inclusion coding.

research, satellite imagery of night light emissions has become a valuable resource for scientific analysis. In particular, researchers have used night light emission data to track economic development. Some of the first studies focus on between-country comparisons and show that night lights correlate highly with GDP (Elvidge et al., 1997). Analyzing changes over time, Henderson, Storeygard and Weil (2011) demonstrate that luminosity data can also approximate economic growth. More relevant for our analysis is a related strand of literature that uses night lights to track *subnational* variation in economic outcomes. Chen and Nordhaus (2011) present a global study that compares night light emissions to economic output measured at the level of 1-degree (approx. 100 km by 100 km) grid cells. One of the most detailed analyses so far is provided by Weidmann and Schutte (2015) using fine-grained survey data for validation. Their results show that night lights approximate economic wealth even down to the level of households.

Due to their ability to track economic wealth, night lights emissions have also been employed to measure economic inequality. Aggregating night lights at the level of ethnic groups, Alesina, Michalopoulos and Papaioannou (2015) study inequality between ethnic groups. However, their analysis aggregates inequality scores to the national level, and is therefore not able to tell how the relative status of any particular group affects group-level outcomes such as conflict. This is why Cederman, Weidmann and Bormann (2015), improving upon earlier work by Cederman, Weidmann and Gleditsch (2011), analyze night lights estimates at the group-level. In particular, their analysis combines different data sources in an effort to improve explanatory models of ethnic conflict. Their analysis shows that satellite measurements, in combination with other spatial economic data and survey data, produce more robust evidence for the effect of ethnic inequality on conflict. Night lights have also been used to measure intra-group inequality. Using a luminosity-based indicator, Kuhn and Weidmann (2015) show that both between- and within-group inequality increase conflict risk. Investigating the source of horizontal inequality, De Luca et al. (2015) rely on changes in total night lights emissions to show that a political leader's co-ethnics profit disproportionally from their putative cousin's rule.[9]

The work discussed above demonstrates that remote-sensing data can complement, and in many cases, improve on, more traditional measures for ethnic inequality such as surveys. Surveys are often limited to a specific set of countries, and it is in many cases difficult to assign respondents to ethnic groups. For our present analysis, another major limitation of survey-based indicators becomes relevant: surveys typically offer very few temporal points of measurement, which makes it difficult to precisely track variation in ethnic inequality over time. This, however, is what we need for our analysis. For that reason, we base our analysis entirely on night lights and compute annual estimates at the level of ethnic groups. More precisely, our method relies on times-series data of

[9]For a similar result that focuses on regions but ignores ethnic identity, refer to Hodler and Raschky (2014).

night light emissions from the Defense Meteorological Satellite Program's Operational Linescan System (DMSP-OLS), provided by the US National Oceanic and Atmospheric Administration. The data comes as annual rasters with a resolution of 30 arc seconds, which corresponds to approximately 1 km. We use the "stable lights" version of the data, which has non-stable light sources such as forest fires removed (National Geophysical Data Center, 2014). For each raster point, the dataset provides a so-called "digital number" (DN) between 0 and 63 that encodes the level of radiation. Night lights imagery is available starting in 1992, which is why we limit our analysis to the years between 1992 and 2013.

Using the GeoEPR settlement regions described above, we compute the sum of the night lights emitted from each group region.[10] This calculation is performed annually for each group, in order to capture variation in luminosity over time as well as changes in the groups' settlement regions. To disentangle changes in lights emissions due to population growth from those due to increased economic activity, we compute group income per capita. Proceeding in parallel fashion, we estimate local group populations by overlaying groups' settlements with disaggregated population data from the Global Rural-Urban Mapping Project's population density dataset (CIESIN et al., 2011). Unfortunately, these population estimates are only available for 1990, 2000, and 2010, which is why missing years are linearly interpolated. Finally, we divide groups' night lights emissions by their population size.

To capture ethnic inequality, we follow earlier approaches introduced by Cederman, Weidmann and Gleditsch (2011) and Cederman, Weidmann and Bormann (2015), and separate poorer from richer groups. If y_g denotes per capita income of the ethnic group, and y_c per capita income on the country-level, we compute an inequality ratio as follows:

$$\text{Inequality ratio} = \begin{cases} y_c/y_g, & \text{if } y_g < y_c \\ y_g/y_c & \text{otherwise} \end{cases}$$

For example, for a group poorer than the national average, a value of 1.3 means that the national average is 30% higher than the group's per capita night light emissions. For a richer group, it means that the group emits 30% more light (per capita) than the national average. While we initially use this indicator in a symmetric fashion and treat richer and poorer groups equally, we also provide more fine-grained analyses distinguishing between poorer and richer groups.

The remote-sensing approach yields a large dataset with annual resolution. However, the use of night lights as an indicator of wealth poses potential problems. One of these

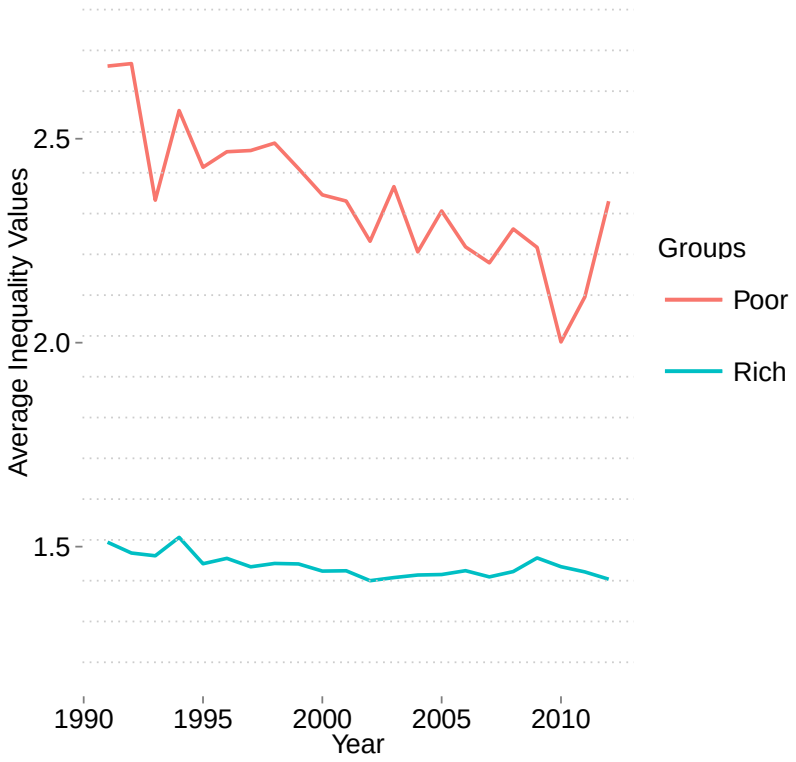
[10]Where group polygons overlap, we additionally divide the sum of night lights in this region by the number of relevant groups. In other words, where two groups inhabit the same region, they will each receive half of those regions' night light emissions.

is the fact that absolute levels of night lights vary tremendously between countries. As Weidmann and Schutte (2015) show, a "rich" group in one country sometimes emits less than 30% the amount of of light as a "rich" group in another country. This is a significant problem for analyses comparing absolute values across countries, but less so in our case. As introduced above, our inequality indicator is entirely based on within-country comparisons between groups and therefore should not suffer from this problem.

Explanatory variables. In order to gauge the effect of globalization on changes in horizontal inequality, we employ data on economic flows from the KOF index of globalization (Dreher, 2006). We use the "actual flows" subcomponent that aggregates the GDP shares of trade, foreign direct investment, portfolio investment, and income payments to foreign nationals into one composite measure of economic globalization. We choose this broad measure since we expect the political and institutional mechanisms outlined above to apply equally to financial and trade flows. Both foreign investments in fixed capital and export opportunities for domestic producers are important to reap the benefits of international economic integration. Where these benefits end up is then decided by the institutions in place, specific economic policies and the distribution of power among ethnic groups. Our second explanatory variable captures a group's political status through a dummy variable that indicates if group representatives are excluded from the central government in a given year.[11] We use two main variables to operationalize the neopatrimonial-developmental distinction made above: The Government Effectiveness score from the World Bank's World Governance Indicators (Kaufmann, Kraay and Mastruzzi, 2011) and investment as a share of GDP from the Penn World Tables 8.1 (Feenstra, Inklaar and Timmer, 2015). The World Bank's government effectiveness index combines information from various large-scale individual-level surveys such as Afrobarometer with expert assessments from commercial business providers, international organizations and NGOs. It measures "perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies" (Kaufmann, Kraay and Mastruzzi, 2011). In this sense, it is a proxy for the institutional preconditions for effective and impartial developmental policies. The investment variable measures the share of GDP that goes into fixed capital assets such as residential and non-residential construction, transport infrastructure, and machinery (Feenstra, Inklaar and Timmer, 2015). This is a more implementation-related proxy for a developmental outlook and captures the respective political regime's actual ability and willingness to either invest itself in the country's capital stock or at least encourage high levels of private investment.

[11] Political status is always measured on January 1st of a given year, which is why the variable is effectively lagged.

Figure 1: Global Average Horizontal Inequality, 1992–2013.



Trends in Ethnic Inequality

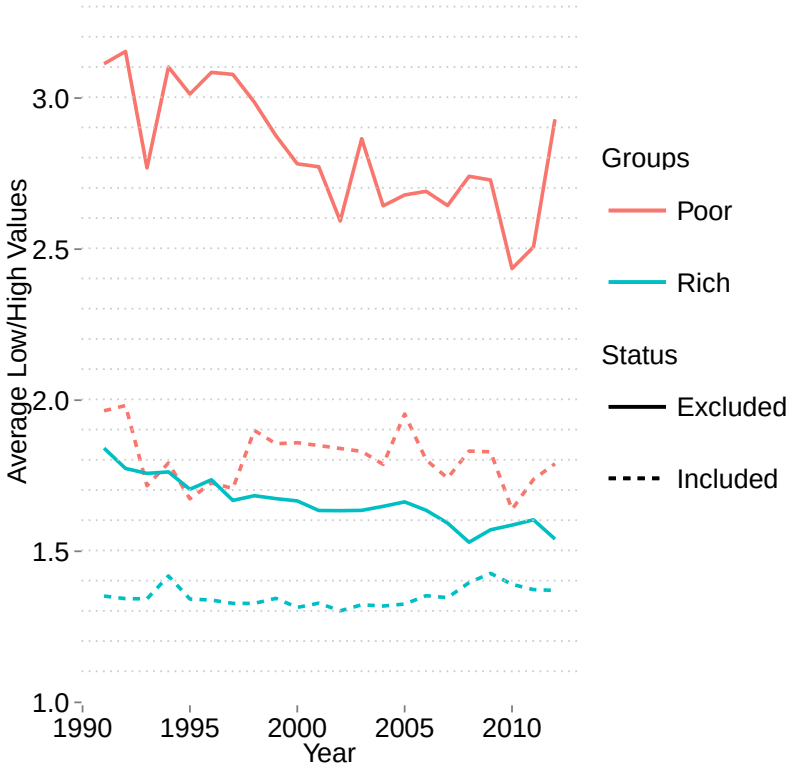
Before exploring specific explanations for the vast differences in ethnic groups' per capita income, we first describe global and regional inequality trends by calculating the mean of ethnic inequality for relatively richer and poorer groups.

Figure 1 reveals three notable patterns in ethnic horizontal inequality from 1992 to 2013. First, deviations from a country's mean income are much more pronounced for the average poor group (blue) than for the average rich group (red). This discrepancy is due to the small number and size of rich groups compared to poor ones. Second, we detect some convergence towards the national average among poorer groups amidst relatively noisy yearly fluctuations. In contrast to Piketty's findings, horizontal inequality seems to be decreasing overall. Overall, however, our data reveal a relatively stable picture of horizontal inequality compared to the changes in individual-level and country-level inequalities described above. This stability confirms the durability of categorical inequalities that overlap with identity markers such as language, religion, or race (Tilly, 1999; Stewart, 2008).[12]

A central insight of the literature on horizontal inequality is its multi-dimensionality.

[12]The stability shown here also supports earlier inequality-conflict analyses that rely on a snapshot estimate of HI at the beginning of the time period under analysis (Cederman, Weidmann and Gleditsch, 2011; Cederman, Weidmann and Bormann, 2015).

Figure 2: Global Average Horizontal Inequality by Political Status, 1992–2013.



In her foundational book, Stewart (2008) distinguishes between the political, economic, social, a cultural dimensions of inter-group differences, and argues that they frequently overlap and reinforce each other. Political exclusion along identity lines has arguably the largest distributional consequences of all dimensions, which is why we complement the economic indicators with data on political inequalities. Adding a comparison between included and excluded groups, Figure 2 reveals a more nuanced picture than suggested by Stewart's overlap hypothesis. While included groups below the national income average (red dashed line) are in fact far less poor than their excluded counterparts (red continuous line), this relationship reverses for groups richer than the national average. Those excluded from power (blue continuous line) are on average wealthier than included groups (blue dashed line). This surprising pattern at least partly captures smaller groups that benefited from colonial rule or specialized in lucrative economic activities such as trade or banking (see e.g. Horowitz, 1985). However, this advantage appears to decline over time. Generally, we continue to find overall stability of horizontal inequality and a slight decrease in inequality among poorer and richer groups.

Yet, the general trends discussed above mask substantial regional heterogeneity. We focus on Asia and Sub-Saharan Africa as these regions exhibit the largest variation in patterns of ethnic inequality as Figure 3 reveals.[13] In Asia, the slightly declining trend

[13] All other regions show much greater stability.

among poorer excluded groups at the global level is amplified dramatically. On average excluded ethnic groups are four times poorer than the national average at the start of the time-series but only two and half to three times as poor at the end. For all other Asian groups, the overall pattern hardly changes at all.

Turning to Sub-Saharan Africa, we detect a strikingly different pattern. Next to generally higher levels of inequality, the most notable deviation from the global trend is the lack of convergence among poorer excluded groups. In the final years of our time-series from 2009, corresponding to the global economic crisis, ethnic inequality increases strongly. The deteriorating position of poorer excluded groups is paralleled by a significant loss of wealth among excluded groups that are richer than the country's average (blue continuous line). These groups entirely lose their economic advantage over richer and included groups between 2006 and 2013. Finally, included and poorer groups (red dashed) experience a reduction in their backwardness and trend towards the country average.

The pattern corresponds closely to our theoretical expectations. First, economically disadvantaged groups that are excluded from executive power are far poorer than those with access to governmental power. While this relationship is curiously reversed for groups richer than the country average, the difference is far smaller. Generally, this supports our expectation that structural exclusion from government power tends to have a negative impact on a groups' economic status. Over time, we observe a catch-up process among poorer excluded groups that is driven by developments in Asia. In contrast, the gap between included and excluded group widens in Sub-Saharan Africa. This is a first hint that institutional differences between the two regions modify the effects of political exclusion.

Having surveyed the key outcome dimensions, we now turn to the explanatory variables. Figure 4 displays country-level averages of trade openness and political exclusion for Asia and Sub-Saharan Africa since 1992. The two regions exhibit almost identical developments with respect to economic openness (upper panel), which mirror a larger global secular increase until 2007, a brief drop after the global economics crisis, and a subsequent continued rise. Increasing openness corresponds closely to the development of ethnic inequality in Asia but not in Sub-Saharan Africa, thus indicating that additional domestic factors must account for the difference. We argue that ethnic exclusion mediates the impact of inequality for specific groups. Indeed, there are notable differences between the two regions. African states tended to exclude a much larger share of the population at the beginning of the sample period than Asian polities. However, throughout the period under observation, Sub-Saharan Africa experienced a powerful trend towards power-sharing (long dashes), which diverges strongly from the Asian pattern of relative stability (short dashes). As ethnic inequality is slightly increasing in Africa, these descriptive data suggest that ethnic power-sharing does not in itself cause a reduction of economic disparities in the short run but that structural exclusion might have pernicious

Figure 3: Average Horizontal Inequality by Political Status in Asia and Sub-Saharan Africa, 1992–2013.

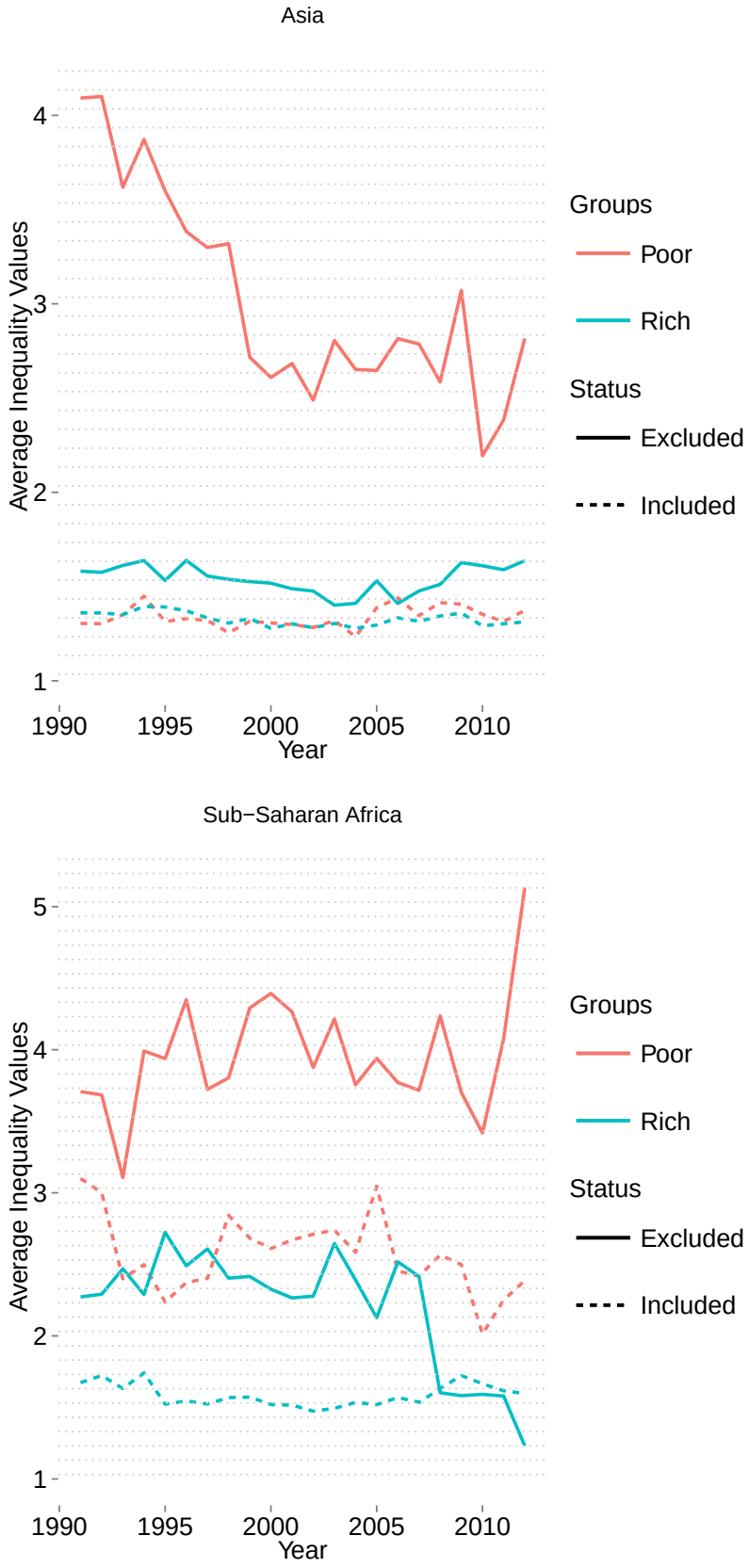
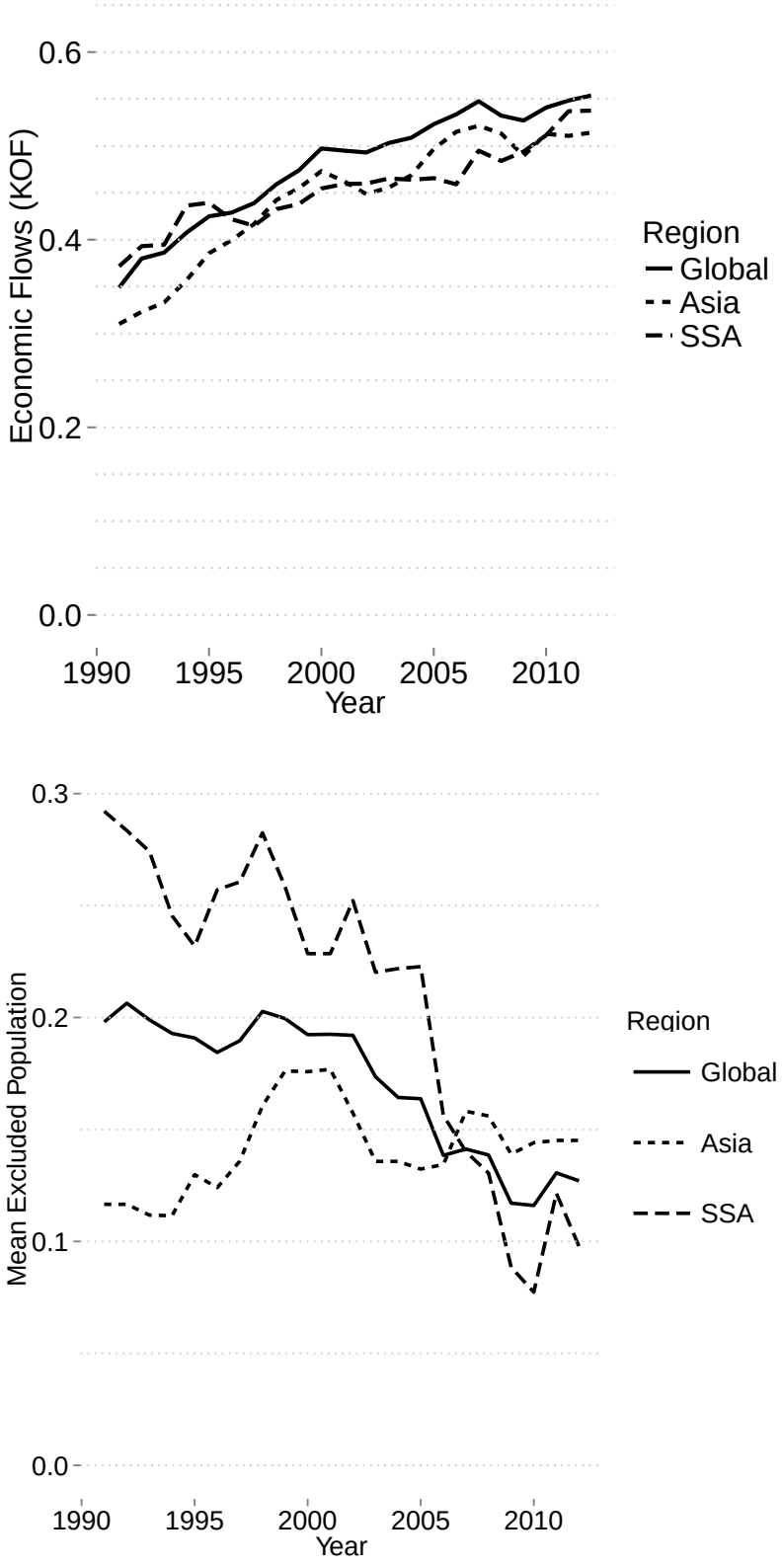


Figure 4: Average Economic Flows (KOF) and Exclusion (EPR), 1992–2013.



long-run effects. This is consistent with the relative stability of economic inequality among racial groups in Sub-Saharan Africa (Statistics South Africa, 2012). In the next, section, we investigate both the short-term changes and the long-term structural effects of trade openness and exclusion on ethnic inequality.

Analysis

To evaluate our theoretical expectations we employ hierarchical linear models that are appropriate given the multi-level structure of our data (years are nested within ethnic groups, which are nested within states). Following Bell and Jones (2015), we adopt a Random Effects Within-Between (REWB) model that allows us to model both within-unit changes *and* between-unit variation where the former are equivalent to the commonly employed fixed effects estimates. Next to also recovering cross-sectional effects, the REWB model offers us the possibility of adding random effects for any level of analysis that account for unobserved group and country-specific variance. To capture global shocks to all ethnic groups all our models include year-fixed effects.

Before evaluating our hypotheses, we explore the overall effect of state openness and political exclusion on ethnic inequality among spatially concentrated ethnic groups around the world in Table 1. We begin by estimating a model on deviations from the national average for rich and poor groups simultaneously to arrive at a baseline average of changes in overall inequality. Positive coefficients indicate increasing inequality while negative estimates imply a decrease. Across all models, ethnic groups that are structurally excluded are more unequal than included ones (between-unit). Curiously, this effect works in both directions. Poorer, excluded groups are most destitute, while richer excluded groups are the most affluent. This long-term difference in relative affluence likely stems from politically marginalized groups that specialize in high-value economic activities such as trading or banking, as for example the Han-Chinese communities throughout South-East Asia.

In contrast, moves into and out of the government from one year to the next (within-unit effect) have no effect on ethnic inequality with one exception. Once more, it seems as if richer groups benefit from exclusion. Upon closer inspection, this within-unit effect seems to be entirely driven by including richer ethnic groups in African power-sharing arrangements. Put differently, these groups pay an entry fee to be included, but leaving the government does not yield any economic benefit. This observation supports Kasara's (2007) theory of the African state's lacking ability to tax excluded groups. This could also explain the positive between-group effect of exclusion for richer groups: Where ethnic elites are excluded from the government, they might escape the extractive capacity of the state.

Turning to economic flows, we find there is little room for escape from the redistributive

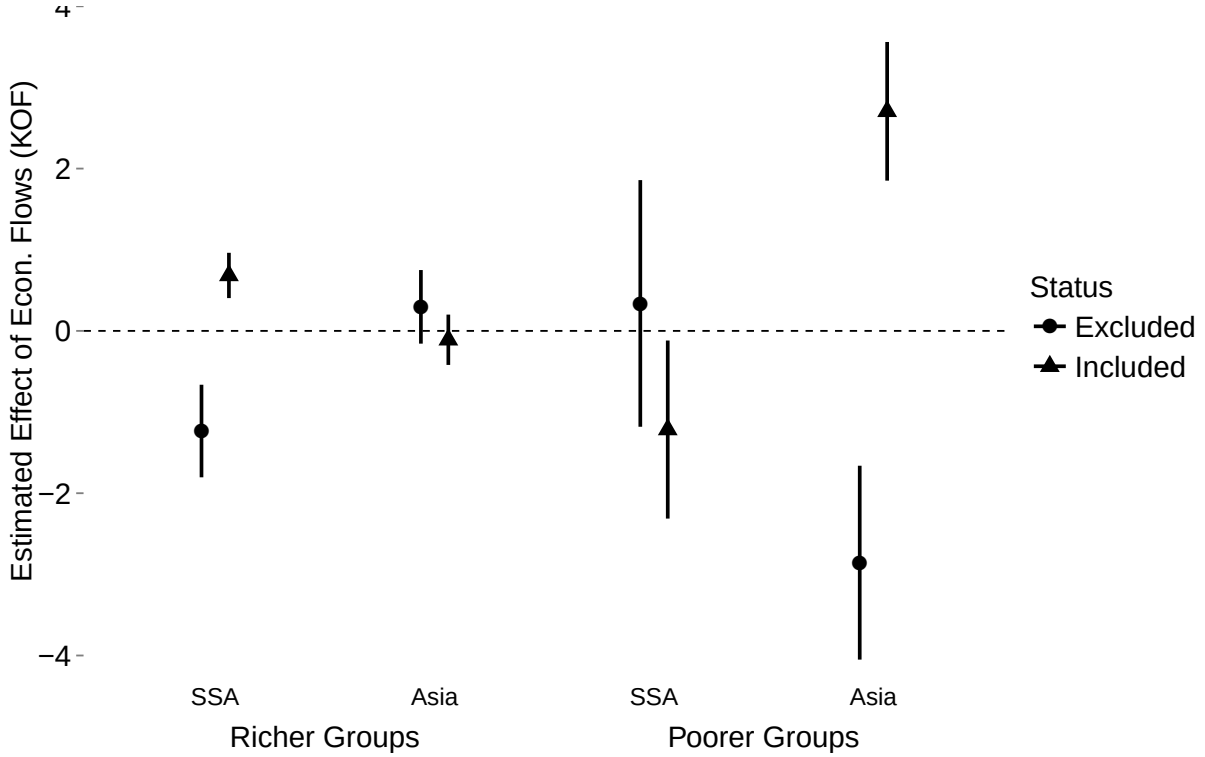
Table 1: Explaining global ethnic inequality, 1992-2013.

	(1)	(2)	(3)
	All Groups	Richer Groups	Poorer Groups
Within-unit effects			
Economic Flows (Δ)	0.640^{***}	0.209^{**}	0.726^{*}
	(0.155)	(0.079)	(0.282)
Excluded (Δ)	0.083	0.188^{***}	0.042
	(0.047)	(0.027)	(0.078)
Flows (Δ) $\times$ Excluded	-1.355^{***}	0.080	-1.496^{***}
	(0.201)	(0.115)	(0.348)
Between-unit effects			
Economic Flows	-0.663	-0.373	-0.745
	(0.648)	(0.308)	(0.837)
Excluded	0.945^{***}	0.215^{*}	0.931^{***}
	(0.177)	(0.102)	(0.243)
Constant	2.076^{***}	1.548^{***}	2.438^{***}
	(0.356)	(0.168)	(0.465)
Year-Fixed Effects	Yes	Yes	Yes
Random effects			
σ Countries	0.771	0.199	0.924
σ Groups	1.244	0.552	1.377
N	6,559	2,819	3,691
ℓ	$-7{,}568.010$	-311.180	$-5{,}211.277$
AIC	15,196.020	682.360	10,482.550

*p<0.05; **p<0.01; ***p<0.001
Standard errors in parentheses.

consequences of globalization. Although the estimated effects of the level of economic flows on differences in inequality between ethnic groups remain statistically insignificant, increasing levels of trade and financial transactions deepen ethnic inequality for included groups in Models 1 to 3. This picture changes completely once we turn to the interaction between flows and excluded groups. Such groups significantly improve their position with increasing trade openness – at least when they are poorer than the country average (Model 3). In contrast, changes in trade openness exert almost no influence on excluded groups richer than the country average (Model 2). This result might either imply that excluded, poorer ethnic groups indeed enjoy comparative advantages relative to richer ones, or that richer groups are better insulated from the redistributive consequences of increasing international trade.

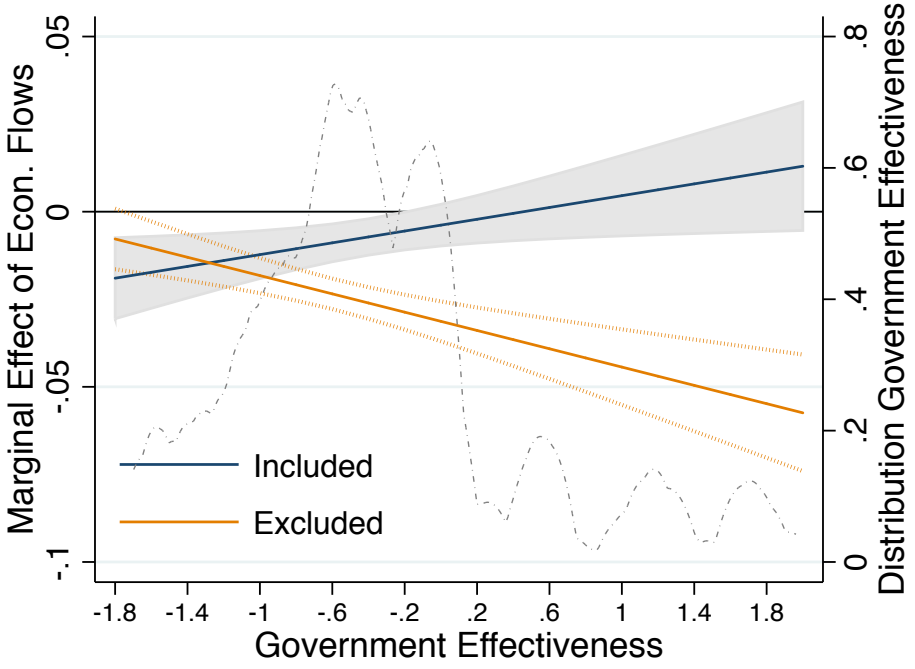
Figure 5: Marginal effects of trade openness on ethnic inequality of included (triangle) and excluded (circle) ethnic groups in Asia and Sub-Saharan Africa.



Having described the basic patterns linking globalization, ethnic exclusion, and inequality, we now evaluate our main hypotheses. Recall that we expect that political elites in neopatrimonial regimes will redirect the gains from trade to ethnic insiders (H1). In contrast, impartial bureaucracies in developmental states can withstand political pressures for clientelism and implement effective economic policy that directs the gains from trade to poorer and marginalized groups (H2). Since neopatrimonial regimes are arguably more prevalent in Sub-Saharan Africa and developmental regimes more common in Asia, we should expect the effects of globalization to strongly differ between the two regions. This is exactly what we find.

Figure 5 displays the results for both richer and poorer groups across the two world regions.[14] Our findings indicate that increasing economic flows make included groups in Sub-Saharan Africa richer and less poor relative to the country-average whereas excluded groups lose ground. In Asia, this dynamic reverses, specifically for poorer groups. Following increases in economic flows, included poorer groups lose relative to the country average while their excluded counterparts gain economic ground. A similar dynamic can be observed for richer groups but the estimated effects are not statistically significant. Substantively, the redistributive effects are largest among poorer groups in Asia and smallest among richer groups in the region. African groups lie in-between. In sum, inequality between included and excluded groups in Sub-Saharan Africa increases while excluded, poorer groups in Asia tend to catch up with the country average.

Figure 6: Marginal effects of economic flows on relative poverty conditional on government effectiveness and political status. The dotted line displays the global distribution of government effectiveness.

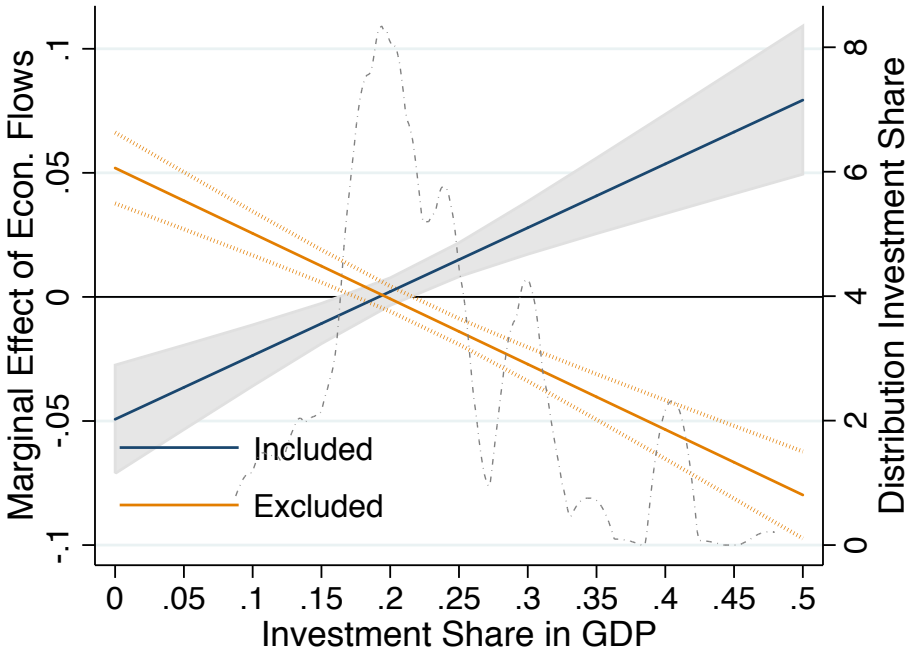


Yet to equate states in Sub-Saharan Africa with neopatrimonial regimes and Asian countries with developmental states is rather imprecise. We thus return to the global level and assess differences between neopatrimonial and developmental regimes with government effectiveness and investment share of GDP. The latter arguably reflects political and economic elites' willingness to invest in structural economic improvements at the expense of short-term consumption. Government effectiveness, in contrast, proxies the capacity of the state and should correlate strongly with an impersonal and capable bureaucracy. The two indicators therefore reflect the ability and willingness of the government to pursue

[14] We provide the underlying regression results in Table-Axx in the appendix.

developmental policy. Figure 6 plots the marginal effect of economic flows on ethnic inequality moderated by both government effectiveness and political status. African states tend to cluster towards the left of the distribution of government effectiveness with cases such as Chad, the DRC, and Sudan in the far left tail. As government effectiveness increases, the inequality-ameliorating effect of economic flows for excluded ethnic groups increases as well. This pattern reverses for included groups, which only catch up with the country average at very low levels of government effectiveness. At intermediate and high levels, economic flows do not statistically affect the relative economic position of groups in the government.

Figure 7: Marginal effects of economic flows on relative poverty conditional on investment share in GDP and political status. The dotted line displays the global distribution of investment share.



When turning to investment share as a moderator in Figure 7, we see an even stronger effect of economic flows on ethnic inequality for poorer groups that more clearly reproduces the difference between Africa and Asia discovered above. At very low levels of investment share, included groups benefit from increasing economic flows while excluded groups suffer. Admittedly, there are not many cases in this region of the graph but those that are placed there are all in Africa. In states where investment share crosses 20% of total GDP, excluded groups stand to gain from increased integration into the global economy while included groups become relatively poorer.

The indicators capture the variation between Asia and Africa rather well but do not align perfectly. Some cases in Africa such as Ghana are closer towards a developmental model while several countries in South Asia exhibit clear neopatrimonial characteristics.

Thus, far from capturing deeply rooted cultural differences or reflecting geographic determinism, institutional change is possible, and better institutions should go a long way to making the benefits of globalization available to excluded and marginalized groups in Sub-Saharan Africa.

Our results are robust to alternative measures of globalization and including GDP p.c. as an additional control (results available in our appendix).

Conclusion

Motivated by the realization that "extreme inequality" poses an urgent challenge to development policy and the stability of ethnically divided societies, this study demonstrates that categorical inequality pertaining to ethnic groups that are less wealthy than the national average has been slowly decreasing since the end of the Cold War. While inequality levels remain substantial, the decrease is striking because it contrasts sharply with developments in levels of individual inequality in developed economies (see Piketty, 2014).

Our theoretical account relates the causes of the decline in inequality to globalization. However, we have not found support for an unconditionally equalizing effect of globalization. Siding with a growing literature on "shared growth," we argue that the distributive effects from increasing integration into the world economy are mediated by domestic factors, in particular, the logic of ethnic power relations. On average, politically marginalized groups are far poorer than the average ethnic group. Yet in capable developmental states, these poorer and excluded groups experience a process of catch-up as their governments steer the gains from globalization towards less developed areas. Increasing trade openness undermines traditional ethnic hierarchies. In contrast, developmental convergence does not occur in many neopatrimonial regimes of Sub-Saharan Africa where ethno-political elites exert a far stronger influence over the economy and the benefits from international trade than in the ethnically more neutral regimes of Asia.

As the first analysis that globally compares the trends in ethnic inequalities, our empirical strategy adopts a spatial approach that combines satellite data on nightlights emissions with geocoded information on ethnic group settlement areas. We find that increasing trade openness reduces ethnic inequality for poorer and politically excluded groups. This global finding is driven by the developmental states of East and Southeast Asia that perform better than neopatrimonial regimes with respect to the effectiveness of their government institutions and the investment share of GDP. Where these factors are less developed, governmental elites find it easier to divert resources to their co-ethnics and economic disparities remain unchanged or even increase with increasing globalization.

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