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## Horizontal inequality as a dependent variable

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WIDER Working Paper 2018/70

## **Horizontal inequality as a dependent variable**

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**Abstract:** A considerable body of research suggests that horizontal inequality between ethnic groups has major socioeconomic implications, in particular for peace and economic development. Much of this work focuses on horizontal inequality as an independent causal variable, rather than an outcome of various processes. In this paper we offer conceptual, theoretical, and empirical reasons for treating horizontal inequality as a dependent variable and challenging assumptions of fixity. We first consider explanations for variation drawing on the literature on horizontal inequality, as well as on ethnicity more broadly. We then explore how horizontal inequality can be measured using survey and census data and present analyses based on two datasets providing information on inequality in terms of educational attainment (HI-E) for the period 1960s–2000s. These data suggest both a general trend towards decline in HI-E over time and considerable regional variation. This paper serves also to introduce and frame the contributions to this special section, each of which speaks to horizontal inequality in a particular country and provides a focused look—using survey and census data—into patterns, trends, correlates, and implications of horizontal inequality at sub-national levels.

**Keywords:** educational attainment, ethnic groups, group-based inequality, horizontal inequality, inequality

**JEL classification:** J15, I24, D63, C80

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# 1 Introduction

A considerable body of research in political science and economics over the past 20 years has focused on the political-economic implications of ethnic divisions. On the whole, this work raises the spectre of major negative consequences—for economic development, peace and conflict, electoral politics, public goods provision, and the quality of governance (e.g., Alesina et al. 1999; Easterly and Levine 1997; Habyarimana et al. 2007; Horowitz 1985).<sup>1</sup> Indeed, the negative relationship between social divisions and economic progress has been characterized as ‘one of the most powerful hypotheses in political economy’ (Banerjee et al. 2005: 639). Recent research suggests that it may be especially inequalities between ethnic groups that drive negative outcomes (in particular, see Baldwin and Huber 2010). Research on ‘horizontal’ inequality between ethnic groups shows links, in particular, with conflict and underdevelopment (e.g., Alesina et al. 2016; Cederman et al. 2011; Stewart 2002, 2008).

A commonality in this body of work is its focus on the ‘impact’ of ethnic divisions and inequalities. While institutions and other factors are considered to mediate the expression and influence of such ethnic ‘structure’, it is often treated as in effect an independent variable that varies across countries and holds considerable stability over time. In this paper, by contrast, it is our central object of enquiry. We explore conceptual, empirical, and theoretical bases for treating ethnic structure—especially horizontal inequality—in this way, that is, as a dependent variable. Two key implications of this for future work are the need for better data that allow for—and empirically track—changes over time, and the value of more attention to theory building and testing with respect to change and variation in horizontal inequality. In presenting this argument, we build explicitly on the literature on ethnicity, as well as that on horizontal inequality. We also draw on analysis of two cross-national datasets that provide measures of horizontal inequality in terms of educational attainment for the period 1960–2010 based on census and household survey data.

This paper is an introductory/framing paper for a collection of studies entitled ‘Horizontal Inequality: Persistence and Change’, to be published in a forthcoming UNU-WIDER special section of Oxford Development Studies. The other four studies in this collection each speak to horizontal inequality in a particular country—Brazil (Leivas and dos Santos 2018), India (Chadha and Nandwani 2018), Nigeria (Archibong 2018), and Guatemala (Canelas and Gisselquist 2018a)—providing focused analyses of sub-national patterns, trends, influences, and consequences. While each paper advances a distinct argument, each also draws on the common ‘toolkit’ of concepts and measures that are introduced here. In considering explanations for horizontal inequality, this paper also reviews the arguments developed in these studies within the context of the wider research literature. Collectively, we consider these four countries particularly interesting for ‘hypothesis building’ because they offer useful variation in terms of both geographic region (Latin America, sub-Saharan Africa, and South Asia) and the types of ethnic groups that are salient (e.g.,

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<sup>1</sup>A growing body of research challenges these negative expectations (e.g., Birnir 2007; Chandra 2005; Gisselquist et al. 2016; Singh and vom Hau 2016).

indigenous/non-indigenous in Guatemala, race in Brazil, caste in India, and ethnolinguistic in Nigeria) (see Eckstein 1975; Lijphart 1971).<sup>2</sup>

Section 2 of this paper builds on the literature to explore the concepts of horizontal inequality and ethnic identity, and to consider sources of change and variation. This section sets out conceptual and theoretical bases for treating horizontal inequality as a dependent variable and, within this context, introduces two blunt predictions concerning persistence over time and systematic variation across regions. Section 3 turns to the measurement of horizontal inequality, including discussion of data. It introduces the two cross-national datasets used in this paper, which measure horizontal inequality in terms of educational attainment, and provides context on trends in educational inequality since the 1960s. Section 4 considers cross-national patterns and trends in horizontal inequality using these data. It suggests empirically why treating horizontal inequality as ‘fixed’ over decades is problematic, while situating the countries studied in this special section within a broader empirical context. Section 5 concludes.

## **2 Horizontal inequality and ethnicity: exploring change and variation**

### **2.1 Key concepts**

A growing body of research on inequality considers stratification not only between individuals and households, but also between groups in society. In Stewart’s (2008) definition, ‘horizontal inequalities’ are ‘inequalities in economic, social or political dimensions or cultural status between culturally defined groups’ (p. 3). In this paper, we adapt this definition by replacing ‘culturally defined’ with ‘ethnic’ groups.<sup>3</sup> This follows common usage; ‘horizontal inequality’ is often used interchangeably with ‘ethnic inequality’ (Alesina et al. 2016)<sup>4</sup> and ‘between group inequality’ (Baldwin and Huber 2010). It also has a close relation to work in political science and sociology on ethnic stratification and disadvantage (e.g., Grusky 1994; Kao and Thompson 2003; Noel 1968), ‘ranked’ and ‘unranked’ ethnic groups (e.g., Gisselquist 2013; Horowitz 1985), and ‘categorical’ inequalities (Tilly 1999).

‘Ethnic’ as understood here refers to a broad set of categories based on ascriptive attributes such as skin colour, maternal language, tribe, caste, religion, and sometimes region (Chandra 2004; Horowitz 1985; Htun 2004). This broad approach to ethnicity has become standard in the recent literature on ethnic politics, grounded in constructivist and instrumentalist frameworks (see Chandra 2001; Hale 2004; Varshney 2007). Ethnic categories, it is clear, are social constructs (often linked

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<sup>2</sup>This collection is part of a broader research initiative, ‘Group-based Inequalities: Patterns and Trends Within and Across Countries’, which is supported by UNU-WIDER under its 2014–18 research programme as part of the project on ‘Disadvantaged Groups and Social Mobility’.

<sup>3</sup>We prefer ‘ethnic’ because culture may also play a role in defining other types of groups, including ‘class’ groups—see Lewis (1959) on the ‘culture of poverty’ or Thompson (1963) on the English working class.

<sup>4</sup>Alesina et al. (2016) define ethnic inequality as ‘within-country differences in well-being across ethnic groups’ (p. 1)

with descent-based attributes) and are in this sense culturally defined. Likewise, ethnic groups tend to be associated with systems of shared meanings and beliefs; to have distinguishing cultural features, such as a common language; and to have a sense of shared history and/or connection to a ‘homeland’—although some do not (Bates 2006; Fearon 2003). Adopting such an approach to ethnicity, theories of ‘ethnic’ politics address all of the following groups: African, White, ‘Coloured’, and Indian in South Africa (Ferree 2010); indigenous and non-indigenous in Latin America (Van Cott 2007); Bemba, Nyanja, Tonga, and Lozi speakers in Zambia (Posner 2003); Hindu and Muslim in India (Varshney 2003); and scheduled castes in India (Chandra 2004).

It is worth noting that ‘ethnic’ is used more narrowly in some work, including distinctions between, for instance, ‘ethnic’, ‘linguistic’, and ‘religious’ divisions (Alesina et al. 2003). Further, in Sections 3 and 4, we conduct analysis separately for ‘ethnic’ and ‘religious’ cleavages following the classifications used in our datasets. While we otherwise use ‘ethnic’ in this paper in a broad sense, we also note that some types of ethnic divisions may be qualitatively different from others in ways that may be relevant to understanding change in horizontal inequality. For instance, ethnic categories linked to less mutable characteristics such as skin colour could be more fixed than those related to, for example, religious affiliation. Understanding better the relationship between type of group and how horizontal inequality changes is one area for future research.

## 2.2 Explaining change

Read within the context of contemporary literature on ethnic identity, the assumption of group stability implicit in the data used in some recent work on horizontal inequality is notable. In Alesina et al. (2016), for instance, proxies for ethnic inequality are constructed using two datasets/maps on the location of ethnic groups, the Geo-Referencing of Ethnic Groups (GREG) dataset, based on the Atlas Narodov Mira, which provides information from the early 1960s (Weidmann et al. 2010), and the fifteenth edition of *Ethnologue* (Gordon 2005), which maps language groups in the mid to late 1990s. In the literature on ethnicity, by contrast, a rejection of approaches that assume decades-long fixity in ethnic boundaries has been cited as a defining characteristic of recent research (see Bates 2006; Chandra 2012; Hale 2004; Varshney 2007). To offer just a few examples, recent research demonstrates changes in ethnic identities, triggered or influenced by the collapse of the Soviet Union (Laitin 1998), the 1991 and 1992 regime transitions in Zambia and Kenya (Posner 2007), and the timing of competitive presidential elections in sub-Saharan African countries relative to when individuals are asked about their identity (Eifert et al. 2010).

That said, it is also clear that ethnic divisions and horizontal inequality can show notable persistence over time. Indeed, classic ‘constructivist’ work describing, for instance, the emergence of ‘imagined communities’ along with print capitalism and mass vernacular literacy (Anderson 1983) or of nationalism in industrial society (Gellner 1983) can be consistent with considerable continuity in (ethno)national identities over time. With respect to horizontal inequality, in particular, Stewart and Langer (2007) consider and summarize six factors that contribute to its persistence: ‘1. Unequal rates of accumulation, due to inequalities in incomes and imperfect markets. 2. Dependence of the returns to one type of capital on the availability of other types. 3. Asymmetries

in social capital. 4. Discontinuities in returns to capital. 5. Present and past discrimination by individuals and non-governmental institutions. 6. Political inequalities leading to discrimination by governments' (p. 12).

Given such factors contributing to 'persistence', much of the literature on horizontal inequality has dealt with long-ago 'origins'. In particular, arguments highlighting the role of (1) colonialism and conquest, (2) historical institutions, and (3) geographic endowments offer explanations that speak principally to why levels of horizontal inequality—originating decades or more ago—vary across countries and regions. The literature has also explored factors that can offer explanations for more recent changes over time. We consider a further three here: (4) modernization, (5) migration and integration, and (6) the impact of contemporary government policies.

Classic work on horizontal inequality highlights in particular 'foundational shocks' related to colonialism, conquest, capture, and related movements of populations, including the forced migration of Africans to the New World (Stewart and Langer 2008; see also Horowitz 1985). As a result, Horowitz (1985) suggests, we find highly stratified ethnic systems in Southern Africa and North and South America, among other regions. If we remember that the European colonial period, for instance, can be dated from the 1400s until 1914, and that a number of African and Asian countries achieved independence after the Second World War, such work suggests divergent levels of horizontal inequality across countries and regions that trace back from decades to centuries.

A second set of arguments, often closely linked with the first, deals with the originating influence of historical institutions, in some cases pre-dating colonialism. For instance, Michalopoulos and Papaioannou (2013) points to the degree of centralization of precolonial ethnic political institutions in explaining variation in contemporary economic performance across ethno-regions ('ethnic homelands'). Analysis draws on Murdock's (1967) index of 'Jurisdictional Hierarchy Beyond the Local Community Level', which differentiates stateless societies, petty chiefdoms, paramount chiefdoms, and larger states.

In this special section, Archibong (2018) points both to the role of colonialism and conquest, and precolonial institutions, in understanding contemporary horizontal inequality in Nigeria. Documenting that horizontal inequality (measured in terms of wealth, education, and access to public goods) has been 'remarkably persistent', she locates the roots of this inequality in differential treatment by historic (Nigerian) federal regimes in the allocation of federally administered services. This in turn is linked to their interaction with local ethnic leaders and states: in particular, the federal regime 'punished' with underinvestment in federally administered infrastructure services centralized ethnic states that were non-compliant with or rebelled against it. Thus, 'being a centralized ethnic state in 1850 is likely linked to development outcomes inasmuch as it allowed centralized ethnic states to "bargain" with federal regimes for access to federally controlled services through the system of indirect rule' (p. 7). Two periods of federal regimes are in turn highlighted, the British colonial autocracy (about 1885–1960) and the postcolonial military autocracy (1966–99).

A third set of arguments highlights the originating role of geography in influencing horizontal inequality. For instance, Alesina et al. (2016) argues that 'to the extent that land endowments shape ethnic human capital and affect the diffusion and adoption of technology and innovation (e.g., Diamond 1997), ethnic-specific inequality in the distribution of geographic features would

manifest in contemporary differences in well-being across groups' (p. 470). Geographic inequality is proxied using georeferenced data on elevation, land suitability for agriculture, distance to the coast, precipitation, and temperature.

Michalopoulos (2012) locates the origins of ethnolinguistic diversity in differences in land endowments, giving rise to 'location-specific human capital'. This argument resonates in significant ways with Barth's (1969) classic work showing how ethnic boundaries are maintained not through geographic and social isolation of groups, but through their interaction. 'Ecologic interdependence' may take diverse forms, with some groups occupying clearly distinct ecological niches and interdependence only in the sense of being co-resident in a particular area, while others 'provide important goods and services for each other, i.e. occupy reciprocal and therefore different niches' (p. 20). Ethnic stratification obtains 'where one ethnic group has control of the means of production utilized by another group', 'where groups are characterized by differential control of assets that are valued by all groups in the system'. Thus, for instance, 'Fur and Baggara do not make up a stratified system, since they utilize different niches and have access to them independently of each other, whereas in some parts of the Pathan area one finds stratification based on the control of land, Pathans being landowners, and other groups cultivating as serfs' (p. 27).

In this volume, Leivas and dos Santos' (2018) discussion of the roots of horizontal inequality and ethnic division in Brazil emphasizes geographic (structural) factors alongside colonial influences. They note the particular significance of two episodes during the colonial period: the sugar cane boom (1570–1760) and the gold boom (1695 until the end of the eighteenth century). Slave labour, a cornerstone of both episodes, 'not only affected ethnic diversity, but also generated a historical horizontal inequality' (p. 11). Given Brazil's geography, it was the northeast and central regions in which emerged both high ethnic fractionalization and high horizontal inequality.

A fourth set of arguments relates to processes of modernization. While modernization theory suggests that 'traditional' identities would be replaced by (modern) class identities, it has long been clear that ethnic divisions remain a fact of modern societies and indeed that modernization itself may give rise to ethnic politics (see Melson and Wolpe 1970). The relationship between processes of modernization and the emergence of horizontally unequal ethnic groups is likewise suggested in classic work of this era. For instance, Hechter (1974) suggests that while we may often see status group (ethnic) cleavages becoming less salient with modernization, they have remained politically salient in 'peripheral' regions, which are 'relatively poor and culturally subordinate'. Here, 'the persistence of such status group political orientations among collectivities is, at least in part, a function of the salience of cultural distinctions in the distribution of resources, and, hence, in the general system of stratification' (p. 1177). In this argument, then, modernization alongside processes of colonialism and conquest contributes to an enduring 'cultural division of labour'. Likewise, Bates' (1974) discussion of the emergence of ethnic politics in Africa points also to the role of colonial institutions, as well as geography. In this argument, it is through competition over the 'goods of modernity' (e.g. jobs and education) that 'new patterns of stratification' emerged (p. 457). Colonial policy towards 'tribes' and the spatial location of groups (e.g. in relation to industry and urban centres) in turn influenced the ethnic character of this stratification.



A fifth set of arguments—which speak also to more recently emerged horizontal inequalities—relate to contemporary migration and integration.<sup>5</sup> In general, we expect both socioeconomic inequalities and ethnic distance between migrant and ‘native’ populations to decline over time and generations. In Dahl’s (1961) theory of assimilation, for instance, the relatively low socioeconomic status of new immigrants reinforces ethnic bonds. But there is considerable diversity in how this plays out, given diverse contexts of reception (government policies, labour markets, and ethnic communities) (Portes and MacLeod 1996; Portes and Rumbaut 1990).<sup>6</sup> Waters’ (2001) study of West Indian immigrants to the USA, for one, suggests the more ‘Americanized’ second-generation doing worse economically than the first generation.

This in turn points us to a sixth set of arguments highlighting the impact of government policy on horizontal inequality. In particular, there is substantial research into the impacts of targeted efforts, such as affirmative action policies, on inequality and disadvantaged populations (see, e.g., Brown et al. 2012; Kalev et al. 2006; Sautman 1998; Sowell 2005). Conversely, we can also include here policies of ethnic favouritism that engender greater inequality (De Luca et al. 2018).

In this collection, Canelas and Gisselquist (2018a) and Chadha and Nandwani (2018) both explore how other types of policies may impact horizontal inequality. Canelas and Gisselquist (2018a) consider the impact of educational and other reforms in Guatemala between 2000 and 2010 on horizontal inequality in terms of human capital and labour market outcomes. This analysis suggests both notable improvements in horizontal inequality between indigenous and non-indigenous populations over the period of study, and the persistence of significant horizontal inequalities, including between indigenous subgroups. It points to the potential of educational policies to support greater equality overall, while also suggesting the need for more targeted efforts to address the persistent disadvantages of some groups.

Chadha and Nandwani (2018) document increases in horizontal inequality in India (at the district, state, and national levels) since the 1990s, and consider the relationship between ethnic fragmentation, public goods provision, and inequality. Building on the literature on ethnic fragmentation and the underprovision of public goods (e.g., Alesina et al. 1999; Gisselquist et al. 2016; Habyarimana et al. 2007), they consider both whether ethnic fragmentation influences horizontal inequality via a negative impact on public goods provision, and whether public goods provision positively influences inequality. Teasing out distinctions in impact on vertical and horizontal inequality, they find that while ‘overall inequality is higher in more fragmented districts’ and ‘lowered provision of public goods is the channel through which fragmentation manifests its impact’, ‘this is only true for overall inequality and not horizontal inequality’ (p. 12).

As this brief review suggests, there is considerable space for further theory building and testing that speaks to horizontal inequality as a dependent variable. In broad strokes, we consider below two cross-national patterns and trends suggested by the discussion above:

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<sup>5</sup>Migration is also closely interlinked with the influence of colonialism and conquest—as Stewart and Langer (2008) note, the roots of horizontal inequalities can also be found in movements of people ‘from the imperial power, but also the movement of indentured labour from one part of the world to another’ (p. 79).

<sup>6</sup>For instance, these four studies of Vietnamese refugees in Canada, Germany, the UK, and the USA suggest diverse patterns both across and within countries: Bankston and Zhou (2018); Barber (2018); Bösch and Su (2018); Hou (2017).

1. General stability in terms of relative horizontal inequality between countries over decades (and possibly centuries), along with a gradual trend towards greater equality.
2. Broad variation in horizontal inequality across regions linked to diverse histories, institutions, and geography—with particularly high horizontal inequality in regions marked by settler colonialism, conquest, and slavery, such as Southern Africa and the Americas.

### 3 Data and measurement

Various approaches to the measurement of horizontal inequality are developed in the literature. One set of cross-national measures has relied on geospatial estimates or proxies. Alesina et al. (2016), for instance, combine data on nighttime luminosity along with ethnic ‘homelands’ to construct measures, while Cederman et al. (2011) combine geocoded data on ethnic group settlement areas with spatial wealth estimates. A second set of work, into which this paper falls, measures from data compiled in censuses and surveys at the individual or household level.

While the former has the benefit of generally better cross-national and time series coverage, it has several major weaknesses in light of the project at hand and the literature reviewed above. The first is the strong linking of ethnic groups and homelands. This is problematic because many groups are spatially intermixed and because migration contributes to further intermixing, and can be expected to impact horizontal inequality as well. The second is the in-built assumption in focusing on historic ‘homelands’ that all salient ethnic groups have homelands and are relatively stable over time. A third issue is that the construct validity of such proxies simply remains as yet unproven without better microdata on horizontal inequality against which to compare them.<sup>7</sup>

As Stewart (2008) discuss, horizontal inequalities are multidimensional, including economic, social, political, and cultural dimensions. In this paper, we draw on data that speak most directly to the economic and social dimensions, focusing on horizontal inequality assessed in terms of educational outcomes (HI-E), in particular mean years of schooling. Education is a common indicator in research on horizontal inequality, but clearly does not speak to all dimensions. It has direct implications in the labour market and for social mobility and wealth. Research shows that inequality in educational outcomes is evident early in childhood and pervasive across the life cycle. Further, evidence suggests that pervasive group disparities in education mirror group disparities in socio-economic status (see, e.g., Baliaoune-Lutz and McGillivray 2015; Canelas and Gisselquist 2018a; Cutler and Lleras-Muney 2006; García-Aracil and Winter 2006).

Our focus on education is also due to the availability of comparable data with which to consider horizontal inequality across countries and over time. While long time series on vertical inequality exist for most countries in the world, data are comparatively limited on horizontal inequality. For instance, Østby (2008) and Tetteh-Baah et al. (2018) each rely on analysis of 36 countries using

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<sup>7</sup>For an opposing case in favour of spatial datasets over survey-based methods, see Cederman et al. (2011: 483).

data from the Demographic and Health Surveys (DHS).<sup>8</sup> Data gaps on horizontal inequality are not surprising, given key methodological, conceptual, and in particular political challenges that complicate the collection and use of survey and census data on topics related to ethnicity and, by extension, horizontal inequality (Canelas and Gisselquist 2018b). This study draws on data from two sources based on census and survey data, which offer comparatively broad coverage across countries and over time: the Education Inequality and Conflict (EIC) dataset and the World Inequality Database on Education (WIDE).

The EIC dataset, commissioned by the UNICEF Peacebuilding, Education and Advocacy Programme, is a joint effort with the Education Policy and Data Center to advance knowledge of the relationship between horizontal education inequality and violent conflict, and the effects of investment into educational equity on peacebuilding (EIC 2015). It is an unbalanced panel of countries that combines data from national censuses, DHS, and household consumption and expenditure surveys. It contains measures of horizontal inequality in the educational attainment of young people (ages 15–24) according to identified ‘ethnic’, ‘religious’, and sub-national divisions<sup>9</sup> for up to 111 countries from 1960 to 2010.<sup>10</sup> The dataset also includes country–year information regarding conflict onset and duration, gross domestic product per capita, political regime, and population, among others. A detailed explanation of the mapping of ethnic groups within countries and across time, as well as on the techniques used for data extraction, back projections, and interpolation, can be found in the EIC (2015) report.

The WIDE (2015) dataset, developed for UNESCO’s *Education for All Global Monitoring Report*, combines data from DHS, multiple indicator cluster surveys (MICS), national household surveys, and learning achievement surveys from over 160 countries at different points in time. It enables comparison of different education outcomes between countries and between groups within countries, by wealth quintile, gender, ethnicity, and location of young people (ages 20–24).

### 3.1 Measures

A variety of group inequality measures are explored in the literature. These range from simple measures like comparison of group means to more sophisticated indexes (see, e.g., Atkinson 1970; Das and Parikh 1982; Deutsch and Silber 2013; Zhang and Kanbur 2005). Because our focus here is not on the development of new measures, we work in particular with three well-established measures as defined by Mancini et al. (2008), i.e. the GGini, GTheil, and GCOV (the group-weighted coefficient of variation) (see also Stewart 2008). We also consider changes in relative

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<sup>8</sup>One of the objectives of the research initiative of which this special section is a part was to investigate data gaps. It involved both research into available large- $N$  datasets on horizontal inequalities and focused studies on a set of 15 selected countries.

<sup>9</sup>In measuring ethnic and religious inequality, the EIC dataset is limited to countries with more than one ethnic and religious group. It also establishes a minimum cutoff, requiring groups to be at least 5 per cent of the population.

<sup>10</sup>The dataset contains inequality measures among identity groups defined by ethnicity for 73 countries and defined by religion for 84 countries.

dispersion of education across countries over time. Each of the horizontal inequality measures is calculated as follows:

$$\text{GGini} = \frac{1}{2\bar{y}} \sum_r^R \sum_s^S p_r p_s |\bar{y}_r - \bar{y}_s| \quad (1)$$

$$\text{GTheil} = \sum_r^R p_r \frac{\bar{y}_r}{\bar{y}} \log \frac{\bar{y}_r}{\bar{y}} \quad (2)$$

$$\text{GCOV} = \frac{1}{\bar{y}} \left( \sum_r^R p_r ((\bar{y}_r - \bar{y})^2) \right)^{\frac{1}{2}} \quad (3)$$

where  $y$  is the variable of interest, i.e mean years of schooling,  $\bar{y}$  its mean value,  $R$  the number of groups, and  $p$  the group's population share.

The GGini based on mean years of schooling compares every group with every other group (as opposed to calculating the difference from the mean) and, in our case, it can be interpreted as a measure of how concentrated the total stock of education is in one group. The GTheil compares each group's mean in educational attainment with the national mean. In doing so, it is especially sensitive to the lower end of the distribution. The GCOV is a measure of overall dispersion and therefore changes on this index can be interpreted as occurring at all levels of the distribution and not only at the tails or near the mean.

The contributors to this special section have taken these measures as a starting point in their analyses. They also were asked to consider several additional measures, including of 'crosscuttingness' (Rae and Taylor 1970; Selway 2011), ethnic fractionization (Taylor and Hudson 1972), and ethnic polarization (Montalvo and Reynal-Querol 2005). Selected studies in this collection further explore additional measures. Archibong (2018), for instance, adapts McKenzie's (2005) inequality coefficient.

### 3.2 Educational attainment

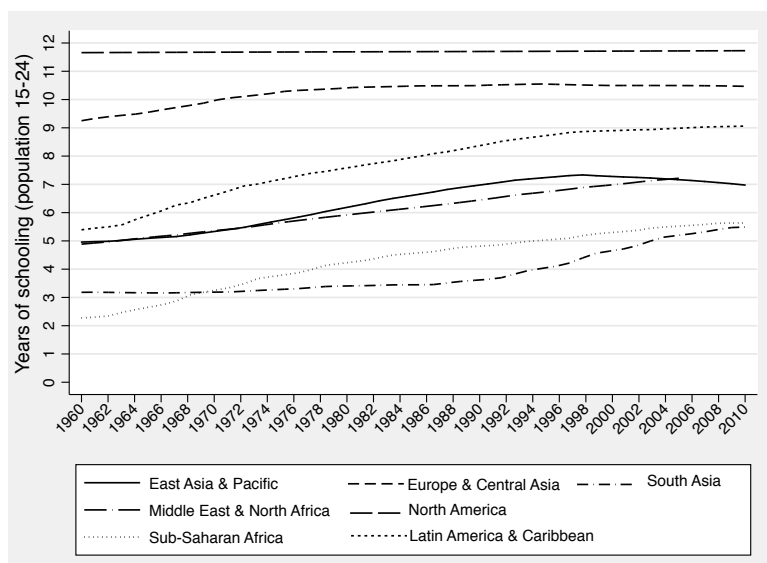
It is useful to consider HI-E within the broader context of educational attainment since the 1960s. Figure 1 displays the trend in educational attainment, in five-year intervals, during 1960—2010 for all countries in the EIC dataset grouped by geographic region. For comparison, we also provide the same figures based on the Barro and Lee (2013) and Jordá and Alonso (2017) datasets (see Appendix).<sup>11</sup>

The first point to notice is that, on average, educational attainment has increased since the 1960s throughout the world. This is clear in the EIC dataset, as well as the Barro and Lee (2013) and Jordá and Alonso (2017) datasets. However, despite this positive trend, persistent differences in mean years of schooling exist across world regions, notably in sub-Saharan Africa and South Asia, which are consistently below the world average.

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<sup>11</sup>Note that the EIC dataset contains considerably fewer countries than the Barro and Lee (2013) and Jordá and Alonso (2017) datasets.

Figure 1: Regional trend in educational attainment.



Source: authors' calculations based on the EIC dataset.

It is also useful to consider HI-E between ethnic groups alongside inequality between other types of groups. Using the WIDE dataset, Table 1 shows the average years of schooling for the countries studied in depth in this special section, for specific years and by different population subgroups. Table A.1 in the Appendix shows values for other countries in the data with relatively big gaps in educational attainment in similar years.

For most countries in the data, the greatest educational inequalities are geographic—that is, between urban and rural populations, and across sub-national regions—as well as across wealth quintiles. Clearly, ethnicity, geographic location, and wealth can be deeply intertwined. These interconnections are considered in several of the studies in this special section and call for further unpacking in future work.

The data suggest that while the educational disparity between urban and rural areas has generally decreased over time, the gap in mean years of schooling has remained persistent. In Nigeria, for instance, the country with the highest difference in mean years of schooling between groups in the sample, the mean years of schooling in 2013 was 5.77 years in rural areas compared with 10.37 years in urban areas. Further, in spite of overall increases in educational attainment, the gap in mean years of schooling has increased over time. (In 2003, the relevant means were 5.43 and 9.01 years, respectively; DHS, age group 20–24 years.) A similar pattern is found when looking at within-country regional disparities, which in the case of Nigeria are stronger than the usual urban–rural divide (see Archibong 2018).

Table 1: Average years of schooling by population subgroup, selected countries.

	Nigeria		Guatemala		Brazil		India	
	2003	2013	2000	2011	2007	2015	1992	2005
<i>Gender</i>								
Female	5.48	6.67	5.18	6.91	9.61	10.57	5.42	6.37
Male	8.03	8.97	5.99	7.74	8.87	9.76	6.05	8.33
Difference	2.55	2.3	0.81	0.83	-0.74	-0.81	0.63	1.96
<i>Location</i>								
Rural	5.43	5.77	3.55	5.43	6.94	8.62	4.99	6.17
Urban	9.01	10.37	8.22	8.99	9.66	10.4	7.83	9.34
Difference	3.58	4.6	4.67	3.56	2.72	1.78	2.84	3.17
<i>Region</i>								
Most deprived	3.86	4.8	3.22	5.35	7.19	9.11	4.83	5.35
Least deprived	10.31	10.92	8.14	9.75	10.47	11.23	8.1	10.85
Difference	6.45	6.12	4.92	4.4	3.28	2.12	3.27	5.5
<i>Wealth</i>								
Poorest quintile	3.03	1.73	1.99	3.66	6.63	8.46	2.9	2.88
Richest quintile	11.03	12.17	9.77	10.35	11.82	12.19	9.41	11.56
Difference	8.00	10.44	7.78	6.69	5.19	3.73	6.51	8.68
<i>Ethnicity</i>								
Most deprived	–	1.11	2.65	4.76	7.83	8.37	–	6.11
Least deprived	–	12.06	6.7	8.32	10.61	11.39	–	13.28
Difference	–	10.95	4.05	3.56	2.78	3.02	–	7.17
<i>Religion</i>								
Most deprived	4.78	5.55	–	–	–	–	–	–
Least deprived	9.92	10.5	–	–	–	–	–	–
Difference	5.14	4.95	–	–	–	–	–	–

Source: authors' calculations based on the EIC dataset.

Unsurprisingly, the data show a clear relationship between wealth quintile and educational attainment: individuals in higher wealth quintiles have higher average educational attainment. However, there is also notable variation across world regions. Sub-Saharan Africa has the highest

difference in mean years of schooling between the lowest and highest wealth quintiles and Nigeria the largest educational gap, followed closely by Ethiopia. The same pattern as above is observed, with an increasing gap in mean years of schooling over time. In Nigeria, in 2013, mean years of schooling in the lowest wealth quintile is just 1.73 years, compared with 12.7 years in the wealthiest quintile (see Table 1). In Ethiopia, in 2011, averages were 1.55 and 8.58 years, respectively.

Educational attainment also varies by gender. Across regions, sub-Saharan Africa has the highest difference in mean years of schooling; however, the country with the highest gap in educational attainment is now in South Asia (Afghanistan). While the gender gap in educational attainment has reduced significantly over the years, some differences persist, notably in these two regions. According to DHS (2015) data for Afghanistan, for 20–24-year-olds, there was an educational gap of 3.56 years in favour of men. Afghanistan is closely followed by Guinea and Benin.

In other regions of the world, educational inequality between genders is lower due to both the vast educational expansion that took place in the past decades and active gender equity promotion. In Latin America, for instance, female educational attainment is on average higher than that of males; however, this gain has not yet been translated into lower inequalities in other socioeconomic spheres, such as the labour market, domestic production, and political representation (see Campa et al. 2018; Canelas and Salazar 2014; Carrillo et al. 2014).

## **4 Results: HI-E patterns and trends**

This section presents trends in horizontal inequality in educational attainment (HI-E) across ‘ethnic’ and ‘religious’ cleavages as identified in the EIC dataset. We present the results at the regional level. The Appendix provides a disaggregated list of countries grouped by region.

Before going into the details of the results, it is useful to look at the simple correlation among the HI-E measures. Table 2 presents the correlation coefficients between all three HI-E measures used in this study for ‘ethnic’ and ‘religious’ cleavages. The correlations between all the measures are significant at the 1 per cent level and very high, although there is some variation on the strength of the relationship, in particular within countries (not shown in the tables). The strongest correlations at the regional level are between the GGini and the GCOV for both ethnic and religious cleavages, while the lowest correlation is between the GTheil and the GCOV for ethnic groups and between the GGini and the GTheil for religious groups. Given the strength of the correlation, most of the analysis below relies on the GGini, but when needed we also present the results for the other measures.

Table 2: Correlations HI.

	Ethnic			Religious		
	GCOV	GTheil	GGini	GCOV	GTheil	GGini
GCOV	1			1		
GTheil	0.932	1		0.911	1	
GGini	0.970	0.936	1	0.971	0.862	1
Observations		2,755			3,125	

Source: authors' calculations based on the EIC dataset.

#### 4.1 Trends over time

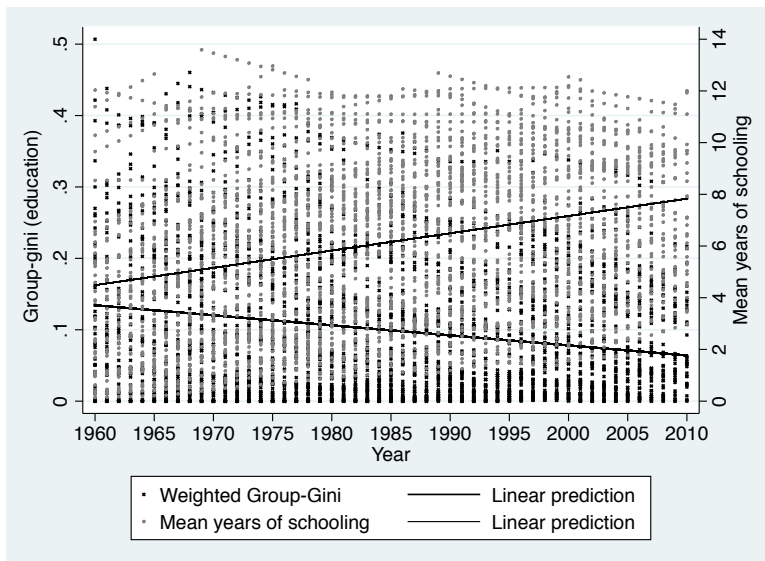
Average schooling years and education GGini coefficients by ethnic groups for 73 countries are shown in Figure 2 for 1960–2010. A declining trend in HI-E can be observed alongside an increasing level of educational attainment during the period. For all countries together, the average GGini declined from 0.12 in 1965 to 0.08 in 2005 (five-year intervals), suggesting an increasingly equal distribution of education over time. This is broadly consistent with the first prediction outlined in Section 2.2 (although the decline in HI-E has arguably been less gradual than theory would have suggested). The data also show significant variation across regions, as suggested in the second prediction—but, they show no evidence that horizontal inequality is highest in Southern Africa and the Americas. In fact, whether we look at ethnic disparities or religious disparities, Southern Africa and the Americas, together or in two groups, rank second or third and fourth, after South Asia and all the other African countries in terms of HI-E.<sup>12</sup> Figures A.4–A.7 in the Appendix show trends for HI-E for ethnic and religious groups.

Significant geographic dispersion in HI-E also can be observed in Table 3 and Figure 3. South Asia and sub-Saharan Africa have relatively higher HI-E GGini coefficients, suggesting greater inequality in the distribution of educational attainment between ethnic groups in those regions. For instance, in 2005, the five-year average GGini coefficient by ethnic groups in North America (USA) was 0.001, while in South Asia it was 0.14.

<sup>12</sup>The ethnic HI-E includes available Southern African (Malawi, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe) and American countries (all Latin American and Caribbean countries in the dataset, along with the USA). The religious HI-E includes also Lesotho and Swaziland, but not the USA.



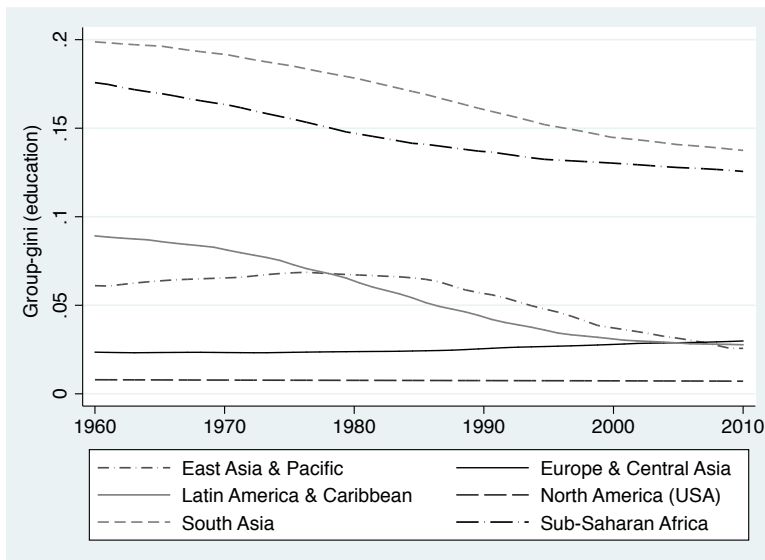
Figure 2: Trends in educational attainment and HIs.



Notes: fitted values adjusted for time- and country-fixed effects.

Source: authors' calculations based on the EIC dataset.

Figure 3: HIs by ethnic groups.



Source: authors' calculations based on the EIC dataset.

Table 3: Horizontal inequality measures by ethnic groups.

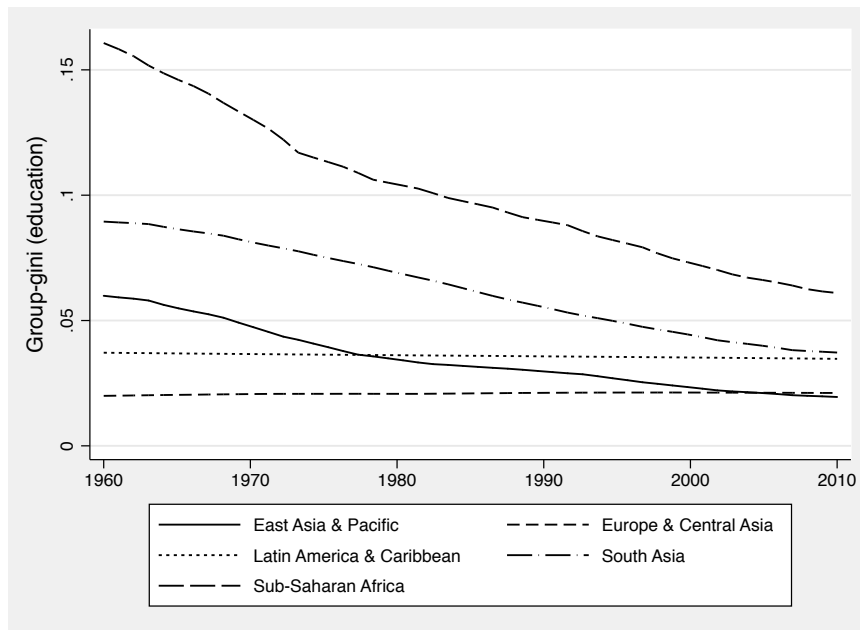
	1965		1975		1985		1995		2005	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>All countries</i>										
GGini	0.12	0.12	0.12	0.11	0.10	0.10	0.09	0.08	0.08	0.07
GTheil	0.06	0.08	0.05	0.07	0.04	0.05	0.03	0.04	0.02	0.03
GCOV	0.31	0.26	0.29	0.24	0.23	0.20	0.20	0.17	0.19	0.15
<i>East Asia and Pacific</i>										
GGini	0.07	0.06	0.08	0.06	0.08	0.06	0.06	0.05	0.03	0.03
GTheil	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.00	0.01
GCOV	0.19	0.16	0.24	0.17	0.22	0.17	0.20	0.16	0.10	0.09
<i>Europe and Central Asia</i>										
GGini	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.04
GTheil	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
GCOV	0.11	0.14	0.10	0.13	0.09	0.11	0.10	0.11	0.10	0.10
<i>Latin America and Caribbean</i>										
GGini	0.09	0.10	0.07	0.09	0.05	0.06	0.03	0.03	0.02	0.02
GTheil	0.04	0.08	0.03	0.08	0.01	0.03	0.00	0.00	0.00	0.00
GCOV	0.26	0.27	0.21	0.27	0.14	0.16	0.09	0.06	0.07	0.04
<i>North America (USA)</i>										
GGini	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00
GTheil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GCOV	0.04	0.00	0.02	0.00	0.02	0.01	0.03	0.00	0.01	0.00
<i>South Asia</i>										
GGini	0.18	0.12	0.21	0.12	0.17	0.10	0.14	0.09	0.14	0.02
GTheil	0.09	0.06	0.11	0.07	0.08	0.04	0.05	0.04	0.04	0.01
GCOV	0.42	0.24	0.49	0.24	0.41	0.21	0.33	0.20	0.33	0.06
<i>Sub-Saharan Africa</i>										
GGini	0.18	0.12	0.17	0.11	0.14	0.11	0.14	0.09	0.12	0.08
GTheil	0.09	0.09	0.07	0.08	0.06	0.07	0.05	0.05	0.04	0.04
GCOV	0.42	0.23	0.37	0.20	0.32	0.19	0.29	0.17	0.26	0.15

Note: means over regions and using a five-year interval.

Source: authors' calculations based on the EIC dataset.

HI-E across religious groups also declined during the period under study, in particular for East Asia.<sup>13</sup> For the other world regions, HI-E between religious groups has remained relatively low over time. Interestingly, in Latin America, HI-E between ethnic groups, gender groups, and sub-national regions is large (see Feranti et al. 2004), but HI-E between religious groups has been traditionally low and constant over time (Figure 4). This is true for all three measures employed: GTheil, GGini, and GCOV (see Appendix for details).

Figure 4: HIs by religious groups.



Source: authors' calculations based on the EIC dataset.

## 4.2 Variation across countries and regions

To explore overall changes in the relative dispersion of education from 1960 to 2005, we calculate the percentage change in the three measures of horizontal inequality used in this study. As shown in Table 4, all three measures yield rather similar results in terms of ranking. The most significant reduction in HI-E over the period, when comparing regions, occurred in Latin America, where the regional average GGini by ethnic groups decreased by roughly 72 per cent, from 0.09 in the 1960s to 0.02 in the 2000s. At the country level (not shown in the tables), the largest reduction occurred in Mexico (roughly 94 per cent between 1965 and 2000), closely followed by Vietnam (90 per cent),

<sup>13</sup>Note that in the 1990s, Thailand (1990), Malaysia (1991), and Indonesia (1995) left the sample.

the Democratic Republic of Congo (80 per cent), and South Africa (80 per cent), all between 1965 and 2005.

Table 4: Changes in horizontal inequalities.

	$\frac{(GGini_{05} - GGini_{65})}{GGini_{05}}$	$\frac{(GTheil_{05} - GTheil_{65})}{GTheil_{05}}$	$\frac{(GCOV_{05} - GCOV_{65})}{GCOV_{05}}$
<i>By ethnic groups</i>			
East Asia and Pacific	-0.59	-0.74	-0.5
Europe and Central Asia	0.03	-0.24	-0.12
Latin America and Caribbean	-0.72	-0.95	-0.72
North America	-0.63	-0.93	-0.75
South Asia	-0.23	-0.54	-0.22
Sub-Saharan Africa	-0.35	-0.58	-0.40
<i>By religious groups</i>			
East Asia and Pacific	-0.72	-0.86	-0.64
Europe and Central Asia	0.03	-0.21	-0.10
Latin America and Caribbean	-0.46	-0.61	-0.48
South Asia	-0.57	-0.84	-0.60
Sub-Saharan Africa	-0.61	-0.86	-0.65

Note: Regional means using five-year interval.

Source: authors' calculations based on the EIC dataset.

## 5 Conclusion

A considerable body of research suggests that horizontal inequality between ethnic groups has major socioeconomic implications, in particular for peace and economic development. Much of this work effectively treats horizontal inequality as an independent causal variable, rather than an outcome of various processes. In so doing, it sits uncomfortably with a large body of research on ethnicity demonstrating the constructed nature of ethnic groups. If ethnic groups are not fixed and require explanation, so too does horizontal inequality. Horizontal inequality may change not only due to changes in average group levels of economic, social, political, and cultural status or well-being, but also due to changes in the composition and boundaries of the salient groups themselves. Indeed, it may also be that ‘ethnic’ boundaries between groups weaken as inequalities decline.

In this paper, we consider horizontal inequality as a dependent variable, exploring explanations for variation both across countries and over time. We consider six in particular. The first three deal with ‘origins’ due to (1) colonialism and conquest, (2) historical institutions, and (3) geographic endowments. Once set, it is expected in these arguments that various factors contribute to the persistence of variant horizontal inequality levels. The latter three sets of explanations deal with factors that may influence more recent change over time: (4) modernization, (5) migration and integration, and (6) contemporary government policies.

We further explore how horizontal inequality can be measured using survey and census data and draw on two relatively new datasets providing information on inequality in terms of educational attainment, including for selected ethnic and religious cleavages. These data suggest both a general trend towards a decline in HI-E over time between the 1960s and 2000s, and considerable regional variation. These trends appear to go along with worldwide improvements in educational access, which in most parts of the world have influenced not only inequality between ethnic groups but also between other population subgroups (sub-national regions, urban–rural divides, gender, and even wealth quintiles). Nevertheless, substantial group-based inequalities remain—particularly in sub-Saharan Africa and South Asia.

Broadly, then, the HI-E data we analyse are consistent with expectations both of substantial regional variation—likely linked with variant histories, institutions, and geography—and a trend towards greater equality. Notably, however, there is little evidence—at least in these data—for particularly high horizontal inequality in either Southern Africa or the Americas as compared to the rest of the world. This latter finding requires further consideration. In particular, we suspect this lack of evidence may be due to the ethnic categories considered in each country within our data and the focus on inequality in terms of educational attainment. If we were to look at horizontal inequality assessed in terms of wealth or land holdings, for instance, we might see different patterns.

In short, in this paper we offer conceptual, theoretical, and empirical reasons for treating horizontal inequality as a dependent variable and challenging assumptions of fixity. In so doing, this paper serves also to introduce and frame this special section. The other four studies in this collection each speak to horizontal inequality in a particular country, providing a focused look—using

survey and census data—into patterns, trends, correlates, and implications of horizontal inequality at sub-national levels.

In terms of future research, this paper and the collection as a whole suggest first that there is a need for further work on data that allow for—and empirically track—changes in horizontal inequality over time, both at national and sub-national levels. There are indeed challenges and limits to the sort of data that can be compiled on ethnicity in surveys and censuses, but much more can be done in terms of reanalysis of existing surveys and censuses, new data collection, and innovative approaches to measurement (Canelas and Gisselquist 2018b).

A second implication is that much more attention should be paid in future work to theory building and testing with respect to change in horizontal inequality—especially change over the short to medium term. For instance, in the area of migration, what are the key factors influencing the evolution of inequality between migrants and ‘native’ populations over years and generations? Why are migrants and their descendants better integrated economically in some societies? What policies and institutions support greater equality and integration at the national and local levels? In terms of government policy, there is substantial research into affirmative action and disadvantaged populations, but less work into how other types of programmes and policy instruments affect horizontal inequality. The impact of development interventions to reduce poverty, for instance, is generally analysed in terms of individuals and households, with relatively little attention to impacts on groups (Gisselquist 2018). More broadly, there is considerable space for exploring other explanatory factors. In particular, as we look to the future, focused consideration of the impact of economic globalization on horizontal inequality—including factors that mediate impact—should be a priority for research and policy (see, e.g., Bormann et al. 2016; Chua 2002; Thomas and Clarke 2013).

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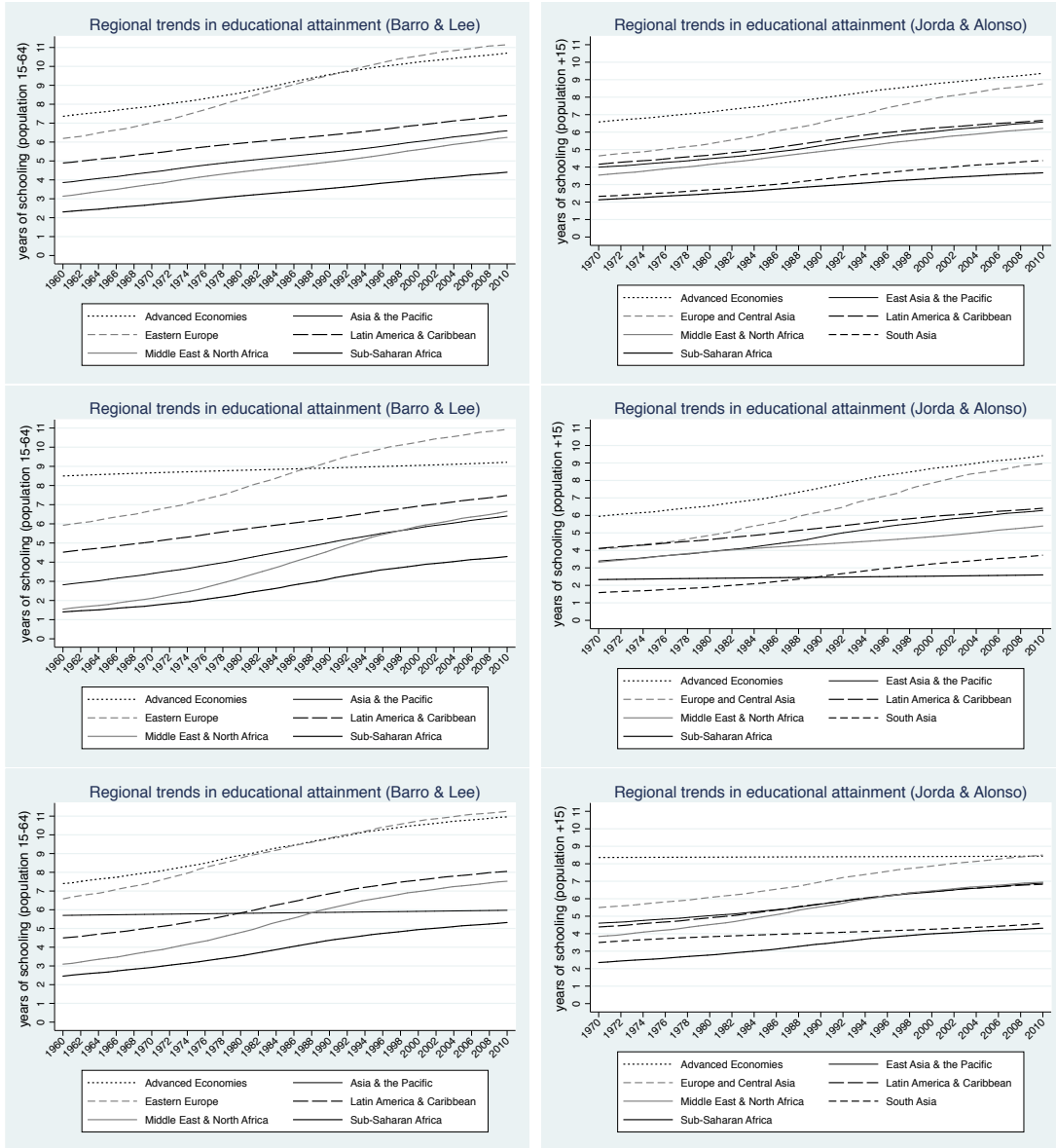
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# Appendix

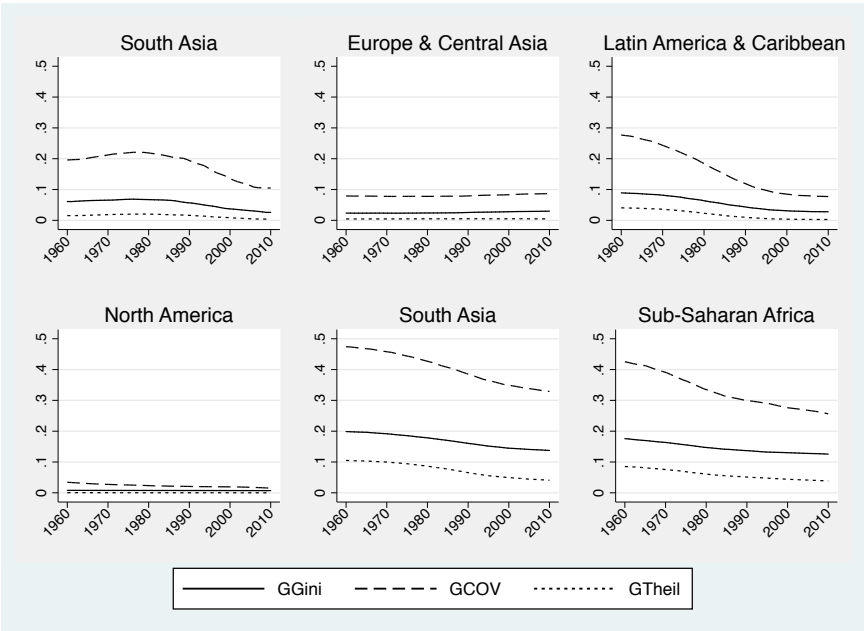
Figure A.1: Regional trends in educational attainment.



Notes: from right to left, figures 1 and 2: whole population; 3 and 4: females; 5 and 6: males

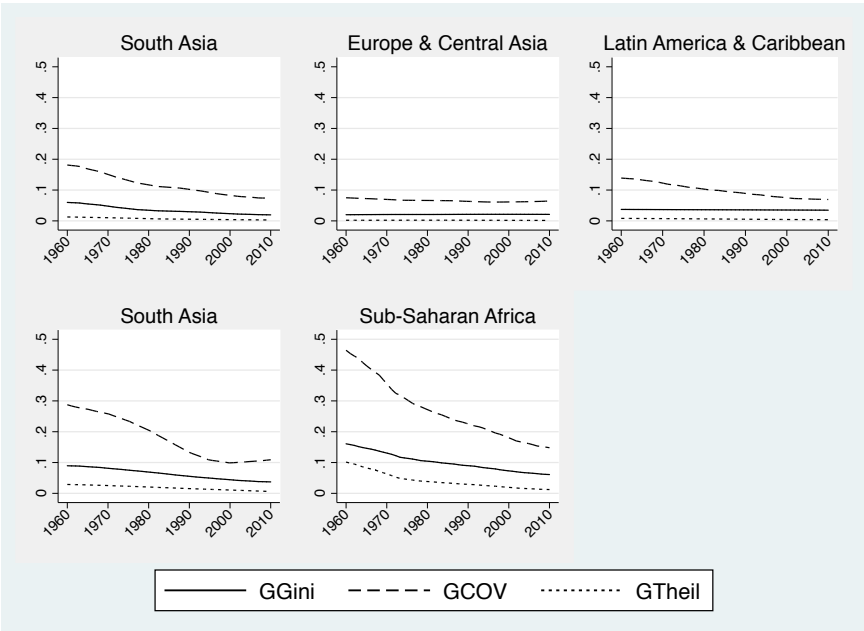
Source: authors' calculations based on the EIC dataset.

Figure A.2: HIs measures by ethnic groups.



Source: authors' calculations based on the EIC dataset.

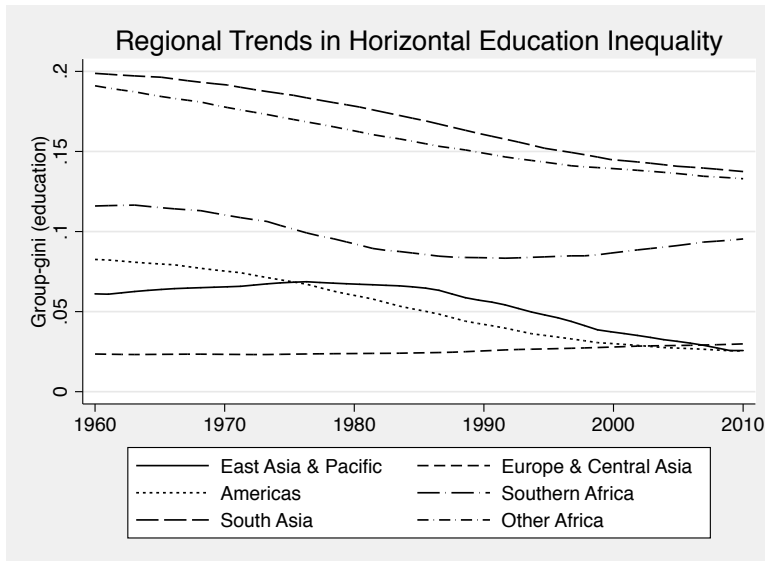
Figure A.3: HIs measures by religious groups.



Source: authors' calculations based on the EIC dataset.

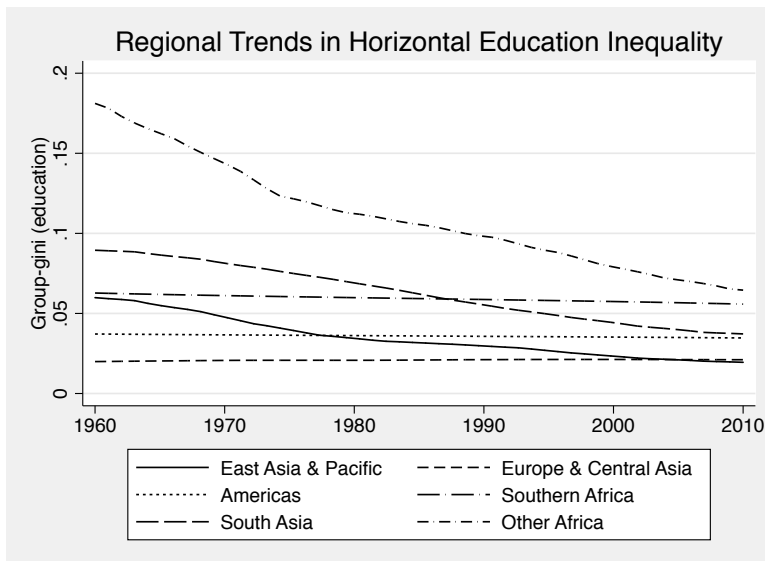


Figure A.4: Trends in HIs by ethnic groups.



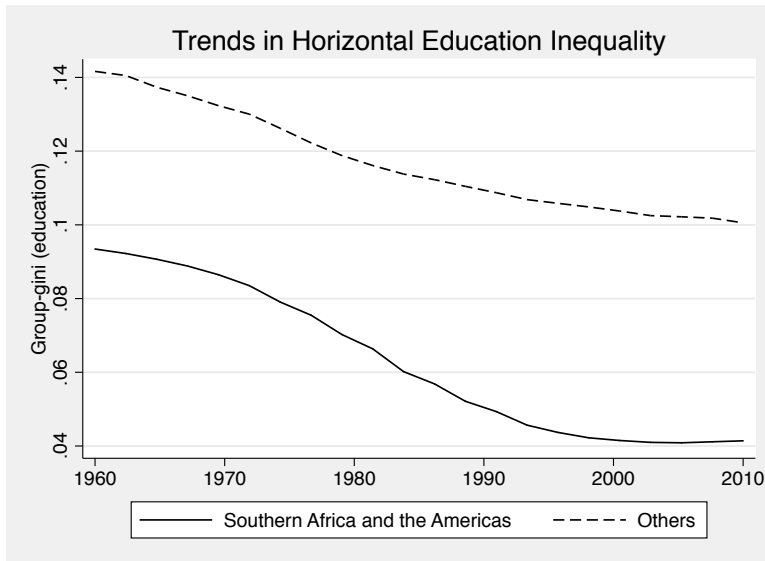
Source: authors' calculations based on the EIC dataset.

Figure A.5: Trends in HIs by religious groups.



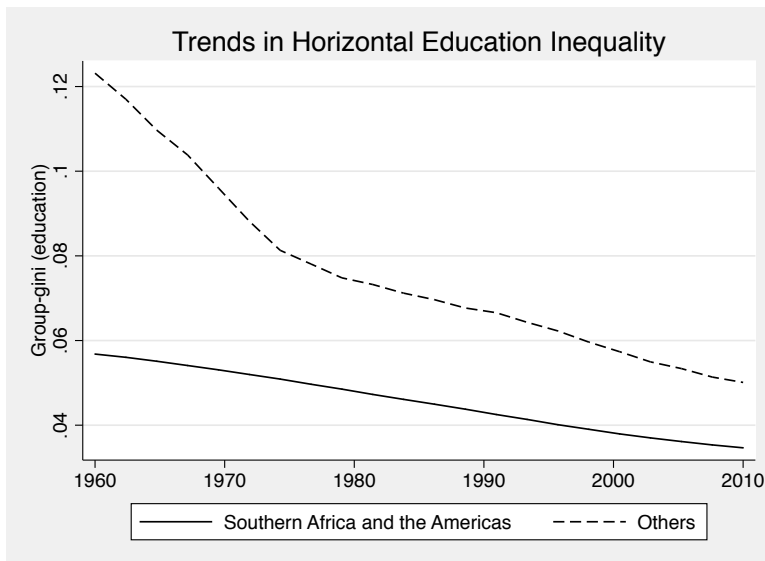
Source: authors' calculations based on the EIC dataset.

Figure A.6: Trends in HIs by ethnic groups.



Source: authors' calculations based on the EIC dataset.

Figure A.7: Trends in HIs by religious groups.



Source: authors' calculations based on the EIC dataset.

Table A.1: Average years of schooling by population subgroup, selected countries.

	Burkina Faso		Guinea		Sudan		Pakistan		Lao PDR		Afghanistan
	2003	2010	1999	2012	2010	2014	1990	2012	2006	2011	2015
<i>Gender</i>											
Female	1.92	2.07	1.57	3.81	4.46	7.59	2.47	5.54	4.84	7.05	3.19
Male	3.04	3.77	3.84	7.29	6.27	8.93	5.18	7.23	5.9	8.07	6.75
Difference	1.12	1.7	2.27	3.48	1.81	1.34	2.71	1.69	1.06	1.02	3.56
<i>Location</i>											
Rural	0.88	1.11	1.00	2.61	4.42	6.81	2.65	5.16	2.79	4.76	4.16
Urban	6.34	6.14	5.05	8.45	7.15	10.86	6.17	8.37	8.07	11.74	7.03
Difference	5.46	5.03	4.05	5.84	2.73	4.05	3.52	3.21	5.28	6.98	2.87
<i>Region</i>											
Most deprived	0.55	0.62	1.07	2.47	2.98	5.00	1.62	4.24	4.37	4.29	0.68
Least deprived	6.72	6.29	5.54	8.98	7.35	12.09	4.04	10.79	6.39	12.78	8.06
Difference	6.17	5.67	4.47	6.51	4.37	7.09	2.42	6.55	2.02	8.49	7.38
<i>Wealth</i>											
Poorest quintile	0.41	0.55	0.58	1.35	2.17	4.74	1.33	1.88	2.16	2.88	3.81
Richest quintile	6.27	6.49	6.04	9.18	8.86	13.63	9.06	10.5	8.73	13.10	7.71
Difference	5.86	5.94	5.46	7.83	6.69	8.89	7.73	8.62	6.57	10.22	3.9
<i>Ethnicity</i>											
Most deprived	0.49	0.58	1.86	4.38	–	–	–	2.63	3.17	4.98	1.67
Least deprived	6.22	4.59	3.3	8.61	–	–	–	8.18	6.6	9.38	4.36
Difference	5.73	4.01	1.44	4.23	–	–	–	5.55	3.43	4.4	2.69
<i>Religion</i>											
Most deprived	0.6	0.64	1.5	–	–	–	–	–	–	4.55	–
Least deprived	4.28	4.88	3.75	–	–	–	–	–	–	9.04	–
Difference	3.68	4.24	2.25	–	–	–	–	–	–	4.49	–

Source: authors, based on WIDE dataset.

Table A.2: Countries with HI measures by ethnic groups, EIC.

Region	Country	Region	Country
East Asia and Pacific	Fiji	South Asia	Afghanistan
East Asia and Pacific	Lao PDR	South Asia	Bangladesh
East Asia and Pacific	Malaysia	South Asia	Nepal
East Asia and Pacific	Mongolia	South Asia	Pakistan
East Asia and Pacific	Philippines	South Asia	Sri Lanka
East Asia and Pacific	Vietnam	Sub-Saharan Africa	Benin
Europe and Central Asia	Albania	Sub-Saharan Africa	Burkina Faso
Europe and Central Asia	Armenia	Sub-Saharan Africa	Cameroon
Europe and Central Asia	Azerbaijan	Sub-Saharan Africa	Central African Rep.
Europe and Central Asia	Hungary	Sub-Saharan Africa	Chad
Europe and Central Asia	Kazakhstan	Sub-Saharan Africa	Congo, Dem. Rep.
Europe and Central Asia	Kyrgyz Republic	Sub-Saharan Africa	Congo, Rep.
Europe and Central Asia	Macedonia, FYR	Sub-Saharan Africa	Cote d'Ivoire
Europe and Central Asia	Moldova	Sub-Saharan Africa	Ethiopia
Europe and Central Asia	Serbia	Sub-Saharan Africa	Gabon
Europe and Central Asia	Uzbekistan	Sub-Saharan Africa	Gambia, The
Latin America and Caribbean	Bolivia	Sub-Saharan Africa	Ghana
Latin America and Caribbean	Brazil	Sub-Saharan Africa	Guinea
Latin America and Caribbean	Chile	Sub-Saharan Africa	Guinea-Bissau
Latin America and Caribbean	Colombia	Sub-Saharan Africa	Kenya
Latin America and Caribbean	Costa Rica	Sub-Saharan Africa	Liberia
Latin America and Caribbean	Ecuador	Sub-Saharan Africa	Malawi
Latin America and Caribbean	El Salvador	Sub-Saharan Africa	Mali
Latin America and Caribbean	Guatemala	Sub-Saharan Africa	Mozambique
Latin America and Caribbean	Guyana	Sub-Saharan Africa	Namibia
Latin America and Caribbean	Honduras	Sub-Saharan Africa	Niger
Latin America and Caribbean	Jamaica	Sub-Saharan Africa	Nigeria
Latin America and Caribbean	Mexico	Sub-Saharan Africa	Rwanda
Latin America and Caribbean	Nicaragua	Sub-Saharan Africa	Senegal
Latin America and Caribbean	Panama	Sub-Saharan Africa	Sierra Leone
Latin America and Caribbean	Peru	Sub-Saharan Africa	South Africa
Latin America and Caribbean	Suriname	Sub-Saharan Africa	Togo
Latin America and Caribbean	Trinidad and Tobago	Sub-Saharan Africa	Uganda
Latin America and Caribbean	Uruguay	Sub-Saharan Africa	Zambia
North America	United States	Sub-Saharan Africa	Zimbabwe
East Asia and Pacific	Fiji		
East Asia and Pacific	Lao PDR		
East Asia and Pacific	Malaysia		
East Asia and Pacific	Mongolia		

Source: authors, based on WIDE dataset.

Table A.3: Countries with HI measures by religious groups, EIC.

Region	Country	Region	Country
East Asia and Pacific	Cambodia	Sub-Saharan Africa	Benin
East Asia and Pacific	Fiji	Sub-Saharan Africa	Burkina Faso
East Asia and Pacific	Indonesia	Sub-Saharan Africa	Burundi
East Asia and Pacific	Lao PDR	Sub-Saharan Africa	Cameroon
East Asia and Pacific	Malaysia	Sub-Saharan Africa	Central African Rep.
East Asia and Pacific	Mongolia	Sub-Saharan Africa	Chad
East Asia and Pacific	Philippines	Sub-Saharan Africa	Congo, Dem. Rep.
East Asia and Pacific	Thailand	Sub-Saharan Africa	Congo, Rep.
East Asia and Pacific	Timor-Leste	Sub-Saharan Africa	Cote d'Ivoire
East Asia and Pacific	Vietnam	Sub-Saharan Africa	Ethiopia
Europe and Central Asia	Albania	Sub-Saharan Africa	Gabon
Europe and Central Asia	Armenia	Sub-Saharan Africa	Gambia, The
Europe and Central Asia	Azerbaijan	Sub-Saharan Africa	Ghana
Europe and Central Asia	Kazakhstan	Sub-Saharan Africa	Guinea
Europe and Central Asia	Kyrgyz Republic	Sub-Saharan Africa	Guinea-Bissau
Europe and Central Asia	Macedonia, FYR	Sub-Saharan Africa	Kenya
Europe and Central Asia	Moldova	Sub-Saharan Africa	Lesotho
Europe and Central Asia	Serbia	Sub-Saharan Africa	Liberia
Europe and Central Asia	Turkey	Sub-Saharan Africa	Madagascar
Europe and Central Asia	Ukraine	Sub-Saharan Africa	Malawi
Europe and Central Asia	Uzbekistan	Sub-Saharan Africa	Mali
Latin America and Caribbean	Brazil	Sub-Saharan Africa	Mozambique
Latin America and Caribbean	Chile	Sub-Saharan Africa	Namibia
Latin America and Caribbean	Dominican Republic	Sub-Saharan Africa	Niger
Latin America and Caribbean	Guyana	Sub-Saharan Africa	Nigeria
Latin America and Caribbean	Haiti	Sub-Saharan Africa	Rwanda
Latin America and Caribbean	Honduras	Sub-Saharan Africa	Sao Tome & Principe
Latin America and Caribbean	Jamaica	Sub-Saharan Africa	Senegal
Latin America and Caribbean	Mexico	Sub-Saharan Africa	Sierra Leone
Latin America and Caribbean	Nicaragua	Sub-Saharan Africa	South Africa
Latin America and Caribbean	Peru	Sub-Saharan Africa	Swaziland
Latin America and Caribbean	Suriname	Sub-Saharan Africa	Tanzania
Latin America and Caribbean	Trinidad & Tobago	Sub-Saharan Africa	Togo
Latin America and Caribbean	Uruguay	Sub-Saharan Africa	Uganda
South Asia	Bangladesh	Sub-Saharan Africa	Zambia
South Asia	Nepal	Sub-Saharan Africa	Zimbabwe
South Asia	Sri Lanka		

Source: authors, based on WIDE dataset.