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# Drivers of Inclusive Development: An Empirical Investigation

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## Abstract

Concerns about socially uneven progress and inequality have regained public attention (including that of many populist politicians). The purpose of this paper is to identify the economic policies as well as economic factors that facilitate inclusive development. This paper is a first attempt to empirically estimate the drivers of inclusive development. For our empirical assessments, we apply the Multidimensional Inclusiveness Index suggested by Dörffel and Schuhmann (2022) in a panel OLS regression setup with fixed effects (FE) and GMM estimations for up to 178 countries and a time frame ranging from 1980 to 2018. In FE regressions, we find robust associations with inflation as well as financial sector development in the short and long-run, trade/GDP in the long-run. The GMM results point only to inflation and trade as significant drivers in the long-run and investment in the short run. These results suggest that accessible and well-functioning financial markets paired with low rates of inflation and high trade openness take on a more critical role than government spending. Our results suggest that rudiments of the Washington consensus could still guide the promotion of inclusive development.

**Keywords** Inclusive development · Globalization · Trade · Institutions · Policies

## Resumen

Las preocupaciones sobre el progreso socialmente desigual y la desigualdad han recobrado la atención del público (incluyendo la de muchos políticos populistas). El propósito de este artículo es identificar las políticas económicas, así como los factores económicos, que facilitan el desarrollo inclusivo. Este documento es un primer intento de estimar empíricamente los impulsores del desarrollo inclusivo.

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Para nuestras evaluaciones empíricas, aplicamos el Índice de Inclusividad Multidimensional sugerido por Dörffel y Schuhmann (2022) en un conjunto de regresión OLS de panel con efectos fijos (FE) y estimaciones GMM para hasta 178 países y un período de tiempo que va desde 1980 hasta 2018. En las regresiones FE, encontramos asociaciones robustas con la inflación, así como el desarrollo del sector financiero a corto y largo plazo, y el comercio/PIB a largo plazo. Los resultados del GMM solo señalan la inflación y el comercio como impulsores significativos a largo plazo y la inversión a corto plazo. Estos resultados sugieren que mercados financieros accesibles y bien funcionantes, junto con tasas bajas de inflación y una alta apertura comercial, desempeñan un papel más crítico que el gasto gubernamental. Nuestros resultados sugieren que los fundamentos del consenso de Washington aún podrían proporcionar orientación para la promoción del desarrollo inclusivo.

## Résumé

Les préoccupations concernant le progrès socialement inégal et les inégalités ont regagné l'attention du public (y compris celle de nombreux politiciens populistes). Le but de cet article est d'identifier les politiques économiques ainsi que les facteurs économiques qui facilitent le développement inclusif. Cet article est une première tentative d'estimation empirique des moteurs du développement inclusif. Pour nos évaluations empiriques, nous appliquons l'Indice d'Inclusivité Multidimensionnel suggéré par Dörffel et Schuhmann (2022) dans un cadre de régression OLS en panel avec effets fixes (FE) et des estimations GMM pour jusqu'à 178 pays et une période allant de 1980 à 2018. Dans les régressions FE, nous trouvons des associations robustes avec l'inflation ainsi que le développement du secteur financier à court et long terme, et le commerce/PIB à long terme. Les résultats GMM ne pointent que vers l'inflation et le commerce comme moteurs significatifs à long terme et l'investissement à court terme. Ces résultats suggèrent que des marchés financiers accessibles et bien fonctionnants, associés à de faibles taux d'inflation et une grande ouverture commerciale, jouent un rôle plus critique que les dépenses gouvernementales. Nos résultats suggèrent que les rudiments du consensus de Washington pourraient encore fournir des orientations pour la promotion du développement inclusif.

**JEL Classification** C23 · D63 · I31 · O15

## Introduction

High global economic growth during the last decades helped to realize enormous welfare gains. Over one billion human beings have been lifted out of extreme poverty since 1990 (Chen and Ravallion 2013). This success, however, comes with some caveats. Increased outsourcing and the slicing of value chains has led to structural adjustments in economies reducing the overall stock of working capital (Antonelli and Fassio 2014) often resulting in job losses. This contributes to increasing inequalities within countries (Bourguignon and Morrisson 2002). Rising within-country inequalities are paired with recent experiences of slowing economic



growth and structural fiscal challenges, sometimes called “secular stagnation” (World Economic Forum 2017). These problems were intensified by the 2007 world financial crisis and COVID-19 crisis, both of which led to a global recession. In addition, the COVID-19 crisis has shown the vulnerabilities of global value chains, causing enormous disruptions all over the world.

Concerns about socially uneven progress have resurfaced, and these economic problems have generated powerful nationalistic and protectionist currents. This phenomenon takes place especially, but by no means exclusively, in Western countries, where the recovery was slower, unemployment rose (International Monetary Fund 2015, p. 3) and populist movements have already taken root. However, these phenomena can also be observed in Latin America (LA), Africa, and other parts of the developing world. Arguably, these currents are unevenly spread and differently endowed with popular support. Nonetheless, they are undeniably happening. Even proponents of globalization recognize that the associated problems with it are real and must be addressed thoroughly - both on their own merits, and to head off the rise of populism. Political leaders have acknowledged that current development frameworks increasingly fail to deliver desired results. They might need to be adjusted to resolve the observed deficiencies.

Therefore, the matter of inclusiveness, interpreted as the individual capability to master one own's life, has become increasingly relevant. Policies must be adjusted to lead to more (socially) inclusive outcomes rather than primarily facilitating economic growth (Rodrik 2011; Samans 2018; Stiglitz 2012). This needs a thorough understanding of the relation between economic developments and their effects on equity and inclusiveness. For the choice of inclusive economic policies, firstly, policymakers need to determine a clear notion of human development including an augmented set of development objectives, that accommodate aspirations regarding equity and other welfare indicators of significance for human life quality and satisfaction. To this end, Dörffel and Schuhmann (2022) contributed the Multidimensional Inclusiveness Index (MDI) as a new development measure. Secondly, a better understanding of the channels, policies, and economic factors that favor inclusive development will help to take adequate measures in the political efforts of promoting aspired policy outcomes. To the best of our knowledge, such analysis has not yet been conducted. By applying the MDI and empirically exploring the economic and institutional drivers of this measure in a cross-country analysis, our paper can fill this research gap. We are confident that it delivers valuable, first guidance for policymakers and their ambition to enhance inclusiveness.

In the following section, we delineate and discuss inclusiveness as a benchmark for human development and motivate the MDI as our measure of choice. Section 3 analyses the set of the drivers of inclusive development. Section 4 introduces the empirical methods, while Sect. 5 tests the relation of the MDI score and those drivers empirically. Section 6 analyses and discusses the results. Finally, Section 7 concludes.



## Inequality, Inclusiveness and Inclusive Development

The next subsections provide a brief discussion of two key concepts of human development - inequality and inclusiveness.

### The Nexus of Inequality and Inclusiveness

Every society is concerned to a certain extent with the issues of inequality and inclusiveness. They are both important premises for human development. Yet, there is no comprehensive conceptualization that disentangles them and describes the nature of their relationship.

Inequality typically describes the relative distribution of variables among individuals in a society, commonly with regard to income or wealth. To a certain degree, inequality is the natural outcome of individual economic activity reflecting different scales of effort, efficiency, or luck. It becomes problematic when it is the consequence of constraints in social mobility caused by unjust access to educational systems and labor markets and, thereby, reproducing inequalities that are not based on performance but rather on initial endowments.

Empirically, two important observations can be highlighted: Firstly, within-country inequality has increased recently, particularly in developed economies. Globally, it has increased by between 25–72% from 1988 to 2005 (Anand and Segal 2015). This trend could be a motivator for increasing anti-globalization, populist and anti-trade sentiments. Secondly, between-country inequality had declined as the drop of the Gini coefficient from 0.649 in 1988 to 0.633 in 2005 shows (Anand and Segal 2015).

Defining inclusiveness - compared to inequality - is more difficult. A common denominator of most approaches is the appreciation of the multidimensionality of well-being and participation (OECD 2015). Hence, inclusiveness shows the scale of “inclusion of all individuals and groups, specifically individuals or groups who were previously not included or excluded” (Talmage and Knopf 2017). This requires improving access to economic activities, especially for marginalized groups.

Equal societies cannot necessarily guarantee inclusiveness. While many people can be included in the economic mainstream and able to cover life expenses, society may yet suffer from inequalities. By contrast, societies that are relatively equal, yet where most people are “equally poor”, lack inclusiveness.

### Delineating Inclusiveness and Inclusive Development

Thinking about the conceptualization of human development, one important starting point is the capability approach, arguing that every person must be provided with the capabilities to pursue the life they want to live (Sen 1992, 1999). The United Nations Human Development Index (HDI) is the pioneering attempt to provide an empirical measure of this. It combines income, health, and education indicators (Anand and Sen 1994). Another approach is delivered by the World Economic Forum (2017) with the Inclusive Development Index. Other authors approach the task from a



different angle by deriving a development measure from domestic capital stock considering different types of stocks. This could include natural resources, human capital, public health etc. (Arrow 2012), or net national products, considering also environmental and human factors when compared to gross national product (Dasgupta and Maeler 2000). Deficiencies of those measures have been pointed out (see Aidt et al. 2018; Fleurbaey and Blanchet 2013).

Most debates about human development have mainly focused on income dimensions, e.g. pro-poor growth and inclusive growth (e.g. Klasen 2010). Other concepts include non-income dimensions. Rauniar and Kanbur (2009) tracks the Sen'ian idea of human capabilities and argues that a measure for inclusive development needs to include factors that reflect capabilities, such as education, health, social protection, and institutional quality. Rauniar and Kanbur (2009) argue that inclusive development should regard income inequality as well as non-income dimensions. Fairhead et al. (2012) and Gupta et al. (2015) emphasize the importance of the non-income dimension of environmental sustainability. The Asian Development Bank (2014) underscores the need to empower individuals and groups that have been marginalized owing to their gender<sup>1</sup> or ethnicity.

This conceptual discussion leads us to the definition given by Dörffel and Schuhmann (2022) who describe inclusive development as “societal progress (development) that incorporates participatory empowerment of citizens and promotes well-being related outcomes in accordance with sustainability of societal foundations (institutions and environment)”.

### **The Conceptualization and Measurement of Inclusiveness: The Multidimensional Inclusiveness Index**

For the empirical analysis following in Section 4, we needed to find a suitable empirical measure for inclusive development. While there has been thorough thought about measures from a theoretic point which has spawned a variety of indices such as the HDI, many of them still have problems covering relevant domains of development comprehensively enough or making scores comparable across time and countries (Dasgupta and Maeler 2000).

For our analysis, we use the Multidimensional Inclusiveness Index (MDI) developed by Dörffel and Schuhmann (2022). This measure was developed in three versions and contains a set of up to 13 variables. The MDI exploits principal component analysis (PCA) as aggregation method for the calculation of two sub-indices, one on equity (IE) and achievements (IA) each. Both sub-indices are subsequently aggregated by a geometric mean with equal weighting which means that deficiencies in one sub-index cannot easily be compensated by the other sub-index.<sup>2</sup>

<sup>1</sup> Indicators of women's discrimination are unambiguously a driver of development as measured by GDP growth (see Esteve-Volart (2004); Roomi and Parrott (2008)). Although the MDI does not directly include a variable for gender discrimination, the MDI reflects gender inequalities indirectly e.g. with employment ratio and human capital indices.

<sup>2</sup> A detailed discussion can be found in Dörffel and Schuhmann (2022).



The MDI's advantage is comprehensive data coverage, especially for the basic version providing data for up to 178 countries for the years between 1960 and 2018 which we apply in the baseline regressions. It contains the income Gini, GDP p.c., savings, life expectancy, and human capital.

$$MDI_{basic} = I_E \times I_A = I_E(Gini_{income}) \times I_A \left( \begin{array}{c} GDP \text{ p.c.} \\ savings/GDP \\ life \text{ expectancy} \\ human \text{ capital} \end{array} \right)$$

The remaining two versions, MDI equity plus and MDI achievements plus include an extended set of variables. The equity plus sub-index ( $IE+$ ) includes income and wealth Ginis as well as health and education inequality measures. The achievements plus sub-index ( $IA+$ ) includes labor productivity, employment ratio, adjusted net savings/GNI, dependency ratio, carbon intensity of GDP, and natural resource depletion/GNI in addition to the variables included in  $IA$ . These extensions increase the richness of information but decrease the data coverage.<sup>3</sup>

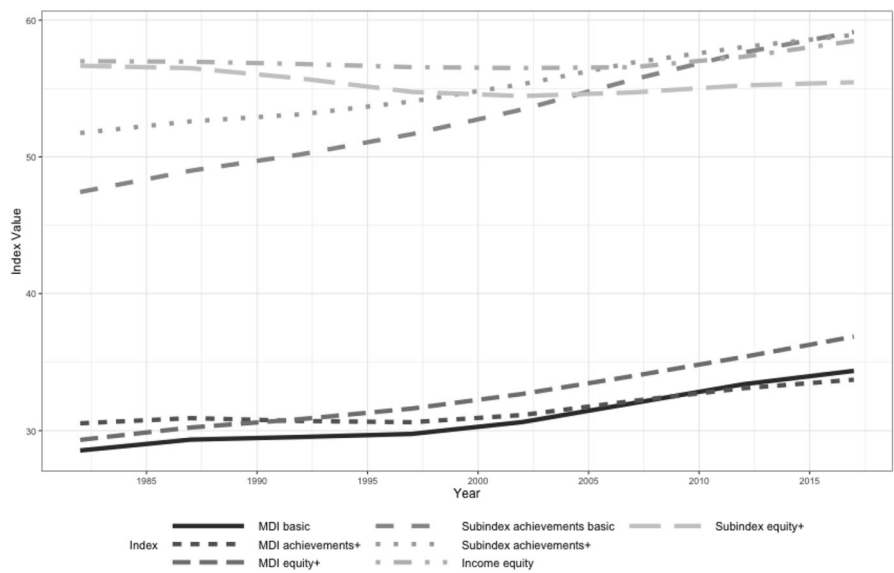
This set of variables portraying factors of inclusive development that have been long left unconsidered makes the index more comprehensive in measuring inclusive development compared to the HDI or p.c. income and is therefore most suitable for our research interest. The sub-indices on development equity and achievements allow the disentanglement of countries' performance in those domains. The three MDI versions exploit improved data availability, especially for more recent years. By applying PCA, the weights of single variables during the aggregation of the sub-indices are determined purely by the characteristics of the underlying data.

Because data coverage is low for the earlier years, we use data from 1980 onwards for the empirical analysis in this paper. Figure 1 shows the development of the global average for five-year intervals of the different MDI versions and their sub-indices. The MDI basic average increases from about 28.5 to about 34.4 points (20%). The trend of the MDI equity plus is slightly better - the score climbed from 29.3 to 36.3 (26%), the MDI achievements plus increased from 30.5 to 33.7 (10.5%). The top ranks for 2018 are dominated by Western countries, such as Norway, Slovak Republic or Denmark, while countries at the bottom are mostly Sub-Saharan African, e.g. South Africa, Namibia, or small island states such as Haiti. Russia and the USA show similar MDI scores ranking at 36th and 37th. The two most populous countries, China and India, take the 72nd and 136th rank respectively. The sub-indices reveal that improvements in scores result mostly from the achievements dimension rather than improved distribution.

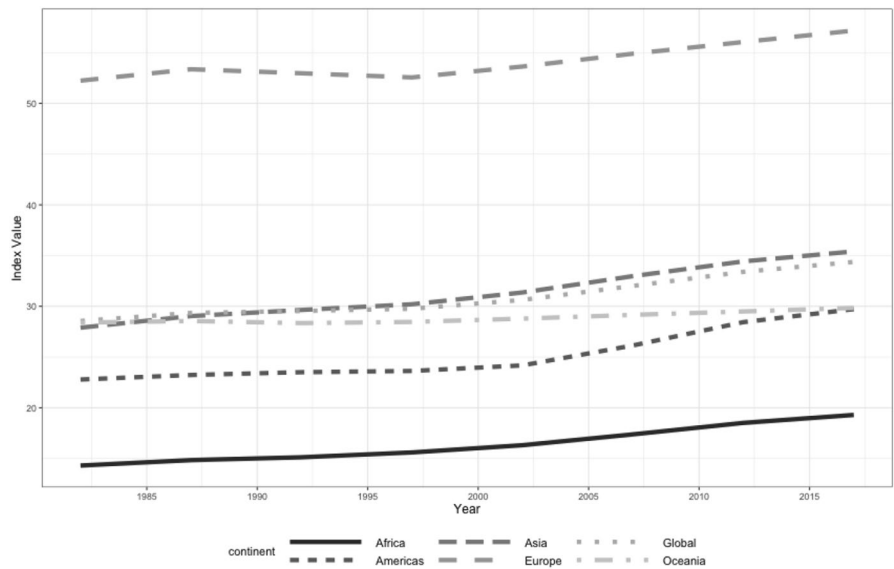
Figure 2 shows the development of MDI basic global average and those of the continents revealing regional differences. Africa, the Americas, and Oceania (including Australia and New Zealand) are below the global average; Asia slightly and Europe far above the global average. Comparing trends, the graph shows that the largest improvements have been made in Africa and the Americas (35% and 32%), while the increase in Asia has been moderate (20% - about the global overage) and advancements in Oceania and Europe below average (both 6%) - although still positive.

<sup>3</sup> We use them to test the robustness of our main findings. Results are available upon request.





**Fig. 1** The Development of Average MDI Scores and Sub-indices Over Time. Note: Own depiction. Data from Dörffel and Schuhmann (2022)



**Fig. 2** The Development of the MDI Basic Index Scores by Continent Averages. Note: Own depiction. Data from Dörffel and Schuhmann (2022)





## Drivers of Inclusiveness

In this section, we identify economic policies and factors that we use for the empirical analysis. For this purpose, we conduct a review of the growth literature to extract a set of relevant factors and group them into the following categories: Economic development, social and political stability, institutional quality, economic policies, human capital and health, regional heterogeneity as well as other (uncategorized) determinants.

We, furthermore, describe how the set of factors from the literature is confined to the set used in the empirical analyses to assess their impact on inclusiveness. The main criteria and restrictions are data availability, possible similarities of variables, and considerations about model parsimoniousness. Table A1 in the Appendix contains descriptive statistics for all variables and the MDI.

Indicators of *economic development* are commonly used in growth analysis. For our purpose, we make sure to avoid variables that are included in the MDI. Trade openness is frequently used in growth regressions (see Barro 2000, 2003; Burnside and Dollar 2000; Dalgaard et al. 2004; Dollar and Kraay 2003; Mishra et al. 2011; Roine et al. 2009). The positive impact of trade on growth as an intermediate indicator for inclusive development has been highlighted (see Aksoy and Beghin 2004; Berg and Krueger 2003; Dollar and Kraay 2003, 2004; Hoekman et al. 2001; Ravallion 2007; Sachs 1995). Another indicator for economic development is investment as a fraction of GDP (Barro 2000, 2003; Mishra et al. 2011; Sala-i-Martin 1997; Vanhoudt 2000). The investment-to-GDP ratio is a proxy of an economy's savings rate, which is an important driver of growth in standard growth models. We include both, trade openness, and investment. Further indicators for economic development mentioned in the literature are financial development (Roine et al. 2009), the credit to GDP ratio, financial openness, ICT application, infrastructure quality, and sophistication of goods and service exports (Anand et al. 2013). To proxy the sophistication of financial systems, we use the volume of credit to private sectors and the amount of bank deposits both as fractions of GDP. The application of ICT gives countries the chance for leapfrogging and benefitting from the “flying geese”<sup>4</sup> phenomenon of industrial relocation. ICT can also help to facilitate people's lives in various domains including access to services in the financial or health sector. However, it can also contribute to increased income inequality when adopted asymmetrically (OECD 2011). Due to ambiguous definitions, data availability, and the need to keep our econometric models parsimonious, we include only investment, trade, financial depth, and ICT density.<sup>5</sup> The data for investment-to-GDP ratio, trade to GDP ratio, and ICT are available widely for most countries and years in the World Bank's World Development Indicators (WDI) database. The data on bank deposits are retrieved from the World Bank's Global Financial Development database. We include lagged MDI level values to control for path dependencies. GDP p.c. cannot be included as an independent variable since it is incorporated in the MDI.

<sup>4</sup> (see Akamatsu 1962)

<sup>5</sup> I.e. sum of mobile cellular subscriptions (per 100 people), fixed broadband subscriptions (per 100 people) and fixed telephone subscriptions (per 100 people) in line with (Sridhar and Sridhar 2007).



*Social and political stability* are prerequisite for development. Political turmoil increases risks and costs for economic activity and affects persons' physical and mental conditions. To consider political instability, Burnside and Dollar (2000), Dalgaard et al. (2004), and Roubini and Sala-i-Martin (1992) factor in assassinations, Roubini and Sala-i-Martin (1992) and Sala-i-Martin (1997) control for revolutions and coups, and Roubini and Sala-i-Martin (1992) additionally include a war dummy. To capture social instability, ethnolinguistic fractionalization has been used (Burnside and Dollar 2000; Dalgaard et al. 2004). To address political instability in our analysis, we include a dummy variable with the average number of coups using data from Bjornskov and Rode (2019). Because coups take place at low frequency (leading to limited variation in the data) and to address the social stability, we also include the Historical Index of Ethnic Fractionalization from Drazenova (2019) measuring the probability that two individuals in a society have different ethnic origins.<sup>6</sup>

There is a substantial body of literature that establishes the impact of **institutional quality** on long-run development (see Acemoglu et al. 2001; Rodrik et al. 2004). Especially, inclusive institutions have positive effects on growth and development (Acemoglu et al. 2001; Acemoglu and Robinson 2013). Barro (1996, 2000, 2003), Burnside and Dollar (2000), Dalgaard et al. (2004), Dollar and Kraay (2003) and Sala-i-Martin (1997) include a rule of law variable, Sala-i-Martin (1997) controls for political rights, civil liberties, and the degree of capitalism. Furthermore, Barro (1996, 2000, 2003) uses a democracy index to control for quality of political institutions. We use the support vector machines democracy index (SVMDI) developed by Gründler and Krieger (2016). This measure captures a broad concept of democracy.

The surveyed studies use an array of measures that can be characterized as *economic policies*. Burnside and Dollar (2000) and Dalgaard et al. (2004) use (lagged) M2/GDP to proxy financial sector development, budget surplus, inflation, and trade openness.<sup>7</sup> The inflation rate is frequently used as control variable (Anand et al. 2013; Barro 1996, 2000, 2003). Another measure is government consumption (see Barro 2000, 2003; Burnside and Dollar 2000; Roubini and Sala-i-Martin 1992). “[G]overnment consumption (...) entail distortions of private decisions. (...) A higher value of the government consumption ratio leads to a lower steady-state level of output per effective worker and, hence, to a lower growth rate for given values of the state variables.” (Barro 2003, p. 239). We confine ourselves to the inclusion of inflation and government consumption to cover the area of economic policies and take data for both from the WDI database.<sup>8</sup> Many other policy variables lack data availability or do not match our research purpose.<sup>9</sup>

<sup>6</sup> This indicator may be flawed in some cases when large ethnic heterogeneity is associated with a high degree of stability.

<sup>7</sup> In the literature, trade openness was discussed as a policy. We considered it a development factor.

<sup>8</sup> Data on budget surplus is also available from the WDI database but the coverage is limited such that we would lose about one third of our estimation sample.

<sup>9</sup> Sala-i-Martin (1997) uses the length of the period since the “opening” of the economy, the black market premium, primary exports, and exchange rate distortions. Roubini and Sala-i-Martin (1992) use price distortions of investment goods and financial repression. Roine et al. (2009) include the marginal tax rate of the top 1%. Anand et al. (2013) add GDP volatility and REER deviations. Barro (1996, 2000, 2003) includes the change in the terms of trade.



In endogenous growth models, *human capital* is considered an important driver of long-run economic development. While the inclusion of human capital indicators (such as school enrollment rates) and **health** indicators (such as average years of schooling, life expectancy) is established in the literature (see Anand et al. 2013; Barro 1996, 2000; Roubini and Sala-i-Martin 1992; Sala-i-Martin 1997), we omit them in our analysis to avoid spurious correlations as they are contained in the MDI.

Many empirical studies control for *regional heterogeneity* by including dummies of world regions or continents (see Barro 1996, 2000; Burnside and Dollar 2000; Dalgaard et al. 2004; Dollar and Kraay 2003; Roubini and Sala-i-Martin 1992). To account for this regional heterogeneity, we include region dummies for Africa, Eastern Asia (EA), and Latin America (LA) in our analysis.

There is a variety of *other (uncategorized) determinants* mentioned in the growth literature such as religious affiliation (see Sala-i-Martin (1997), or demographic factors, such as fertility rate (see Barro 1996, 2000, 2003), population growth (see Roine et al. 2009; Vanhoudt 2000) and population size (see Dollar and Kraay 2003). For the sake of parsimoniousness, we do not include fertility rate and population growth in baseline estimations.<sup>10</sup> The data are widely available from the WDI database. Lastly, country fixed effects account for differences in religion.

Apart from factors derived from the literature above, we find additional factors that we deem important for inclusive development. As Camamero and Tamarit (2004) show, *trade and foreign direct investment* are complements and should, therefore, be considered together. Their effect on inclusive development is not clear a priori. Resource-seeking inward FDIs are likely to be export-oriented and, generally, provide additional employment. Therefore, they are not likely to generate negative economic consequences but may provoke “resource nationalism.” Market-seeking inward FDI, however, seeks to compete with local producers. Outward FDI can lead to an “export pull” force, as companies look to leverage their home base to service a new investment location. The home base may be upgraded in the value chain.

*Structural change* is an unavoidable feature of economic development. It describes the reallocation of production factors into new, usually more efficient production purposes. These processes can leave uncompetitive areas behind. While Western countries face troubles of “deindustrialization” (Alvarez-Cuadrado and Poschke 2011; Herrendorf et al. 2014), some developing countries fight with “premature deindustrialization” (Rodrik 2016). However, structural change allows regions to move their economies up the value chains.

For our analysis, we use data on the volumes of imports, exports, inward FDI, and outward FDI from the WDI database. We calculate a structural change variable - the sum of the absolute one-year changes in the employment shares in the agricultural, industrial, and services sectors, exploiting data from the UN Statistical Division National Accounts dataset.

We do not claim our selection of drivers is an exhaustive set of determinants of inclusive development. Other factors discussed in development literature are governance (see Kaufmann et al. 2002), corruption (see Mauro 1995), doing-business policies (see Pinheiro-Alves and Zambujal-Oliveira 2012), indicators

<sup>10</sup> We use them to test the robustness of our main findings. Results are available upon request.



related to the discrimination of women (see Duflo 2012), all factors which affect entrepreneurship and the ability to start and expand firms (see Ani 2015), output volatility (see Ramey and Ramey 1995) or capital market imperfections (see Li et al. 1998). Governance and corruption are indirectly covered by including the institutional quality variables. To keep the number of independent variables sufficiently low, we spare the inclusion of all other variables.

## Empirical Method

For testing the influence of the selected indicators on inclusive development, we use panel regression models with 5-year averages of variables. The major econometric difficulty is that inclusive development and its potential drivers exhibit endogenous relationships. To account for this endogeneity, we firstly apply values for the independent variables that are lagged by a 5-year period, thereby, mitigating simultaneity bias. Secondly, we employ two-way fixed effects regressions and use internal instruments of GMM estimations to mitigate the problems of endogeneity bias.

The estimation equation of the fixed effects model is the following:

$$MDI = \gamma MDI_{i,t} + X' \beta + \theta + \mu + \varepsilon,$$

where  $MDI_{i,t}$  refers to the MDI index score of country  $i$ , at time  $t$ .  $\beta_k$  represents vector  $X'$  for the lagged independent variable  $MDI_{i,t-k}$  lagged by  $k$  periods,  $\theta_i$  are country fixed effects,  $\mu_t$  are time fixed effects and  $\varepsilon_i$  is the error term.

Country fixed effects (FE) control for unobserved time-invariant heterogeneities between countries, time FE control for unobserved country-invariant heterogeneities over time. Eliminating these unobserved heterogeneities mitigates omitted variables bias (OVV). Possibilities of OVB affecting only a subset of countries or periods persist.

To address remaining biases, the usual approach is to use instrumental variables (IV) using two-stage least squares estimation techniques. To implement this strategy, for each driver variable, an IV would be needed. Thus, this approach is unpractical.

System GMM and difference GMM estimators introduced by Arellano and Bond (1991) and Blundell and Bond (1998) constitute a relief for this problem by using so-called “internal instruments”.<sup>11</sup> These use information on past values of all independent variables as IVs. The difference GMM approach uses lagged differences as instruments, whereas the system GMM approach additionally includes lagged levels into the set of instruments. The general advantage of system GMM is that it uses more information (past differences and levels). The disadvantage herein is that the number of instruments tends to increase quickly, which can lead to overfitting of estimations. The difference estimator uses less information, i.e. might be less informative but more reliable due to the lower number of instruments. GMM

<sup>11</sup> They also address Nickel bias (“Small T, large N”).



estimations have been established as a method to advance the estimations of causal relationships (see Acemoglu 2019; Aslaksen 2010; Bjornskov 2019; Dietrich 2011; Gründler and Krieger 2016).

IV estimations must fulfill two conditions. The instruments must, firstly, be correlated with independent variables and, secondly, not correlated with the error term. This exclusion restriction in difference GMM estimations requires that even if error terms are correlated with independent variables, there is no reason to suspect that this holds over time. As we expect that the error term of (current) differences of independent variables are uncorrelated with the past values of the independent variables, the exclusion restriction holds (Roodman 2009, p. 104f.). Similarly, the exclusion restriction of system GMM estimates is satisfied when we deem (current) errors of independent variables uncorrelated with past differences of these independent variables (Roodman 2009, p. 114f.).<sup>12</sup>

We claim results from FE regressions as associations, but not causal connections. Despite the outlined caveats and given that the GMM regressions fulfill the statistical tests, we consider the significant relationship in GMM regressions as hints towards causal relations (Roodman 2009). This advances the identification of causal relations between inclusive development and its drivers.

## Results

In this section, the results are presented. We distinguish between a short- and long-term analysis to capture different time lags in responses to policies and structural factors.

### Short-Term Results

The main results of FE the regressions shown in Table 1 and those of the system GMM regressions shown in Table 2 will be discussed herein.

The first three columns of Table 1 show the results of specifications including all variables of interest. In the estimation shown in the first column, we include the first lag of the MDI. Because path dependencies can go back further than five years, a second lag is added in the specification shown in column 2, a third and fourth lag in column 3. The MDI scores of past periods have a profound impact on current scores. The first lag is always highly significant. Values close to one suggest that past increases in inclusive development scores entail increases of a similar extent in the current period. The effects of earlier lags are more ambiguous. They are mutually correlated, therefore, providing no additional information (the adjusted R-squared in column 3 is lower than in column 1).

<sup>12</sup> We rely on three sets of information to configure the GMM estimations, namely, the number of instruments, the Hansen weak instruments test, and the Arellano/Bond autocorrelation test. The details are described in Roodman (2009); Acemoglu (2019). We also test for non-stationarity with unit root tests from Choi (2001); Levin et al. (2002) which suggest that the estimations do not suffer from non-stationarity.



**Table 1** Main results TWFE

Variables	(1) FE baseline	(2) FE	(3) FE	(4) FE policy specification	(5) FE policy specification restricted	(6) FE structural specification
Lag MDI basic	0.822*** (0.0367)	1.086*** (0.0561)	1.069*** (0.0688)	0.849*** (0.0323)	0.803*** (0.0380)	0.762*** (0.0399)
Lag MDI basic (t-2)		-0.406*** (0.0514)	-0.574*** (0.107)			
Lag MDI basic (t-3)			0.220** (0.0985)			
Lag MDI basic (t-4)			-0.0549 (0.0396)			
Lag trade/ GDP	0.00374 (0.00370)	0.00467 (0.00312)	0.00353 (0.00373)	0.00267 (0.00310)	0.00407 (0.00331)	
Lag investment/ GDP	-0.00396 (0.00861)	-0.0111 (0.0105)	-0.0139 (0.0108)	-0.00233 (0.00808)	-0.00245 (0.00878)	
Lag credit/ GDP	-0.0147*** (0.00409)	-0.0109*** (0.00370)	-0.0119*** (0.00426)	-0.00795 (0.00614)		
Lag bank deposits/ GDP	0.00576*** (0.00174)	0.00784*** (0.00152)	0.00691*** (0.00112)	0.00329* (0.00170)	0.000743 (0.00241)	
Lag FDI inflow/ GDP	0.0125 (0.00857)	0.0113 (0.00697)	0.00593 (0.00414)	0.00326 (0.00382)	-0.00234 (0.00269)	
Lag ICT density	0.00132 (0.00292)	0.000927 (0.00243)	0.00278 (0.00301)			0.00113 (0.00300)
Lag Coups	0.0990 (0.323)	0.629* (0.351)	0.328 (0.436)			-0.0736 (0.305)
Lag ethnic fract. index	-3.921 (2.951)	-2.891 (2.714)	-3.541 (3.289)			-8.830*** (2.700)
Lag SVM DI	-0.0950 (0.363)	-0.128 (0.316)	-0.217 (0.428)			0.0857 (0.277)
Lag inflation	-0.00129*** (0.000273)	-0.000904*** (0.000254)	0.00413* (0.00217)	-0.00140*** (0.000259)	-0.00156*** (0.000283)	
Lag gov. cons	0.0591*** (0.0169)	0.0680*** (0.0136)	0.0709*** (0.0112)	0.0536*** (0.0177)	0.0390* (0.0210)	



**Table 1** (continued)

Variables	(1) FE baseline	(2) FE	(3) FE	(4) FE policy specification	(5) FE policy specification restricted	(6) FE structural specification
Lag struct. ch	0.00125 (0.00554)	0.00170 (0.00523)	-0.00252 (0.00526)			-0.00554 (0.00434)
Observations	707	643	483	838	907	940
R-squared	0.876	0.889	0.860	0.862	0.839	0.845
Number of countries	137	137	137	163	163	144
Adj. R-squared	0.873	0.886	0.855	0.860	0.837	0.843

\*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1; Robust clustered standard errors in parentheses

Lagged inflation, the indicator of economic instability or uncertainty, has a negative association with inclusive development. However, the effect is small in magnitude. Government consumption is positively associated, pointing towards redistribution policies and social safety nets having a positive - though limited - impact on inclusive development (coefficients range from 0.05–0.07). Columns 1 to 3 also show a negative association of the ratio of private sector credit to GDP, though small in magnitude. The impact of credits is ambiguous. While they allow investments that facilitate development, poorly monitored financial markets and insufficient regulatory frameworks entail risks for creditors, which can translate into credit losses and can cause financial crises (Wu et al. 2010). The other financial depth proxy, the ratio of bank deposits to GDP is also highly significant and positive but small in magnitude.

Columns 4–6 of Table 1 split the regressions from the full specification into two sets of separate regression specifications. Because of the high number of independent variables, multicollinearity can cause biases in the estimates. The new specifications serve to confirm the estimations from the full specification. We decide to assign variables that are relatively quickly moving and more easily modifiable by policies to a “policy specification” and variables that are relatively sluggish to a “structural specification”.<sup>13</sup>

In the specifications in columns 4–6, past MDI values remain highly significant (in a range of 0.76 and 0.85). In the policy specification, the financial depth proxy credit to the private sector becomes insignificant. When keeping bank deposits to GDP ratio as the only proxy for financial development, it becomes insignificant too. The associations of lagged inflation and lagged government consumption stay significant.

In the structural specification in column 6, we find only the ethnic fractionalization index significant. Ethnic fractionalization increasing by 10 p.p. decreases

<sup>13</sup> We admit some arbitrariness within this categorization.



Table 2 Main Results System-GMM

Variables	(1) SYS-GMM baseline	(2) SYS-GMM baseline	(3) SYS-GMM	(4) SYS-GMM	(5) SYS-GMM policy specification	(6) SYS-GMM policy specification restricted	(7) SYS-GMM structural specification
Lag MDI basic	0.974*** (0.0136)	0.964*** (0.0235)	1.414*** (0.0960)	1.573*** (0.125)	0.935*** (0.0259)	0.943*** (0.0276)	0.977*** (0.0233)
Lag MDI basic (t-2)			-0.440*** (0.0922)	-0.724*** (0.265)			
Lag MDI basic (t-3)				0.154 (0.254)			
Lag MDI basic (t-4)				-0.0237 (0.104)			
Lag trade/GDP	0.00665** (0.00318)	5.88e-05 (0.00610)	-0.00151 (0.00562)	0.000443 (0.00561)	0.00433 (0.00607)	0.00517 (0.00601)	
Lag investment/GDP	0.00726 (0.0125)	-0.0162 (0.0258)	-0.0501*** (0.0185)	-0.0457** (0.0191)	-0.0529** (0.0249)	-0.0424* (0.0251)	
Lag credit/GDP	-0.00879*** (0.00331)	-0.0134*** (0.00509)	-0.00779* (0.00461)	-0.00494 (0.00415)	-0.00458 (0.00545)		
Lag bank deposits/GDP	0.00122 (0.00146)	0.00312 (0.00229)	0.00423* (0.00238)	0.00398 (0.00267)	0.00292 (0.00262)	0.00129 (0.00417)	
Lag FDI inflow/GDP	0.00246 (0.00531)	0.01000 (0.0186)	0.00211 (0.00864)	-0.00272 (0.00694)	0.00223 (0.0127)	-0.00211 (0.0138)	
Lag ICT density	0.000338 (0.00275)	0.00294 (0.00625)	0.000789 (0.00489)	-0.000245 (0.00478)			-0.00311 (0.00554)
Lag Coups	0.258	1.681	2.328	1.371			0.768





Table 2 (continued)

Variables	(1) SYS-GMM baseline	(2) SYS-GMM baseline	(3) SYS-GMM	(4) SYS-GMM	(5) SYS-GMM policy specification	(6) SYS-GMM policy specification restricted	(7) SYS-GMM structural specification
Lag ethnic fract. index	(0.548) −0.885 (0.681)	(2.559) −0.378 (1.525)	(2.286) −0.766 (1.101)	(2.092) −0.221 (1.040)			(3.534) −2.021 (2.862)
Lag SVMDI	0.119 (0.396)	0.712 (0.601)	1.213** (0.488)	0.721 (0.483)			0.0141 (0.713)
Lag inflation	−0.000773** (0.000331)	−0.00864 (0.00770)	0.00199 (0.00659)	0.0279 (0.0179)	−0.0134 (0.0112)	−0.0106 (0.0108)	
Lag gov. cons	0.0316 (0.0237)	0.0195 (0.0422)	0.0276 (0.0341)	0.0403 (0.0398)	−0.0152 (0.0302)	−0.0177 (0.0274)	
Lag struct. ch	−0.0102** (0.00480)	−0.0173 (0.0166)	0.000565 (0.0124)	−0.00764 (0.0124)			−0.0155 (0.0132)
LA	−0.116 (0.812)	−0.903 (0.622)	−0.360 (0.533)	−0.0125 (0.413)	−1.068* (0.645)	−0.963 (0.606)	−0.00393 (0.602)
EA	0.514 (0.789)	0.879 (0.915)	0.935 (0.681)	0.978 (0.622)	0.793 (0.702)	0.240 (0.616)	0.280 (1.004)
Africa	−0.663** (0.279)	−1.624** (0.687)	−0.522 (0.628)	−0.618* (0.373)	−2.069*** (0.789)	−1.779** (0.721)	−0.378 (0.573)
Observations	707	707	643	483	838	907	940
Number of countries	137	137	137	137	163	163	144
Lags	2–7	5–6	5–6	5–6	5–6	5–6	5–6
No. of Instruments	334	106	105	103	66	66	50



Table 2 (continued)

Variables	(1) SYS-GMM baseline	(2) SYS-GMM baseline	(3) SYS-GMM	(4) SYS-GMM	(5) SYS-GMM policy specification	(6) SYS-GMM policy specification restricted	(7) SYS-GMM structural specification
Hansen test p-value	1	0.163	0.162	0.173	0.460	0.361	0.00379
AB-AR(2) test	0.000134	0.137	0.00154		0.221	0.159	2.34e-05

Note: \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1; Robust clustered standard errors in parentheses



inclusive development by 0.8 units. Interpreting changes in ethnic fractionalization as changes in political stability can be doubtful, though. The general quality of institutions (SMVDI), political instability (coups), structural change, and ICT density do not seem to be associated with MDI scores.

Table 2 mirrors Table 1 but employs the system GMM estimator. In the specification in column 1, the number of instruments is very high (334). A common strategy in the literature (see Roodman 2009; Acemoglu 2019) is to truncate the number of lags used for instrumentation. Using lags of the 5th and 6th periods as instruments lowers the number of instruments down in columns 2 to 7.<sup>14</sup> In columns 2 to 4, the Hansen test values are within the desired range. Past values of the MDI, financial depth, and the Africa dummy are significant here. The magnitude of past inclusive development is close to one, similar as in FE estimations. Private sector credit to GDP is negatively associated with the MDI with a slightly larger magnitude than in FE estimations, but again small in magnitude (0.013). On average, African countries show MDI scores lower by 1.6 units, when controlling for all the other factors. In the baseline regression, trade openness is significant as well, which is not confirmed in any of the other specifications.

The number of instruments in the policy specification in columns 5 and 6 is considerably lower (66). Despite excluding many variables, the Hansen p-value is high (0.46 and 0.36), indicating that the number of instruments might still be too large. Lagged investment is significant both at the 5 and 10 percent level with a negative coefficient of  $-0.053$  and  $-0.042$  respectively. This is contrary to our expectations. One possible explanation can be that savings and investments exhibit an inverse U-shaped relation with development, i.e. harmful overinvestment beyond a certain threshold. Furthermore, African as well as LA countries exhibit significantly lower MDI scores.

The structural specification in column 7 suffers from weak instruments according to both the Hansen and autocorrelation test. Therefore, we are not able to identify any causal linkages.

## Long-term results

We repeat the previous analysis using 10-year averages to test for long-run effects. We report FE estimations in Table 3 and difference GMM estimations in Table 4.

In accordance with the previous results, the results from the FE regressions show a significant relation between past and current MDI scores. The coefficients are lower than in the short-term analysis, indicating that past development has a lower influence in the long-term. While in the short-term, trade did not seem to play a substantial role, it displays significance in three out of five long-term regressions (FE as well as GMM; ranging from 0.013 to 0.026). Inflation is also significant and similar in magnitude as in short-term FE estimates. Furthermore, there are two regressions (columns 1 and 2), where the two financial depth proxies, and two regressions

<sup>14</sup> We ran the regression using all possible combinations of lag structures and identifying this lag structure as the one providing the best set of instruments.



**Table 3** TWFE Results with 10-Year Panel

Variables	(1) FE baseline	(2) FE	(3) FE	(4) FE policy specification	(5) FE policy specification restricted	(6) FE structural specification
Lag MDI basic	0.630*** (0.0740)	0.595*** (0.113)	0.376** (0.167)	0.694*** (0.0674)	0.600*** (0.0591)	0.590*** (0.0557)
Lag MDI basic (t-2)		-0.165** (0.0764)	0.0195 (0.110)			
Lag MDI basic (t-3)			-0.0545 (0.130)			
Lag trade/GDP	0.0103 (0.00876)	0.0181** (0.00746)	0.0262** (0.0126)	0.00766 (0.00741)	0.0127* (0.00731)	
Lag investment/ GDP	0.00753 (0.0234)	-0.0115 (0.0250)	-0.00161 (0.0307)	0.0124 (0.0190)	0.0133 (0.0185)	
Lag credit/ GDP	-0.0190** (0.00887)	-0.0222** (0.00877)	-0.0131 (0.0127)	-0.00771 (0.0122)		
Lag bank deposits/ GDP	0.0369** (0.0167)	0.0381** (0.0162)	0.0233 (0.0203)	0.0112 (0.0148)	0.00396 (0.0106)	
Lag FDI inflow/GDP	-0.0293 (0.0533)	-0.0403 (0.0690)	-0.105 (0.0718)	-0.00506 (0.0530)	-0.00392 (0.00681)	
Lag ICT density	-0.00417 (0.00750)	-0.00139 (0.00762)	-0.00286 (0.00956)			-0.00537 (0.00531)
Lag Coups	0.0871 (1.031)	0.198 (1.241)	0.780 (1.877)			-0.927 (0.878)
Lag ethnic fract. index	-9.622 (7.702)	-7.419 (8.160)	-18.16* (9.600)			-9.776** (4.513)
Lag SVM DI	1.049 (0.740)	-0.280 (0.943)	-1.983 (1.627)			0.533 (0.540)
Lag inflation	-0.00204*** (0.000722)	-0.00244*** (0.000774)	-0.00309** (0.00150)	-0.00203*** (0.000576)	-0.00239*** (0.000538)	
Lag gov. cons	-0.000387 (0.0366)	0.0515 (0.0421)	0.0934 (0.0564)	0.0262 (0.0321)	-0.00666 (0.0322)	
Lag struct. ch	0.00267 (0.0164)	0.0133 (0.0171)	0.0103 (0.0173)			-0.00198 (0.00718)
Observations	352	300	230	425	472	505
R-squared	0.751	0.752	0.716	0.712	0.694	0.735
Number of countries	132	132	132	156	158	144



**Table 3** (continued)\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ ; Robust clustered standard errors in parentheses

in columns 3 and 6, where the influence of fractionalization is significant. These results mostly confirm the short-term regression results. However, the short-term association of government consumption is not present in long-term regressions.

All difference GMM regressions are well identified according to test statistics.<sup>15</sup> Past inclusive development does not exert a significant influence on current inclusive development anymore, except in the structural specification in column 6. In the full specifications in columns 1 to 3, trade has a significant and positive influence on inclusive development. However, this is not robust in the policy specification. As in FE estimations, inflation has a negative influence on inclusive development in most estimations and is about twice as large in comparison. Investment and government consumption are significant in one regression. We do not consider this as a robust relation. Compared to FE estimations, financial depth and fractionalization are not significant, hence, have no causal effects on inclusive development.

## Discussion

We identify past MDI scores as well as domestic inflation rates as robustly significant variables in most FE and GMM estimations. The influence declines when we look at long-term trends (i.e. using 10-year intervals). This confirms development literature which suggests that (i) low inflation and sound financial institutions facilitate growth (Rousseau and Yilmazkuday 2009), that they are an indirect determinant of financial development (Bittencourt 2011), and (ii) that low inflation is an important determinant for an equal income distribution (Bulir 1998).

The financial depth proxies (credit to GDP ratio and bank deposits to GDP ratio) are significant. The negative coefficient for the credit ratio is contrary to the positive association between credit and growth emphasized in the literature (Rousseau 2002). The net effect of a sound financial sector on the MDI cannot be clearly predicted, though. Credit ratio and bank deposit ratio take effect in opposite directions and might offset.

In the structural (TWFE and difference GMM) specifications, ethnic fragmentation seems to be an important determinant of MDI scores. As Alesina et al. (2016) and Easterly and Levine (1997) show, ethnic inequalities in economic performance are a significant driver for inequalities in economic development. Deficiencies in the institutional framework can restrict access to economic activities along ethnic frontiers.

In most GMM specifications, the Africa dummy is significant. African countries might still suffer from the consequences of their colonial past. Contrary to the findings in Barro (2000) who finds negative impacts of government consumption on growth, it seems to be positively correlated with the MDI in the short run. The lack of significance in the 10-year regression setting could hint towards the “Ricardian

<sup>15</sup> In columns 2 and 3, it is not possible to calculate autocorrelation. Since the setup is only slightly different to column 1, we can assume that autocorrelation is not a problem.



**Table 4** Difference GMM results with 10-year panel

Variables	(1) Dif-GMM baseline	(2) Dif-GMM	(3) Dif-GMM	(4) Dif-GMM policy specification	(5) Dif-GMM policy specification restricted	(6) Dif-GMM structural specification
Lag MDI basic	0.000203 (0.210)	-0.0463 (0.202)	0.158 (0.390)	0.451 (0.372)	0.486 (0.417)	0.456*** (0.140)
Lag MDI basic (t-2)		0.281 (0.260)	0.301* (0.180)			
Lag MDI basic (t-3)			-0.315 (0.271)			
Lag trade/GDP	0.0597* (0.0354)	0.0441* (0.0250)	0.0706*** (0.0256)	0.0248 (0.0313)	0.0235 (0.0554)	
Lag investment/GDP	-0.101 (0.114)	-0.0389 (0.0855)	-0.0698 (0.0646)	-0.0514 (0.0536)	-0.407* (0.239)	
Lag credit/GDP	-0.0252 (0.0176)	-0.0213 (0.0275)	0.0146 (0.0253)	0.000288 (0.0330)		
Lag bank deposits/GDP	0.0625 (0.0657)	0.0252 (0.107)	-0.000169 (0.0542)	-0.0630 (0.0483)	-0.122 (0.0914)	
Lag FDI inflow/GDP	-0.0610 (0.160)	-0.111 (0.257)	-0.274 (0.264)	0.0314 (0.107)	-0.0527 (0.0495)	
Lag ICT density	-0.00964 (0.0240)	0.00423 (0.0279)	-0.0164 (0.0173)			-0.00546 (0.00744)
Lag Coups	1.165 (1.718)	-0.0399 (2.146)	3.516 (3.307)			0.337 (0.822)
Lag ethnic fract. index	-9.976 (23.57)	-32.06 (34.72)	-23.59 (15.25)			-9.108 (7.359)





Table 4 (continued)

Variables	(1) Dif-GMM baseline	(2) Dif-GMM	(3) Dif-GMM	(4) Dif-GMM policy specification	(5) Dif-GMM policy specification restricted	(6) Dif-GMM structural specification
Lag SVMDI	3.794 (3.310)	1.698 (4.179)	-2.402 (5.470)			1.359 (0.861)
Lag inflation	-0.00442*** (0.00171)	-0.00475*** (0.00206)	-0.00384 (0.00287)	-0.00508*** (0.00160)	-0.0183** (0.00911)	
Lag gov. cons	-0.00345 (0.199)	0.0537 (0.236)	0.0447 (0.128)	0.192* (0.110)	0.163 (0.188)	
Lag struct. ch	-0.0221 (0.0616)	-0.0213 (0.0454)	-0.0368 (0.0334)			-0.0188 (0.0119)
Observations	220	168	98	269	314	361
Number of countries	98	98	98	116	135	140
Lags	2-4	2-4	2-4	2-4	2-4	2-4*
No. of Instruments	42	40	37	24	17	37
Hansen test p-value	0.212	0.152	0.221	0.113	0.132	0.111
AB-AR(2) test	0.862			0.350	0.728	0.463

Note: \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1; Robust clustered standard errors in parentheses; \*additional restrictions of lags of agricultural services, and industry sector shares to identify the estimation

equivalence". Higher government expenses must be financed by higher taxes or fewer goods and services being provided, unraveling the positive short-run effect in the long-run. Another striking difference is the significance of the trade to GDP ratio in the 10-year regressions.<sup>16</sup>

Larger trade volumes seem to positively impact inclusive development when looking at longer timeframes. It is possible that benefits from increased trade benefit firms first and individuals with delay. Thus, the trade integration of the past 40 years may have facilitated inclusive development. This period was characterized by the establishment of the WTO sustaining the liberalization of international trade, resulting in tariff reductions and lifting of other trade barriers (Baldwin 2016, p. 98ff.). Mirroring increased trade flows, firms in countries with deeper integration in global value chains (GVCs) tend to be more productive, have a higher share of female employment (Dollar (2019), p. 3; World Bank (2020), p. 3), and pay higher wages (Dollar (2019), p. 3; Dollar (2017), p. 8). Thereby, it can affect inclusive development.

In the FE estimates, we find that all past MDI scores, ICT, and inflation are important for both development achievements as well as equity. This underlines the general importance of macro-economic stability. We also find that bank deposits, investment, and government consumption are important for achievements but not equity. We stress that restricted access to the financial sector may disadvantage parts of the population.

We also analyze the sub-indices of the MDI.<sup>17</sup> We find structural change to be associated only with the IE+ sub-index. This indicates that restructuring the economy yields both winners and losers magnifying existing inequalities. The effect is, however, small and not robust. In FE specifications, ethnic fractionalization has a larger effect on equity than on achievements. Lastly, inflation, government consumption or bank deposits are not significant for the IE+ sub-index but for most other sub-indices. Hence, they might primarily help to improve development outcomes.

## Conclusion

This paper is a first attempt to discuss and empirically estimate the determinants of inclusive development. Recent dissatisfaction with and deficiencies in development outcomes demonstrate a lack of inclusiveness. Given the risk of (political) repercussions, this problem is of utmost importance. With an improved understanding of relevant policies, governments will be able to address urgent political challenges with more purposeful policies.

Derived from the empirical literature, we identify a set of growth determinants that we deem critical for inclusive development. They include policy variables such as inflation, investment, financial depth, and trade, as well as structural

<sup>16</sup> In a robustness check we disentangle effects of trade and FDI. In 5-year panel regressions, we find that imports are significant; exports, inward and outward FDI are not. Results are available upon request.

<sup>17</sup> Results are not shown and are available upon request.





factors such as institutional quality, social stability, FDI, and structural change. The results from TWFE and GMM panel estimates show that (i) inclusive development is path dependent, (ii) the inclusive development is most robustly associated with macro-economic policies such as inflation, financial sector development and trade, (iii) that the size of the public sector has a positive short-run influence, and (vi) social stability matters. When disentangling the MDI sub-indices, we find that inflation rates, ICT density, and past development scores are equally important for achievements and equity. Financial depth and government consumption matter mainly for the achievements sub-index, while social stability and structural change advance equity.

These results deliver important insight into the critical task of identifying qualified policies to improve aspired development outcomes. They indicate relevant mechanisms that compensate for adverse effects resulting from globalization, deal with structural economic adjustments, and include all individuals in development progress. However, with our empirical setting, we could ultimately not reveal causal connections. Future research may be conducted in this area to further improve the knowledge about the channels and policies through which inclusiveness can be achieved.

Highlighting the presumable importance of financial sector development, inflation, trade, and government consumption, our results are especially notable as they reflect core ideas of the “Washington Consensus” as termed by Williamson (1990) which has received public resentment and lost significance (Rodrik 2006, p. 974). Our analysis shows that the rudiments of the Consensus could still serve as useful guidelines to concern development matters.

## Appendix

See Table 5.



**Table 5** Descriptive statistics

VARIABLES	N	Mean	Std. Dev.	Min.	Max.
MDI basic	696	31.38	17.27	0.83	76.06
MDI achievements plus	696	31.95	14.13	0.95	66.51
MDI equity plus	689	33.33	17.12	6.53	72.74
Sub-index achievements basic	696	55.58	17.04	16.88	90.83
Sub-index achievements plus	696	57.68	10.73	33.72	82.57
Sub-index equity plus	689	56.20	14.57	27.21	88.98
Income equity	696	53.93	16.72	1.71	92.00
Exports/GDP	694	37.69	25.01	5.90	217.20
Imports/GDP	694	41.88	22.90	5.71	190.00
FDI inflow/GDP	694	3.93	9.05	-3.15	176.00
FDI outflow/GDP	693	2.32	9.32	-8.41	201.40
Investment/GDP	691	23.56	7.41	5.70	60.44
Gov. consumption/GDP	690	15.13	5.32	1.15	48.06
Fertility rate	696	3.29	1.69	1.14	7.83
Inflation	695	18.96	133.00	-3.02	2414.00
Population growth	696	1.66	1.40	-4.07	15.74
Credit/GDP	691	46.55	43.25	1.69	247.20
coups	696	0.03	0.09	0.00	0.80
SVMDI	696	0.66	0.35	0.00	1.00
Ethnic frac. Index	561	0.47	0.26	0.00	0.89
Bank Depos Gdp	691	42.69	40.44	2.57	597.70
KOF Glob. Index	693	57.71	15.97	20.98	90.99
KOF Glob. Index de facto	693	55.27	16.13	19.85	91.42
KOF Glob. Index de jure	693	60.17	16.69	20.47	93.07
Econ.Freedom of the World	641	6.41	1.14	2.65	8.82
EFW gov. size	640	6.35	1.22	2.66	9.45
EFW legal & prop. rights	631	4.96	1.69	1.22	8.97
EFW sound money	641	7.60	1.87	0.00	9.89
EFW freedom to trade	627	6.65	1.64	0.24	9.85
EFW regulations	639	6.58	1.17	2.51	9.15
Structural change	696	15.01	9.68	0.87	101.90
ICT density	696	75.68	67.59	0.05	252.30
Trade volume	694	79.57	45.84	16.23	407.10
Africa	696	0.33	0.47	0.00	1.00
EA	696	0.03	0.17	0.00	1.00
LA	696	0.06	0.24	0.00	1.00
FDI volume	693	6.25	18.02	-9.60	377.30



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**Data availability** The data utilized in this research paper are openly accessible and have been thoroughly cited within the text. We are committed to transparency and reproducibility in our research process. Should there be any inquiries regarding the data used in this study, please do not hesitate to contact the corresponding author for further clarification.

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## References

- Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2001. The colonial origins of comparative development: An empirical investigation. *The American Economic Review* 91 (5): 1369–1401.
- Acemoglu, Daron and James A. Robinson. 2013. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. Broadway Business.
- Acemoglu, Daron, et al. 2019. Democracy does cause growth. *Journal of Political Economy* 127 (1): 47–100.
- Aidt, Toke S., Vitor Castro, and Rodrigo Martins. 2018. Shades of red and blue: Government ideology and sustainable development. *Public Choice* 175 (3–4): 303–323.
- Akamatsu, Kaname. 1962. A historical pattern of economic growth in developing countries. *The Developing Economies* 1 (s1): 3–25.
- Aksoy, M. Ataman., and John C. Beghin. 2004. *Global Agricultural Trade and Developing Countries*. Washington, D.C.: World Bank.
- Alesina, Alberto, Stelios Michalopoulos, and Elias Papaioannou. 2016. Ethnic inequality. *Journal of Political Economy* 124 (2): 428–488.
- Alvarez-Cuadrado, Francisco, and Markus Poschke. 2011. Structural change out of agriculture: Labor push versus labor pull. *American Economic Journal: Macroeconomics* 3 (3): 127–158.
- Anand, Rahul, Saurabh Mishra, and Shanaka J. Peiris. 2013. *Inclusive Growth: Measurement and Determinants*. Technical report WP/13/135. IMF.
- Anand, Sudhir and Paul Segal. 2015. *The Global Distribution of Income*. Handbook of Income Distribution. Vol. 2. Elsevier, pp. 937–979.
- Anand, Sudhir and Amartya Sen. 1994. *Human Development Index: Methodology and Measurement*. Technical report HDOCPA-1994-02. Human Development Report Office, United Nations Development Programme.
- Ani, Teodorica G. 2015. Effect of Ease of Doing Business to Economic Growth among Selected Countries in Asia. 3.5, p. 7.
- Antonelli, Cristiano, and Claudio Fassio. 2014. The economics of the light economy. *Technological Forecasting and Social Change* 87: 89–107.
- Arellano, Manuel, and Stephen Bond. 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies* 58 (2): 277–297.
- Arrow, Kenneth J., et al. 2012. Sustainability and the measurement of wealth. *Environment and Development Economics* 17 (3): 317–353.
- Asian Development Bank. 2014. *Framework of Inclusive Growth Indicators* 2014. Technical report Manila, Philippines: Asian Development Bank, p. 117.
- Aslaksen, Silje. 2010. Oil and democracy: More than a cross-country correlation? *Journal of Peace Research* 47 (4): 421–431.



- Baldwin, Richard. 2016. The World Trade Organization and the Future of Multilateralism. *Journal of Economic Perspectives* 30 (1): 95–116.
- Barro, Robert J. 1996. *Determinants of Economic Growth: A Cross-Country Empirical Study*. National Bureau of Economic Research: Technical report
- Barro, Robert J. 2000. Inequality and Growth in a Panel of Countries. *Journal of Economic Growth* 5 (1): 5–32.
- Barro, Robert J. 2003. Determinants of economic growth in panel of countries. *Annals of Economics and Finance* 4: 231–274.
- Berg, Andrew and Anne O. Krueger. 2003. Trade, Growth, and Poverty: A Selective Survey. Annual World Bank Conference on Development Economics. World Bank, pp. 47–91.
- Bittencourt, Manoel. 2011. Inflation and financial development: Evidence from Brazil. *Economic Modelling* 28 (1–2): 91–99.
- Bjornskov, Christian. 2019. Types of Foreign Aid. Lessons on Foreign Aid and Economic Development. Berlin: Springer. pp. 33–61.
- Bjornskov, Christian and Martin Rode. 2019. Regime Types and Regime Change: A New Dataset on Democracy, Coups, and Political Institutions. Review of International Organizations.
- Blundell, Richard, and Stephen Bond. 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics* 87 (1): 115–143.
- Bourguignon, Francois, and Christian Morrisson. 2002. Inequality among World citizens: 1820–1992. *American Economic Review* 92 (4): 727–744.
- Bulir, Ales. 1998. Income Inequality: Does Inflation Matter? Technical report 98.7. International Monetary Fund, p. 1.
- Burnside, Craig, and David Dollar. 2000. Aid, policies, and growth. *American Economic Review* 90 (4): 847–868.
- Camamero, Miriam, and Cecilio Tamarit. 2004. Estimating the export and import demand for manufactured goods: The role of FDI. *Review of World Economics* 140 (3): 347–375.
- Chen, Shaohua, and Martin Ravallion. 2013. More relatively-poor people in a less absolutely-poor World. *Review of Income and Wealth* 59 (1): 1–28.
- Choi, In. 2001. Unit root tests for panel data. *Journal of International Money and Finance* 20 (2): 249–272.
- Dalgaard, Carl-Johan., Hans Hansen, and Finn Tarp. 2004. On the empirics of foreign aid and growth. *The Economic Journal* 114 (496): F191–F216.
- Dasgupta, Partha, and Karl-Goeran. Maeler. 2000. Net National Product, Wealth, and Social Well-being. *Environment and Development Economics* 5 (1): 69–93.
- Dietrich, Simone. 2011. The politics of public health aid: why corrupt governments have incentives to implement aid effectively. *World Development* 39 (1): 55–63.
- Dollar, David, and Aart Kraay. 2003. Institutions, trade, and growth. *Journal of Monetary Economics* 50 (1): 133–162.
- Dollar, David, and Aart Kraay. 2004. Trade, growth, and poverty. *The Economic Journal* 114 (493): F22–F49.
- Dollar, David R., et al. 2017. *Global value chain development report 2017: Measuring and analyzing the impact of GVCs on economic development*. The World Bank: Technical report
- Dollar, David R., et al. 2019. *Global value chain development report 2019: Technological innovation, supply chain trade, and workers in a globalized world*. The World Bank: Technical report
- Drazanova, Lenka. 2019. Historical Index of Ethnic Fractionalization Dataset (HIEF).
- Duflo, Esther. 2012. Women empowerment and economic development. *Journal of Economic Literature* 50 (4): 1051–1079.
- Dörffel, Christoph, and Sebastian Schuhmann. 2022. What is Inclusive Development? Introducing the Multidimensional Inclusiveness Index. *Social Indicators Research* 162: 1117–1148.
- Easterly, William and Ross Levine. 1997. Africa's growth tragedy: policies and ethnic divisions. *The Quarterly Journal of Economics* . 1203–1250.
- Esteve-Volart, Berta. 2004. Gender Discrimination and Growth: Theory and Evidence from India. SSRN Scholarly Paper 1127011.
- Fairhead, James, Melissa Leach, and Ian Scoones. 2012. Green grabbing: A new appropriation of nature? *The Journal of Peasant Studies* 39 (2): 237–261.
- Fleurbacy, Marc and Didier Blanchet. 2013. Beyond GDP: Measuring Welfare and Assessing Sustainability. Oxford: Oxford University Press.



- Gründler, Klaus, and Tommy Krieger. 2016. Democracy and growth: Evidence from a machine learning indicator. *European Journal of Political Economy* 45: 85–107.
- Gupta, Joyeeta, Nicky R.M., Pouw, and Mirjam A.F. Ros-Tonen. 2015. Towards an elaborated theory of inclusive development. *European Journal of Development Research* 27 (4): 541–559.
- Herrendorf, Berthold, Richard Rogerson, and Akos Valentinyi. 2014. Growth and structural transformation. *Handbook of Economic Growth* 2: 855–941.
- Hoekman, Bernard et al. 2001. Trade Policy Reform and Poverty Alleviation. World Bank Policy Research Working Paper 2733.
- International Monetary Fund. 2015. *World Economic Outlook: Uneven Growth: Short- and Long-Term Factors*. Washington, D.C.: Technical report
- Kaufmann, D., A. Kraay, and P. Zoido. 2002. Governance Matters II: Updated Indicators for 2000–01. Technical report 2772. World Bank Policy Research Working Paper.
- Klasen, Stephan. 2010. Measuring and Monitoring Inclusive Growth: Multiple Definitions, Open Questions, and Some Constructive Proposals. Technical report 2010–12. Asian Development Bank Working Paper.
- Levin, Andrew, Chien-Fu. Lin, and Chia-Shang James. Chu. 2002. Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics* 108 (1): 1–24.
- Li, Hongyi, Lyn Squire, and Heng-fu Zou. 1998. Explaining international and intertemporal variations in income inequality. *The Economic Journal* 108 (446): 26–43.
- Mauro, P. 1995. Corruption and growth. *The Quarterly Journal of Economics*. 681–712.
- Mishra, Saurabh, Susanna Lundstrom, and Rahul Anand. 2011. Service Export Sophistication and Economic Growth. Technical report 5606. World Bank Policy Research Working Paper.
- OECD. 2011. *An Overview of Growing Income Inequalities in OECD Countries: Main Findings*. Divided We Stand: Why Inequality Keeps Rising.
- OECD. 2015. *The Governance of Inclusive Growth*. Technical report: OECD.
- Pinheiro-Alves, Ricardo, and Joao Zambujal-Oliveira. 2012. The Ease of Doing Business Index as a tool for investment location decisions. *Economics Letters* 117 (1): 66–70.
- Ramey, Garey, and Valerie A. Ramey. 1995. Cross-country evidence on the link between volatility and growth. *The American Economic Review* 85 (5): 1138–1151.
- Rauniyar, Ganesh, and Ravi Kanbur. 2009. Inclusive growth and inclusive development: a review and synthesis of Asian Development Bank literature. *Journal of the Asia Pacific Economy* 15 (4): 455–469.
- Ravallion, Martin. 2007. Looking beyond averages in the trade and poverty debate. The Impact of Globalization on the World's Poor. Springer, pp. 118–144.
- Rodrik, Dani. 2006. Goodbye Washington Consensus, Hello Washington Confusion? A review of the World Bank's Economic Growth in the 1990s: Learning from a Decade of Reform. *Journal of Economic Literature* 44 (4): 973–987.
- Rodrik, Dani. 2011. The globalization paradox: Democracy and the future of the world economy. WW Norton & Company.
- Rodrik, Dani. 2016. Premature deindustrialization. *Journal of Economic Growth* 21 (1): 1–33.
- Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi. 2004. Institutions rule: The primacy of institutions over geography and integration in economic development. *Journal of Economic Growth* 9 (2): 131–165.
- Roine, Jesper, Jonas Vlachos, and Daniel Waldenstrom. 2009. The long-run determinants of inequality: What can we learn from top income data? *Journal of Public Economics* 93 (7–8): 974–988.
- Roodman, David. 2009. How to do xtabond2: An introduction to difference and system GMM in Stata. *The stata journal* 9 (1): 86–136.
- Roomi, Muhammad Azam, and Guy Parrott. 2008. Barriers to development and progression of women entrepreneurs in Pakistan. *The Journal of Entrepreneurship* 17 (1): 59–72.
- Roubini, Nouriel, and Xavier Sala-i-Martin. 1992. Financial repression and economic growth. *Journal of development economics* 39 (1): 5–30.
- Rousseau, Peter L. and Paul Wachtel. 2002. Inflation thresholds and the finance-growth nexus. *Journal of International Money and Finance* 21 (6): 777–793.
- Rousseau, Peter L., and Hakan Yilmazkuday. 2009. Inflation, financial development, and growth: A trilateral analysis. *Economic Systems* 33 (4): 310–324.
- Sachs, Jeffrey D., et al. 1995. Economic reform and the process of global integration. *Brookings Papers on Economic Activity* 1995 (1): 1–118.



- Sala-i-Martin, Xavier X. 1997. I Just Ran Four Million Regressions. National Bureau of Economic Research, Technical report
- Samans, Richard. 2018. A New Way to Measure Growth and Development: The Inclusive Development Index.
- Sen, Amartya. 1992. *Inequality Reexamined*. Oxford: Oxford University Press.
- Sen, Amartya. 1999. *Development as Freedom*. Oxford: Oxford University Press.
- Sridhar, Kala Seetharam, and Varadharajan Sridhar. 2007. Telecommunications infrastructure and economic growth: Evidence from developing countries. *Applied Econometrics and International Development* 2 (7): 25.
- Stiglitz, Joseph E. 2012. The Price of Inequality: How Today's Divided Society Endangers Our Future. WW Norton & Company.
- Talmage, Craig and Richard C. Knopf. 2017. Rethinking Diversity, Inclusion, and Inclusiveness: The Quest to Better Understand Indicators of Community Enrichment and Well-Being. New Dimensions in Community Well-Being. Ed. by Patsy Kraeger, Scott Cloutier, and Craig Talmage. Community Quality-of-Life and Well-Being. Cham: Springer. pp. 7–27.
- Vanhoudt, Patrick. 2000. An assessment of the macroeconomic determinants of inequality. *Applied Economics* 32 (7): 877–883.
- Williamson, John. 1990. *What Washington Means by Policy Reform*. Washington, D.C.: Institute for International Economics.
- World Bank. 2020. *World Development Report 2020: Trading for Development in the Age of Global Value Chains*. World Bank, Technical report.
- World Economic Forum. 2017. *The Inclusive Growth and Development Report 2017*. World Economic Forum, Geneva, Technical report
- Wu, Jyh-Lin., Han Hou, and Su-Yin. Cheng. 2010. The dynamic impacts of financial institutions on economic growth: Evidence from the European Union. *Journal of Macroeconomics* 32 (3): 879–891.

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