

# The Global Economic Development Index: an economic, social, and institutional approach

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## Abstract

This paper proposes an original composite index, the Global Economic Development Index (GEDI), uniquely integrating economic, social, and institutional factors. GEDI distinguishes emerging from developed economies, identifying specific economic, social, and institutional challenges and opportunities. It examines 129 economies, representing approximately 95% of global GDP in 2017, using over 30 indicators across 10 variables, including financial development, income distribution, environmental sustainability, and corruption. This index improves upon traditional income-based classifications used by institutions such as the World Bank (WB) and International Monetary Fund (IMF), which often group diverse economies like China, Vietnam, and Bulgaria together despite significant structural and developmental differences. Thus, GEDI provides a more comprehensive understanding of economic gaps between developed and emerging economies.

**Keywords:** emerging economies; economic and social development.

## 1. INTRODUCTION

The classification systems employed by international institutions such as the International Monetary Fund (IMF) and the World Bank (WB) rely predominantly on income levels, thereby omitting social and institutional dimensions, including income distribution, corruption, governance quality, and financial development. Conversely, the Human Development Index (HDI) of the United Nations Development Program (UNDP, 2018) emphasizes social dimensions—health, education, and living standards—but neglects economic indicators such as productive structure, technological capabilities, trade balance, and comprehensive financial development. Consequently, these classification approaches implicitly assume homogeneity across all developing economies. This simplification underestimates distinctions among emerging economies; for instance, economies such as China, Vietnam, and Bulgaria share similar classifications based solely on income, despite exhibiting significantly different economic structures, developmental trajectories, and institutional contexts.

In response to these limitations, this paper introduces an original methodological contribution: the Global Economic Development Index (GEDI). Unlike the HDI and governance-focused indices developed by institutions like the WB—which predominantly focus on either social or institutional factors—GEDI integrates economic indicators such as high-technology exports, manufacturing performance, services production, trade balances, and comprehensive financial development, alongside essential social and institutional dimensions. Thus, GEDI provides a nuanced and comprehensive framework capable of capturing the multidimensional nature of developmental gaps among economies (Tezanos Vázquez and Sumner, 2013; Fialho and Bergeijk, 2016).

Multidimensional classifications, such as GEDI, hold significant implications for international policymaking and resource allocation. Differentiating among emerging economies allows international organizations, governments, and development agencies to design targeted economic interventions, policies, and strategic resource distribution. Moreover, understanding structural, institutional, and social factors through a unified and replicable index facilitates comparative analyses, supporting decision-making processes aimed at addressing structural vulnerabilities, facilitating sustainable industrialization, and achieving inclusive economic development (Rodrik, 2014; Stiglitz *et al.*, 2009).

The paper is structured into six sections. The second section examines income-level classifications and the HDI framework used by international institutions. The third section defines emerging economies, highlighting aspects of their productive structures and their social and institutional developmental challenges. The fourth section describes the selection of variables, and the methodological process used to construct the GEDI database. The fifth section details the estimation of GEDI scores for 129 economies, applying the UNDP's HDI methodology, and presents robustness tests and comparative analyses that validate the accuracy and reliability of the index. The final section offers concluding insights and implications derived from our findings.

## 2. CLASSIFICATIONS AND INDICES OF COUNTRIES

Multidimensional methods are fundamental for accurately classifying economies, as classifications based solely on income or isolated social factors provide incomplete perspectives. Hausmann *et al.* (2007), and North (1990) emphasize that institutional frameworks and productive structures critically shape economic development paths. Additionally, Fagerberg and Srholec (2017) underline the relevance of institutional quality, technological capabilities, and structural economic factors, arguing these aspects substantially explain development divergences inadequately captured by traditional indices.

Historically, economic classifications have reflected prevailing geopolitical and economic contexts. Early attempts grouped nations into "first world", "second world", and "third world", implicitly distinguishing developed from underdeveloped economies primarily through geopolitical lenses (Harris *et al.*, 2009; Fialho and Bergeijk, 2016). By the 1980s, the WB shifted toward income-based classifications (low, middle, high), primarily using GDP per capita. In contrast, the 1990s saw the UNDP introduce the HDI, integrating per-capita income with crucial social dimensions like health and education. Subsequently, multiple specialized indices emerged, targeting narrower aspects such as poverty, governance, or environmental factors, yet none comprehensively address development's inherently multidimensional nature.

Despite their widespread usage in research and policymaking, the WB's income classifications inherently assume homogeneity among developing economies, implicitly suggesting similar developmental trajectories and policy requirements. However, this assumption overlooks significant structural and institutional differences among similarly categorized countries such as China, Costa Rica, and Bulgaria (Krugman *et al.*, 2012; Tezanos Vázquez and Sumner, 2013; Fantom and Serajuddin, 2016).

Specifically, the WB's 2007 definition categorizes emerging economies based on per-capita incomes between USD\$1 006 and USD\$12 235 (Agtmael, 2007; World Bank, 2014). Nevertheless, this classification groups markedly heterogeneous countries such as China, India, Poland, South Africa, Honduras, and Mexico within a single category, despite evident differences in their productive structures, technological capacities, and institutional environments. Scholars have emphasized the necessity to incorporate additional multidimensional factors into these classifications (Tezanos-Vázquez and Quiñones-Montellano, 2012; Nielsen, 2013; Ravallion, 2009). Indeed, the WB itself recognizes the growing inadequacy of purely income-based categorizations, emphasizing the importance of addressing multiple development dimensions and vulnerabilities (WB, 2014).

The HDI, despite being a multidimensional advance, presents significant limitations. Although effectively capturing social dimensions (health, education, and living standards), it excludes productive and institutional factors crucial for sustainable economic growth and diversification. Additionally, the high correlation among HDI variables diminishes its capacity for detailed differentiation among economies (Srinivasan, 1994; McGillivray, 1991). Thus, markedly different countries such as Germany, Argentina, and Kazakhstan are grouped together, despite substantial variations in their productive and institutional structures.

The concept of "emerging economies" initially emerged to describe developing countries exhibiting rapid economic growth, industrialization, openness to trade, and institutional reforms, differentiating them from typical underdeveloped nations. Recent classification attempts, including financial-market-based approaches such as the Emerging Markets Core Index (S&P Global, 2018), still fail to clearly distinguish these economies comprehensively. Emerging economies, as defined by Blancas and Aliphath (2023), actively pursue industrialization, institutional strengthening, and inclusive economic growth, distinctly differing from both developed and Least-Developed Countries (LDCs). Nonetheless, achieving a universally accepted definition remains challenging due to their inherent complexity and diversity.

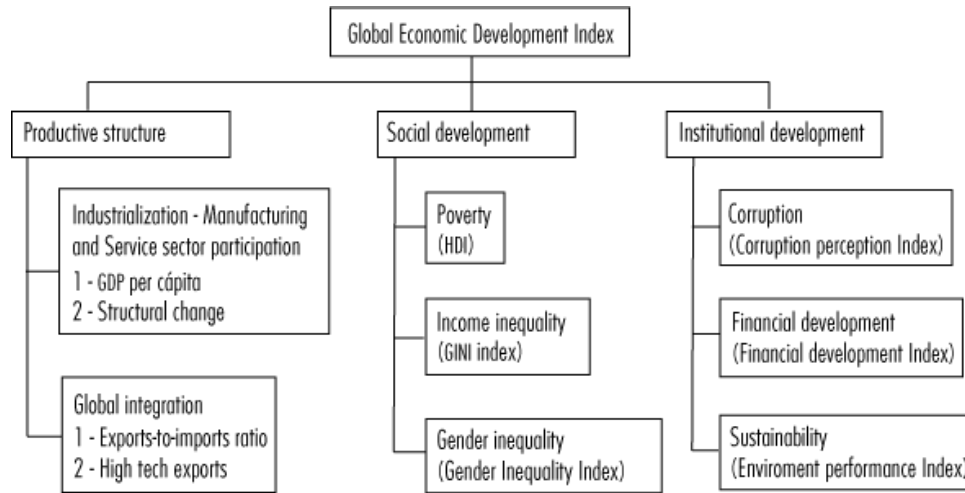
Recent taxonomies illustrate persistent classification challenges. For instance, Tezanos Vázquez and Sumner (2013) group economies like China, Iraq, and Egypt within similar categories based on shared export and governance profiles, despite their fundamentally different economic and institutional contexts. Notably, their classification also clusters Latin American economies, such as Mexico and Argentina, alongside countries with significantly different financial profiles like Iran, Jamaica, or Botswana. Historically, Latin American countries exhibit considerable dependence on external financial flows, especially Foreign Direct Investment (FDI) and external debt, challenging assumptions of low external financial dependence within certain classifications (Fajnzylber, 1975; Alvarado *et al.*, 2017; Minsky, 2008; Palma, 1998).

The persistent heterogeneity evident in both the WB and HDI classifications underscores the necessity of a new, comprehensive classification framework. Consequently, developing a GEDI is essential. GEDI proposes a multidimensional approach clearly differentiating developed, successful emerging, stagnant emerging, and least-developed economies. By integrating economic, social, and institutional dimensions into a unified, replicable, and adaptable framework, GEDI provides nuanced insights into developmental challenges, facilitating targeted policy formulation and comparative analysis across diverse economies (Harris *et al.*, 2009; Madrueño-Aguilar, 2017).

## 3. INTEGRATION OF VARIABLES OF GEDI

According to the classification of the WB and the HDI, it is important to include in the GEDI three key categories 1) productive structure, 2) social development, and 3) institutional development, those includes eight fundamental aspects to understand emerging economies: industrialization, international trade, reduce the poverty, equality income distribution, gender equality, level of corruption, financial development and sustainable development (see figure 1).

Figure 1. Conceptual framework of the GEDI



Source: own elaboration

## Productive structure

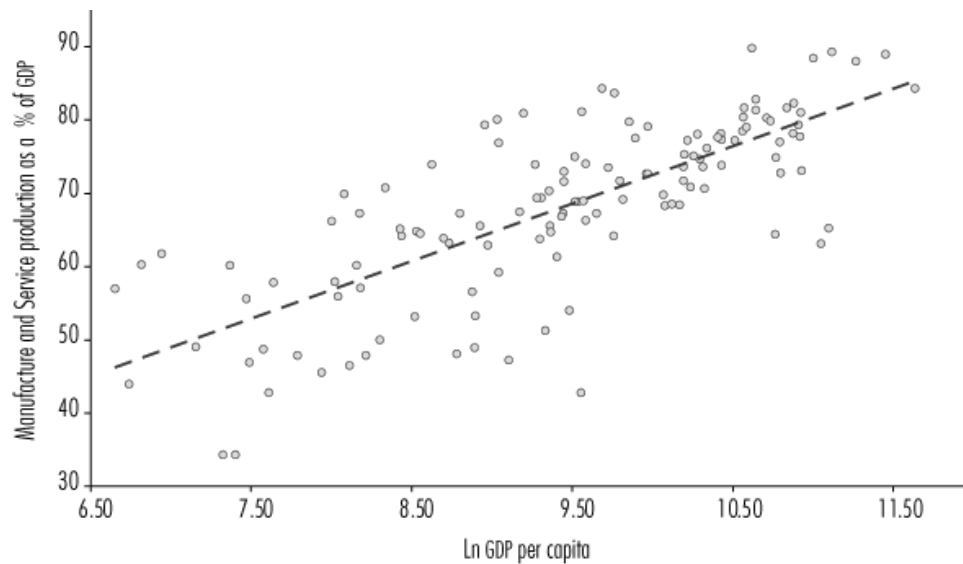
The analysis of economic development implies a comprehensive understanding of the productive structure of economies, extending beyond mere growth rates or indicators of trade openness. Drawing on the scholarly contributions of Fetahi *et al.* (2015), Eriş and Ulaşan (2013), and Mustafa *et al.* (2017), it is evident that neither sustained GDP growth nor high trade openness alone sufficiently explains economic development or the narrowing of developmental gaps between emerging and advanced economies. For example, although Mexico and Singapore have comparable openness levels to international trade, their economic outcomes differ significantly due to underlying differences in productive capabilities, structural composition, and institutional frameworks. Similarly, comparing economic integration indices of advanced economies such as Germany (0.86), the United States (0.28), and Japan (0.36) against emerging countries like Vietnam (1.79), Congo (1.66), and Bulgaria (1.28), highlights that economic integration alone, though critical, is insufficient for sustained economic development.

To thoroughly characterize productive structures in emerging economies, the GEDI employs two principal indicators. First, GDP per capita serves as a proxy measure for national productivity, representing average economic output per person, thus reflecting an economy's efficiency in converting resources into goods and services. Second, the proportion of manufacturing and services production relative to GDP measures structural transformation within the economy. The choice of GDP per capita adjusted by Purchasing Power Parity (PPP) ensures accuracy in capturing productivity dynamics, particularly useful in comparative international analyses. While traditional productivity indicators such as Total Factor Productivity (TFP) and labor productivity are theoretically robust, they often face limitations regarding data consistency and comparability across diverse international samples. Hence, GDP per capita by PPP emerges as an optimal practical alternative, widely available and closely correlated with productivity dynamics (van Ark *et al.*, 2008; Jorgenson and Vu, 2005).

Extensive empirical research validates using GDP per capita as a proxy for productivity. In Asian economies, significant evidence shows GDP per capita increases predominantly reflect productivity-driven growth, closely linked to improvements in labor efficiency and technological advancement. For example, South Korea and Taiwan have recorded remarkable GDP per capita growth largely due to productivity enhancements from technological diffusion, innovation policies, and investments in education and workforce training (Jorgenson and Vu, 2005). Similarly, analyses of European economies by O'Mahony and Timmer (2009) and Schreyer (2001) demonstrate that GDP per capita reliably aligns with long-term productivity trajectories, capturing sustained investments in infrastructure, technology, and human capital development. These studies substantiate GDP per capita's methodological suitability within GEDI, despite acknowledging that this indicator does not isolate productivity effects exclusively from other economic influences.

Combining GDP per capita with the structural composition of manufacturing and services enables a detailed assessment of economies' productive capacities and structural transformations. This approach aligns with Friedrich List's (1997) theoretical arguments published in 1841, where successful economies effectively harmonize their agricultural, manufacturing, and service sectors to enhance productivity and competitiveness. Empirical evidence from 129 economies in 2017 consistently demonstrates that nations with higher productivity levels invariably feature substantial shares of manufacturing and service sectors. Conversely, economies with lower productivity exhibit structural stagnation, characterized by minimal advancement toward high-value manufacturing or sophisticated service industries. This consistent empirical relationship underscores the intrinsic connection between structural transformation and productivity improvements (see figure 2).

Figure 2. Relationship between productivity\* and structural change\*\* of 129 countries in 2017



Notes: \* Ln GDP per capita by PPP \*\* Manufacturing Production and Services (% GDP).  
Source: own elaboration based on data from World Development Indicators WB.

GEDI further evaluates economies' global integration, recognizing international trade's critical role in shaping productive structures. Two essential trade-related indicators underpin this evaluation: trade balance, represented by the exports-to-imports ratio ( $X/M$ ), and export composition, emphasizing high-value-added products. Hausmann *et al.* (2007) underscore that an economy's ability to produce and export goods with substantial domestic value-added significantly determines its success in international markets. Effective integration into global value chains through high-tech exports typically results in sustained productivity growth, enhanced technological capabilities, and efficient resource allocation, driving long-term economic development. Germany exemplifies this scenario, maintaining a pronounced trade surplus and exporting a high proportion of technologically advanced goods, clearly indicating advanced integration into global production networks. This structural configuration supports an innovation-driven industrial base and competitive global positioning. In contrast, South Africa illustrates an alternative scenario, marked by a negligible or negative trade balance and a low proportion of high-tech exports, indicating limited integration predominantly oriented toward lower-value or maquila-type activities (Zahonogo, 2016). Świącki (2017) employs similar indicators to evaluate trade openness efficiency, reinforcing their empirical validity and relevance.

Employing the  $X/M$  ratio within GEDI highlights the critical significance of exporting high-value-added goods, as economies primarily exporting such products secure greater economic benefits from international trade. This strategy ensures sustainable development and robust economic integration. Mendoza and González (2022) emphasize that countries exporting predominantly high-value-added goods benefit significantly from participation in global value chains, achieving sustained productivity growth, structural transformation, and technological advancement. Conversely, economies heavily reliant on re-exporting imported goods or raw commodities without significant domestic processing experience minimal technological advancement and limited productivity gains, constraining long-term development prospects (Romero Tellaeche and Aliphat, 2023).

A consistently positive trade balance substantially reduces dependence on external financial flows, enhancing an economy's autonomy in policy-making. Comparative analyses illustrate this dynamic clearly: Korea, Singapore, and China, characterized by persistent trade surpluses, maintain greater economic policy autonomy compared to Argentina or Pakistan, economies consistently experiencing trade deficits and external financial vulnerabilities (Kregel, 1994; Obstfeld, 2012; Semmler and Tahri, 2017; Cavdar and Aydin, 2015).

Finally, GEDI evaluates technological sophistication in exports through the proportion of high-tech exports within total manufactured exports. This indicator identifies economies' positions in global value chains, distinguishing those with advanced technological integration from commodity-dependent exporters. For example, although Mexico and Japan have comparable overall export values, Japan's significantly higher proportion of high-tech exports clearly indicates superior technological capabilities, deeper integration into global value chains, and stronger long-term productivity potential.

## **Social development**

Regarding social development, the HDI is recognized for its effectiveness and therefore integrated within GEDI as a component. This index encompasses three key categories: long and healthy life, knowledge, and a decent standard of living. Collectively, these dimensions address essential factors critical to reducing poverty and promoting sustainable social progress over the long term (UN, 2019).

Income inequality is another critical determinant of economic development. Reducing income inequality directly contributes to greater individual and collective development opportunities, enhancing social cohesion and promoting equitable resource distribution, aligning closely with Sustainable Development Goal 10 (SDG 10), which emphasizes the reduction of inequalities within and among countries (Palma, 2011). Addressing inequality thus becomes essential not only for fairness but also for effective poverty alleviation and sustainable development.

Gender inequality significantly influences social development outcomes, impacting economic well-being in labor markets and household settings. Ponthieux and Meurs (2015) highlight how entrenched social norms, and existing public policies contribute to disparities by maintaining an uneven distribution of paid and unpaid labor, thereby limiting women's economic opportunities. In many developing countries, gender inequality arises not only from economic underdevelopment but also from deeply embedded cultural norms. Practices such as patrilocality, where women traditionally move to their husbands' households after marriage, and societal expectations regarding female "purity", restrict women's access to education, employment opportunities, and broader economic participation. These cultural practices, notably observed in societies like India and China, contribute to a preference for male offspring and limit the participation of women in both economic and social spheres (Jayachandran, 2015). While economic growth can alleviate some aspects of gender inequality, addressing it effectively necessitates carefully designed and culturally sensitive policies that respect each society's unique characteristics.

By integrating poverty, income inequality, and gender inequality indicators, GEDI provides an assessment of social challenges within emerging economies. This approach tries to capture complex social dynamics globally. For example, regions such as Latin America illustrate scenarios characterized by relatively low poverty levels but persistently high-income inequality. Countries like Argentina, Chile, and Uruguay, despite achieving notable levels of human development, continue facing significant income distribution challenges.

Conversely, other regions present different challenges. Economies such as Iraq in Asia, Moldova in Europe, and Egypt in Africa typically experience high poverty and pronounced gender inequalities, albeit with relatively lower income inequality. The coexistence of substantial poverty and gender disparities necessitates targeted and context-specific policy responses, prioritizing educational access, economic empowerment, and structural reforms that address both poverty alleviation and gender equality effectively.

Reducing poverty and inequality are both critical to sustainable economic development; however, distinct and differentiated policy strategies are required due to the unique characteristics and root causes of each issue (Palma, 2011; Clark and Hulme, 2010). Thus, GEDI's comprehensive integration of these social dimensions supports informed policymaking, resource allocation, and effective strategies tailored to diverse development contexts.

## **Institutional development**

Institutional factors have long been recognized as pivotal for shaping environments conducive to economic development. Early seminal contributions by Hamilton (1919), followed prominently by North (1990), underscore the critical role institutions play in influencing productive structures and societal well-being. Although various institutional variables may be relevant, this study specifically addresses three core dimensions that reflect sound institutional performance: 1) corruption perceptions, 2) financial development, and 3) environmental sustainability. Collectively, these dimensions represent essential institutional conditions supporting sustainable and inclusive economic development.

Corruption significantly affects economic performance through multiple channels. On the supply side, corruption raises production costs, impacting price levels and profit margins. It reduces real wages, limits the capital available for investments in research and development or for the establishment of new enterprises, and facilitates market concentration by erecting barriers to entry (Cuervo-Cazurra, 2016; Shumetie and Watabaji, 2019). On the demand side, corruption diminishes households' real income, as individuals must allocate a portion of their resources to secure services or benefits that would otherwise be less costly. Furthermore, corruption fosters environments of impunity, weakening the rule of law (Bardhan, 1997; Fagerberg and Srholec, 2017).

The degree of financial development significantly influences economic growth and stability. As financial sectors mature, they provide increased savings opportunities for households and expand financing sources for businesses. Evaluations of financial sector development typically consider depth, access, and efficiency within financial institutions and markets. Effective financial development ensures efficient resource allocation between households and firms and reduces vulnerabilities associated with foreign currency indebtedness (Sahay *et al.*, 2015; Fialho and Bergeijk, 2016).

Significant financial development gaps exist between developed and emerging economies, explaining the limited access to credit among businesses in emerging markets (Blancas, 2011). For example, Korea's financial development indicators have consistently improved since 1980, substantially narrowing its financial development gap relative to developed economies. Conversely, Mexico, illustrating a stagnant emerging economy, has exhibited minimal progress in financial sector development over the past 25 years (Financial Development Index - IMF, 2016). Thus, incorporating financial sector development indicators into GEDI is essential for accurately distinguishing among emerging economies based on their financial maturity and economic resilience.

Environmental sustainability represents another fundamental component of institutional development. Within the institutional framework, sustainable economic growth, environmental stewardship, and resilience in productive processes constitute essential conditions for achieving long-term productive development (Islam *et al.*, 2003; Cobbinah *et al.*, 2015; Svenfelt *et al.*, 2019). Moreover, environmental sustainability fosters innovation and technological advancement, creating conducive environments for sustained economic progress (Bailey *et al.*, 2018; Boons *et al.*, 2013; Gibbs and O'Neill, 2016).

#### 4. CONSTRUCTION AND DEVELOPMENT OF THE DATABASE

The three thematic groups and their respective variables constitute the database used to construct the GEDI. Based on the definition of emerging economies and the thematic categories identified in section two, each selected variable can be obtained from recognized global data sources, including World Development Indicators (from WB), International Monetary Fund (IMF), United Nations (UN), Transparency International, and Yale University. These variables share the characteristics of being global, periodically updated, and derived from widely recognized and accepted databases (see table 1).

**Table 1. Variables of the GEDI**

<i>Proxy</i>	<i>Variable</i>	<i>Source database</i>
Productivity	GDP per capita by PPP	WB-Development Indicators
Structural change	Manufacture and Service production as a % of GDP	WB-Development Indicators
Trade integration	Exports/Imports	IMF-International financial Statistics
High-Tech Exports	High-tech exports as % of manufactured exports	WB-Development Indicators
Poverty	Human development index	UN-Development Program
Income inequality	GINI index	WB-Development Indicators
Gender inequality	Gender Inequality Index	UN-Development Program
Corruption	Corruption perception index	Transparency International
Financial development	Financial development index	IMF-Macroeconomic and financial data
Sustainability	Environmental Performance Index	University of Yale

Source: own elaboration.

GEDI faces certain limitations related to data periodicity and availability. For example, indicators such as high-tech exports (WB), GINI coefficients (WB), and the Environmental Performance Index (Yale University) are not consistently updated annually for all countries. To address these limitations, periodic updates of GEDI may apply complementary methodologies such as interpolation, imputation techniques, or multi-year averages to maintain consistent and reliable comparisons.

The GEDI estimation procedure comprises two steps:

1) Each variable is normalized by applying the following formula (equation).

$$x_i = \frac{X - X_{min}}{X_{max} - X_{min}} \quad (1)$$

2) The GEDI is calculated as the geometric mean of the normalized variables using equation 2.

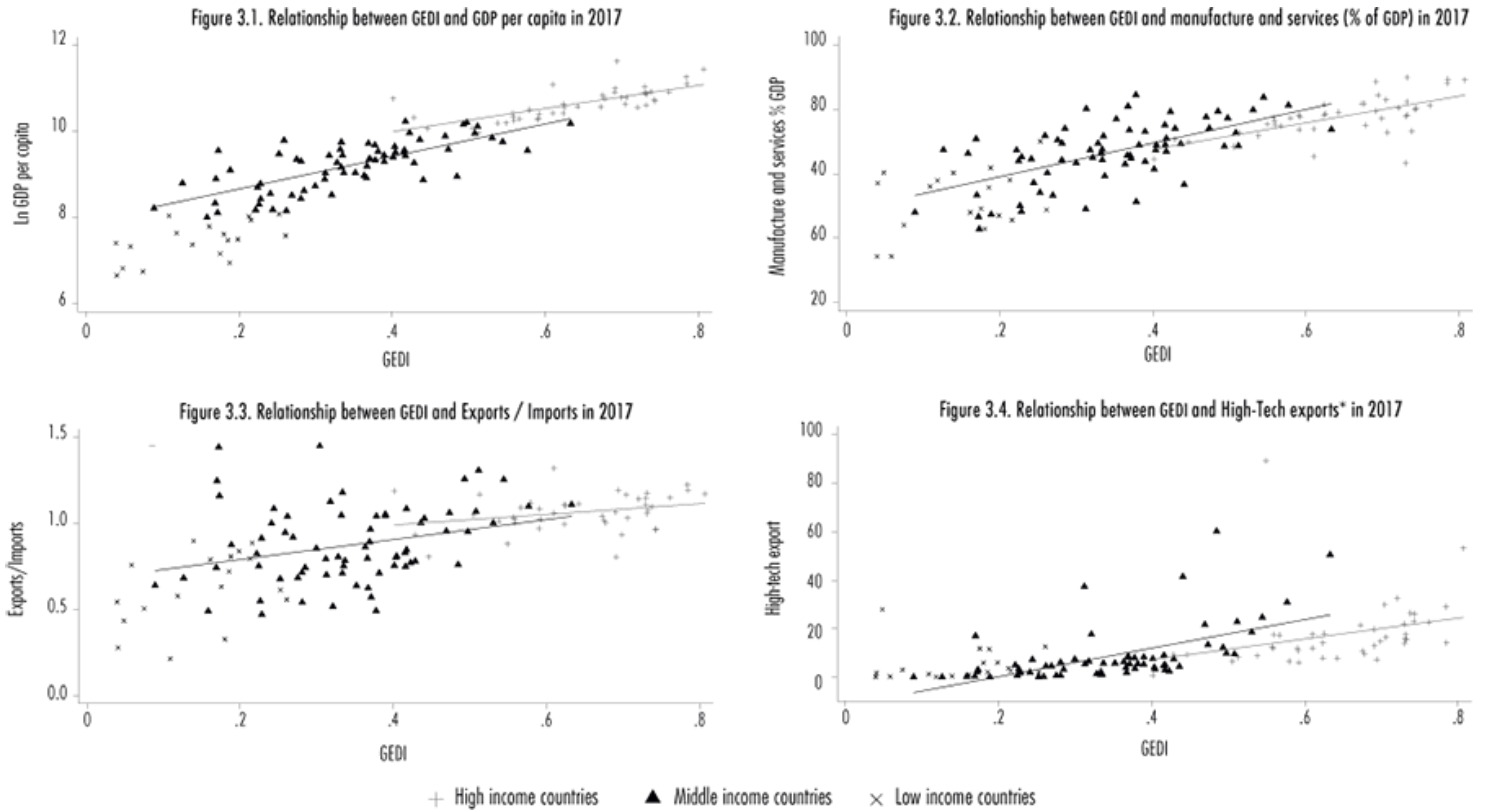
$$i_{EE} = \prod_{i=1}^n (x_i)^{1/n} \quad (2)$$

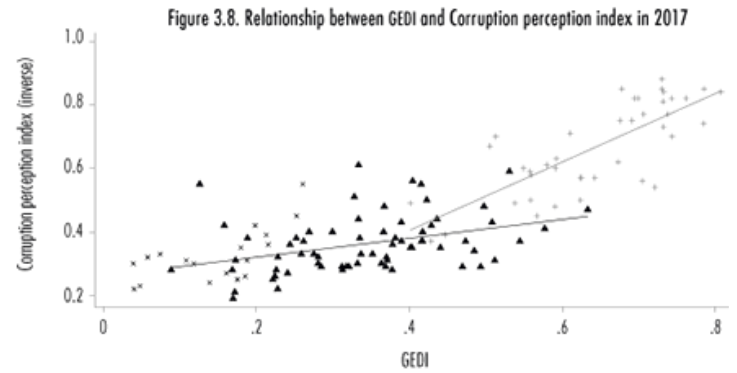
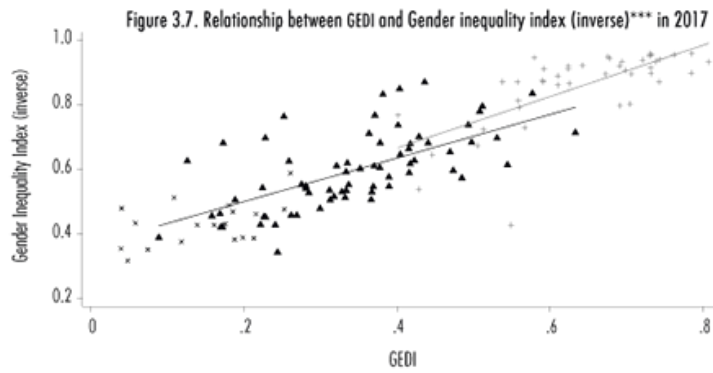
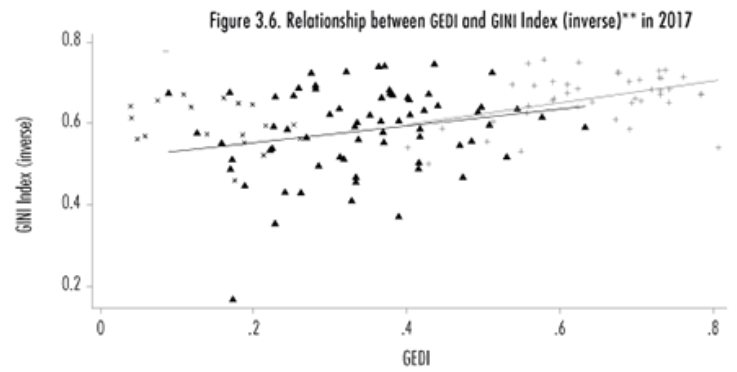
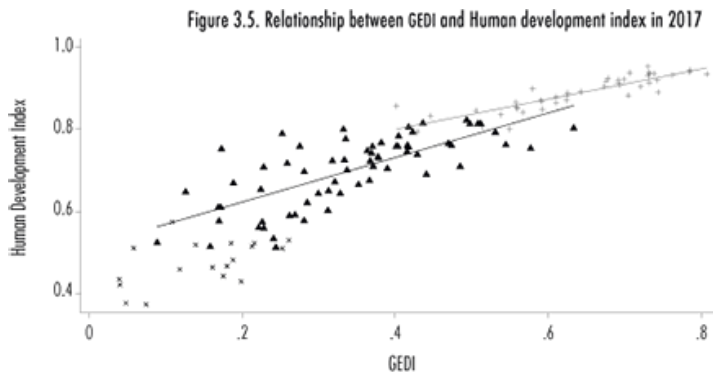
Where:

$$x_i = \left\{ \begin{array}{l} x_1 = GDP_{per\ capita}; x_2 = GDP_{M\&S\%}; x_3 = \frac{X}{M}; \\ x_4 = HighTech_x; x_5 = HDI; x_6 = GINI; x_7 = GII; \\ x_8 = CPI; x_9 = FDI; x_{10} = EPI \end{array} \right\}$$

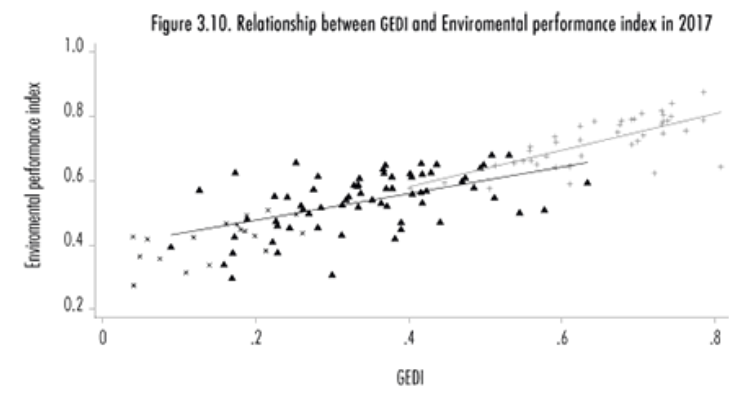
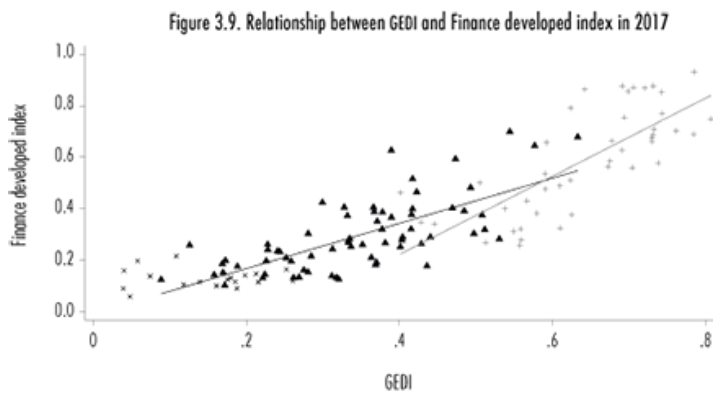
Figure 3 presents the data obtained from the GEDI for each analyzed variable across the set of economies studied. An immediate observation from these graphs is the differing slopes of the trend curves between developed and emerging economies. If the slopes were identical for all variables across these two groups, the existing WB income classification could sufficiently differentiate economic performance. However, the differing slopes observed indicate that GEDI effectively captures multidimensional differences between these groups. This underscores GEDI's capacity to accurately distinguish structural, institutional, and social characteristics, thereby providing more nuanced differentiation between emerging and developed economies.

Figure 3. Analysis of the variables used in the GEDI





+ High income countries    ▲ Middle income countries    × Low income countries



+ High income countries    ▲ Middle income countries    × Low income countries

Notes: GDP per capita by PPP; \* % of total manufacturing exports;  
 \*\* Inverse =  $[1 - \text{GINI}]$ ; \*\*\* Inverse =  $[1 - \text{Gender inequality index}]$ .

Source: own elaboration with data from table 1.

Discrepancies between emerging and developed economies are evident when analyzing variables according to economy type (developed, emerging, and least developed countries—LDC, see figure 3). These results emphasize the importance of public policies aimed at increasing productivity, reducing income and gender inequalities, strengthening institutional frameworks, and developing financial systems.

Variables such as HDI, exports-to-imports ratio, and Environmental Performance Index reveal that developed economies exhibit relatively similar levels, clearly above those of least developed countries. Emerging economies, while positioned above LDCs, display considerable variation, yet remain below developed economies. This development gap may be attributed to comparatively lower economic growth rates and higher inequality levels (Piketty, 2014; Keeley, 2015; Molero-Simarro, 2016).

Regarding trade balance, most developed economies maintain surplus or balanced positions, contrasting with emerging economies, underscoring the importance for these countries to strengthen export capacity and reduce import dependence (Thirlwall, 1979; Araujo and Lima,

2007; Awokuse, 2008). Finally, the behavior of high-tech exports and the share of manufacturing and services in GDP highlights structural differences between developed and emerging economies, confirming that structural change is necessary but not sufficient alone to achieve a full transition from emerging to developed status.

The second step consists of estimating the GEDI using equation 2; the results for each economy are presented in Appendix 1 of this document. Table 2 classifies each country into four categories—developed, successful emerging, emerging, and vulnerable—based on their GEDI scores. These classification thresholds were established by dividing the GEDI score distribution into quartiles. This quartile-based method uses the segmentation naturally present in the data, creating statistically supported boundaries that reflect the multidimensional characteristics of the economies analyzed. This approach ensures that each category represents distinct levels of economic performance, thereby reinforcing the internal coherence and analytical validity of GEDI for comparative assessments.

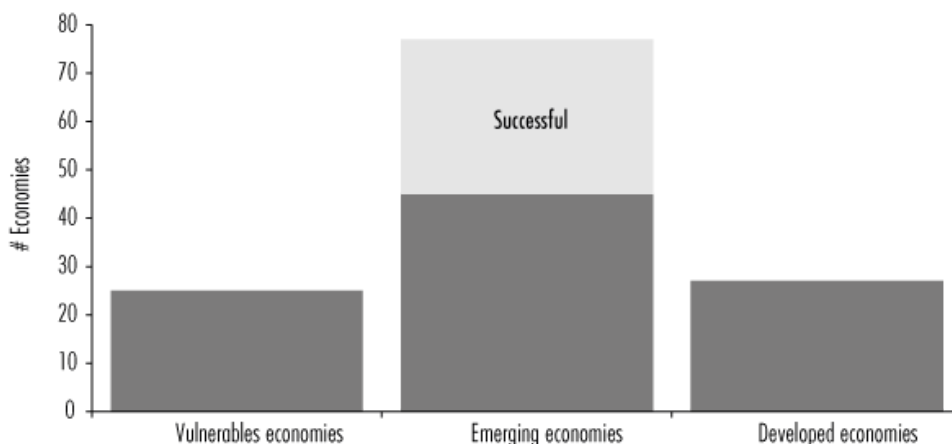
**Table 2. Classification of GEDI**

<i>Classification</i>	<i>Values</i>
Developed economy	$0.620 < \text{GEDI}$
Successful emerging economy	$0.417 < \text{GEDI} < 0.620$
Emerging economy	$0.222 < \text{GEDI} < 0.417$
Vulnerable economy	$\text{GEDI} < 0.222$

Source: own elaboration.

According to the GEDI results, economies are classified into four categories: developed (27), successful emerging (32), emerging (45), and vulnerable (25) (see figure 4).

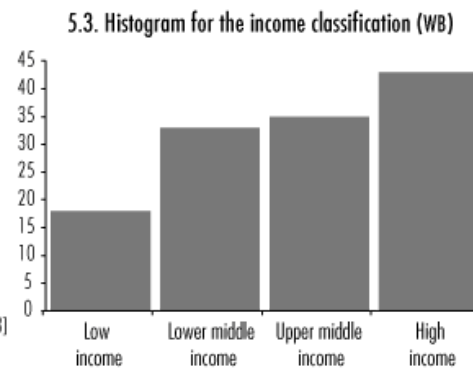
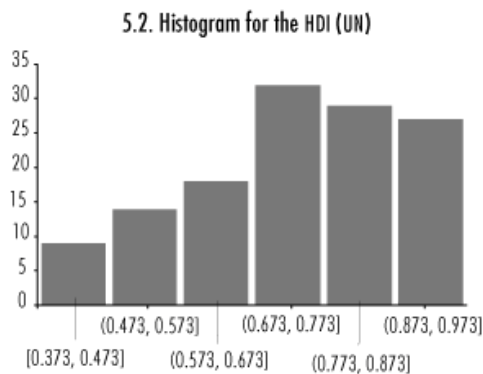
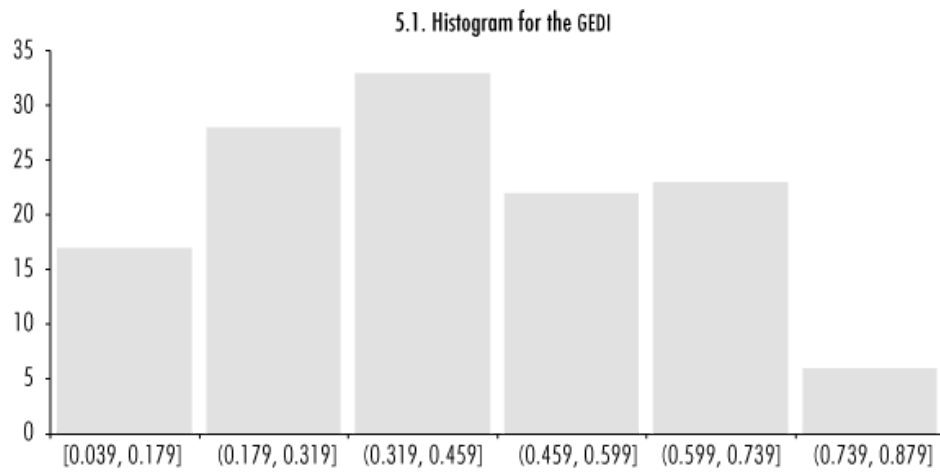
Figure 4. Classification of economies based on the GEDI



Source: own elaboration with the GEDI data of emerging economies.

Figure 5 compares histograms of the GEDI, WB income classification, and HDI, allowing validation of GEDI's consistency and robustness. The GEDI histogram shows a cluster of economies—such as Singapore, Switzerland, and Ireland—with the highest levels of development across productive, social, and institutional dimensions. In contrast, twenty-five economies fall into the vulnerable category, indicating clear developmental gaps. Between these groups are eighty-eight emerging economies, representing diverse and intermediate development stages globally. This distribution highlights GEDI's capacity to identify differences among economies that traditional classifications may overlook.

Figure 5. Distribution histogram for HDI, income classification by WB and GEDI



*Source: own elaboration with the GEDI data of emerging economies.*

The data distribution for the WB income classification (see figure 5.2.) shows a high concentration of economies classified as high income, including Switzerland, Greece, Lithuania, Puerto Rico, and Trinidad and Tobago. This classification places 36% of countries in the high-income category and 14% in the low-income category. Such distribution reflects significant variation in income levels across countries (Madruño-Aguilar, 2017).

The HDI histogram (see figure 5.3.) presents a more balanced distribution but identifies 14% of the countries as experiencing substantial delays in economic development. In contrast, 25% of countries are categorized as highly developed, including economies like Argentina, Oman, and Greece. The HDI results also show that countries such as Iran (0.799) have higher development scores compared to Mexico (0.765), Brazil (0.760), South Africa (0.704), and Egypt (0.696). Additionally, according to HDI values, the development levels of Peru (0.756) and China (0.753) appear similar.

The GEDI results provide insights that differ from traditional development indices. For instance, Malaysia ranks higher than Portugal and Greece, while Peru, Tunisia, and the Philippines are positioned above Saudi Arabia and South Africa. These outcomes demonstrate GEDI's capacity to capture the multidimensional characteristics of development. Observed differences underscore structural, institutional, and social heterogeneities typically not reflected in income-based rankings. Incorporating variables related to productive structures—such as the share of manufacturing and services, technological sophistication, and trade dynamics—enables GEDI to include fundamental determinants of economic development. Consequently, the GEDI offers a comprehensive analytical perspective on the complexities inherent to global development processes.

## 6. CONCLUSIONS

GEDI includes 129 countries, accounting for approximately 95% of global GDP, thereby providing a comprehensive basis for cross-country comparative analysis across different regions and economic contexts. By integrating economic, social, and institutional dimensions into a single composite measure, GEDI extends beyond traditional income-based metrics or the HDI, offering a more holistic and informative assessment of development. This multidimensional framework enhances the understanding of development not only by capturing a broader spectrum of each country's conditions but also by identifying specific areas requiring intervention and potential opportunities for progress.

The broad and integrative scope of GEDI allows countries to pinpoint aspects that may drive sustainable and inclusive economic advancement in the long term. By highlighting structural, institutional, and social factors, GEDI serves as a valuable diagnostic tool, facilitating precise and effective policymaking tailored to each country's unique developmental trajectory. Such comprehensive analysis becomes especially critical in the contemporary global environment, characterized by economic convergence and the imperative of structural transformation. Effective public policy in this context demands nuanced, multidimensional diagnostics to adequately address the complexity and diversity of global economic development paths.

GEDI helps clarify why countries like China, despite generating roughly 16% of global GDP, continue facing substantial social challenges, including pronounced income inequality (GINI index of 0.385) and notable corruption levels (Corruption Perception Index score of 41 out of 100). In Bulgaria, although human development (HDI of 0.807) and income equality (GINI index of 0.373) metrics are relatively satisfactory, significant productivity and technological limitations persist. Specifically, high-tech exports constitute only 9.66% of Bulgaria's total manufacturing exports, reflecting broader structural deficiencies despite manufacturing and services representing 72% of its GDP. Contrastingly, Vietnam presents a different scenario. Despite robust high-tech exports, accounting for 41% of its manufacturing exports, and comparable levels of income distribution to Bulgaria and Mexico, the Vietnamese economy still heavily depends on primary activities, which represent approximately 44% of its GDP. Thus, while China primarily faces social disparities, Bulgaria confronts technological and productivity constraints, and Vietnam requires significant structural transformation.

These detailed insights illustrate GEDI's capacity to identify the precise developmental needs and challenges faced by individual economies, thereby enabling more efficient and targeted resource allocation across economic, social, and institutional dimensions. Governments and policymakers can leverage GEDI findings to better identify specific policy areas that need intervention, effectively reducing duplication of efforts and ensuring more accurate responses to actual developmental requirements. As a result, GEDI not only supports targeted interventions but also facilitates strategic planning aimed at reducing developmental disparities relative to advanced economies.

By incorporating variables across productive, social, institutional, and environmental domains, GEDI embraces a broader and more comprehensive conceptualization of development compared to existing indices. Consequently, it offers deeper analytical insights and practical policy guidance to address the specific and diverse challenges confronting emerging economies.

## **APPENDIX 1**

Table A1. Estimation of GEDI

Country	LN GPDpc by PPP	Ym+s	X/M	High Tech exports*	HDI	GINI**	Gender Index***	Corr. Index	Finance Index	Env Index	Index	Clasf GEDI <sup>1</sup>
	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	GEDI	
Albania	9.480	54	0.68	0.1	0.789	0.668	0.764	0.380	0.209	0.655	0.252	Em
Algeria	9.354	70	0.68	0.6	0.758	0.724	0.553	0.330	0.162	0.572	0.275	Em
Angola	8.897	53	1.25	17.0	0.576	0.487	0.42	0.190	0.152	0.374	0.170	V
Argentina	10.067	70	0.80	9.2	0.832	0.588	0.645	0.390	0.341	0.593	0.446	SE
Armenia	9.402	61	0.75	7.6	0.758	0.664	0.737	0.350	0.252	0.621	0.402	Em
Australia	10.798	73	1.03	16.4	0.937	0.656	0.896	0.770	0.871	0.741	0.706	D
Austria	10.908	79	1.07	12.9	0.912	0.703	0.922	0.750	0.627	0.790	0.691	D
Azerbaijan	9.555	43	1.16	3.1	0.752	0.166	0.682	0.310	0.199	0.623	0.173	V
Bangladesh	8.334	71	0.74	0.3	0.609	0.676	0.462	0.280	0.187	0.296	0.169	V
Belarus	9.814	69	1.00	4.4	0.815	0.746	0.871	0.440	0.178	0.650	0.436	SE
Belgium	10.835	82	1.02	10.6	0.917	0.726	0.95	0.750	0.585	0.774	0.675	D
Benin	8.021	58	0.79	3.6	0.515	0.522	0.386	0.390	0.147	0.382	0.213	V
Bolivia	9.039	59	0.78	5.7	0.700	0.56	0.552	0.330	0.253	0.560	0.337	Em
Bosnia and Herzegovina	9.536	69	0.71	5.4	0.767	0.67	0.833	0.380	0.267	0.418	0.382	Em
Botswana	9.756	64	1.18	0.9	0.724	0.467	0.534	0.610	0.269	0.517	0.334	Em
Brazil	9.583	74	1.06	13.3	0.760	0.467	0.596	0.370	0.593	0.607	0.474	SE
Bulgaria	9.961	73	1.07	9.5	0.813	0.596	0.78	0.430	0.375	0.679	0.508	SE
Burkina Faso	7.491	47	0.84	6.0	0.429	0.647	0.388	0.420	0.141	0.428	0.199	V
Burundi	6.651	57	0.28	1.7	0.421	0.614	0.479	0.220	0.160	0.274	0.040	V
Cabo Verde	8.801	67	0.68	0.0	0.647	0.576	0.626	0.550	0.258	0.569	0.126	V
Cameroon	8.176	67	0.82	4.9	0.560	0.534	0.428	0.250	0.131	0.408	0.222	V
Canada	10.790	77	0.93	14.7	0.921	0.662	0.908	0.820	0.856	0.722	0.699	D
Central African Republic	6.817	60	0.43	27.9	0.376	0.562	0.316	0.230	0.059	0.364	0.048	V
Chile	10.074	68	1.05	6.4	0.845	0.556	0.674	0.670	0.501	0.575	0.505	SE
China	9.557	81	1.10	30.9	0.753	0.615	0.836	0.410	0.645	0.507	0.577	SE
Colombia	9.569	69	0.75	9.0	0.760	0.503	0.589	0.370	0.377	0.652	0.416	Em
Congo, Rep.	8.111	47	1.44	2.1	0.609	0.511	0.42	0.210	0.103	0.424	0.172	V
Costa Rica	9.853	80	1.00	18.5	0.792	0.517	0.697	0.590	0.282	0.679	0.531	SE
Cote d'Ivoire	8.181	57	1.08	7.2	0.512	0.585	0.342	0.360	0.232	0.453	0.244	Em
Croatia	10.192	72	1.01	8.8	0.835	0.696	0.872	0.490	0.400	0.655	0.538	SE
Cyprus	10.423	78	0.99	14.1	0.871	0.686	0.913	0.570	0.510	0.726	0.624	D
Czech Republic	10.558	79	1.10	17.9	0.888	0.751	0.867	0.570	0.377	0.677	0.625	D
Denmark	10.916	78	1.15	13.9	0.929	0.713	0.959	0.880	0.660	0.816	0.730	D
Country	LN GPDpc by PPP	Ym+s	X/M	High Tech exports*	HDI	GINI**	Gender Index***	Corr. Index	Finance Index	Env Index	Index	Clasf GEDI <sup>1</sup>
	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	GEDI	
Dominican Republic	9.725	74	0.89	8.6	0.741	0.578	0.546	0.290	0.183	0.647	0.369	Em
Ecuador	9.360	66	0.96	8.1	0.757	0.553	0.61	0.320	0.192	0.574	0.370	Em

Egypt, Arab Rep.	9.307	69	0.54	0.6	0.696	0.685	0.548	0.320	0.303	0.612	0.281	Em
El Salvador	9.040	77	0.64	5.7	0.665	0.62	0.602	0.330	0.261	0.539	0.352	Em
Estonia	10.429	74	1.06	17.6	0.879	0.696	0.89	0.710	0.325	0.643	0.610	SE
Ethiopia	7.611	43	0.33	5.8	0.466	0.65	0.488	0.350	0.132	0.448	0.180	V
Finland	10.768	75	1.00	9.6	0.924	0.726	0.945	0.850	0.663	0.786	0.678	D
France	10.710	80	0.97	26.1	0.890	0.684	0.942	0.700	0.770	0.840	0.743	D
Gambia, The	7.637	58	0.58	0.1	0.459	0.641	0.375	0.300	0.105	0.424	0.118	V
Georgia	9.517	69	0.81	3.2	0.783	0.621	0.646	0.560	0.290	0.557	0.404	Em
Germany	10.878	82	1.18	15.9	0.938	0.681	0.916	0.810	0.687	0.784	0.732	D
Ghana	8.517	53	0.92	4.4	0.591	0.565	0.457	0.400	0.134	0.497	0.269	Em
Greece	10.278	78	0.97	12.0	0.871	0.656	0.876	0.480	0.535	0.736	0.591	SE
Guatemala	9.030	80	0.70	5.3	0.649	0.517	0.505	0.280	0.243	0.523	0.313	Em
Guinea	7.791	48	0.79	1.0	0.463	0.663	0.427	0.270	0.101	0.466	0.161	V
Guyana	9.104	47	0.87	0.1	0.668	0.446	0.505	0.380	0.176	0.479	0.189	V
Honduras	8.624	74	0.74	3.1	0.621	0.495	0.527	0.290	0.216	0.515	0.285	Em
Hungary	10.293	75	1.09	17.3	0.841	0.694	0.73	0.450	0.431	0.650	0.567	SE
Iceland	10.925	73	1.10	26.4	0.935	0.732	0.935	0.770	0.578	0.786	0.738	D
India	8.730	63	0.85	7.4	0.643	0.622	0.478	0.400	0.424	0.306	0.300	Em
Indonesia	9.300	64	1.05	8.2	0.704	0.606	0.547	0.370	0.367	0.469	0.390	Em
Iran, Islamic Rep.	9.584	66	1.05	1.3	0.799	0.592	0.512	0.300	0.372	0.582	0.332	Em
Ireland	11.266	88	1.22	29.0	0.939	0.672	0.899	0.740	0.689	0.788	0.785	D
Israel	10.570	82	1.04	21.4	0.904	0.61	0.896	0.620	0.563	0.750	0.673	D
Italy	10.640	81	1.11	7.9	0.881	0.641	0.92	0.500	0.791	0.770	0.624	D
Jamaica	9.169	67	0.71	2.1	0.725	0.455	0.592	0.440	0.275	0.586	0.334	Em
Japan	10.616	90	1.06	17.6	0.913	0.671	0.898	0.730	0.877	0.747	0.732	D
Jordan	9.194	81	0.62	1.8	0.722	0.663	0.529	0.480	0.388	0.622	0.367	Em
Kazakhstan	10.121	69	1.31	22.8	0.813	0.725	0.796	0.310	0.319	0.546	0.512	SE
Kenya	8.303	50	0.55	3.4	0.574	0.592	0.452	0.280	0.197	0.473	0.226	Em
Korea, Rep.	10.562	80	1.14	32.5	0.904	0.684	0.94	0.540	0.868	0.623	0.721	D
Kyrgyz Republic	8.526	65	0.52	17.6	0.671	0.727	0.611	0.290	0.126	0.549	0.321	Em
Lao PDR	8.890	49	0.79	37.4	0.602	0.636	0.535	0.290	0.139	0.429	0.312	Em
Latvia	10.257	75	1.00	17.5	0.849	0.644	0.792	0.580	0.278	0.661	0.559	SE
Lebanon	9.685	84	0.49	7.9	0.732	0.682	0.605	0.280	0.320	0.611	0.378	Em



<i>Country</i>	<i>LN GDPpc by PPP</i>	<i>Ym+s</i>	<i>X/M</i>	<i>High Tech exports*</i>	<i>HDI</i>	<i>GINI**</i>	<i>Gender Index***</i>	<i>Corr. Index</i>	<i>Finance Index</i>	<i>Env Index</i>	<i>Index</i>	<i>Clasf GEDI<sup>1</sup></i>
	<i>x1</i>	<i>x2</i>	<i>x3</i>	<i>x4</i>	<i>x5</i>	<i>x6</i>	<i>x7</i>	<i>x8</i>	<i>x9</i>	<i>x10</i>	<i>GEDI</i>	
Lesotho	8.001	66	0.49	0.2	0.514	0.551	0.455	0.420	0.143	0.338	0.158	V
Lithuania	10.429	77	1.03	12.6	0.866	0.627	0.871	0.590	0.258	0.693	0.558	SE
Luxembourg	11.634	84	1.19	7.1	0.908	0.651	0.935	0.820	0.755	0.791	0.694	D
Macedonia	9.652	67	0.80	4.0	0.758	0.658	0.85	0.350	0.278	0.611	0.403	Em
Madagascar	7.368	60	0.90	0.4	0.518	0.574	0.427	0.240	0.116	0.337	0.139	V
Malawi	6.945	62	0.81	11.5	0.482	0.553	0.382	0.310	0.091	0.492	0.188	V
Malaysia	10.190	74	1.11	50.5	0.802	0.59	0.714	0.470	0.679	0.592	0.633	D
Maldives	9.797	72	0.95	0.1	0.716	0.687	0.625	0.330	0.196	0.521	0.259	Em
Malta	10.640	83	1.17	29.9	0.883	0.708	0.803	0.560	0.560	0.809	0.705	D
Mauritania	8.212	48	0.64	0.0	0.524	0.674	0.388	0.280	0.125	0.392	0.089	V
Mauritius	9.972	79	0.77	2.4	0.793	0.632	0.627	0.500	0.465	0.566	0.423	SE
Mexico	9.893	78	0.95	21.6	0.765	0.546	0.654	0.290	0.403	0.597	0.469	SE
Moldova	9.363	65	0.57	5.4	0.709	0.741	0.768	0.310	0.351	0.520	0.371	Em
Mongolia	9.334	51	1.04	3.5	0.729	0.673	0.682	0.360	0.386	0.575	0.378	Em
Morocco	8.925	66	0.80	3.8	0.675	0.605	0.506	0.400	0.406	0.635	0.366	Em
Mozambique	7.157	49	0.63	11.7	0.442	0.46	0.43	0.250	0.125	0.464	0.175	V
Myanmar	8.438	64	0.71	6.1	0.577	0.693	0.54	0.300	0.154	0.453	0.281	Em
Namibia	9.279	69	0.80	1.3	0.643	0.409	0.53	0.510	0.406	0.585	0.328	Em
Nepal	8.039	56	0.21	1.2	0.574	0.672	0.512	0.310	0.216	0.314	0.109	V
Netherlands	10.921	81	1.15	22.5	0.932	0.715	0.956	0.820	0.702	0.755	0.762	D
Nicaragua	8.700	64	0.75	0.6	0.653	0.538	0.542	0.260	0.145	0.550	0.224	Em
Niger	6.741	44	0.50	3.0	0.373	0.657	0.351	0.330	0.138	0.357	0.074	V
Nigeria	8.555	65	1.00	1.9	0.533	0.43	0.427	0.270	0.236	0.548	0.241	Em
Norway	11.050	63	1.11	21.9	0.953	0.73	0.953	0.850	0.673	0.775	0.730	D
Pakistan	8.428	65	0.47	2.2	0.558	0.665	0.451	0.320	0.241	0.375	0.228	Em
Panama	10.325	71	0.93	9.2	0.793	0.501	0.538	0.370	0.348	0.627	0.429	SE
Paraguay	9.441	67	1.13	6.4	0.722	0.512	0.515	0.290	0.132	0.539	0.318	Em
Peru	9.434	67	1.08	5.0	0.756	0.567	0.617	0.370	0.399	0.619	0.417	SE
Philippines	8.956	79	0.76	60.2	0.709	0.556	0.573	0.340	0.392	0.577	0.485	SE
Poland	10.314	74	1.08	10.9	0.868	0.703	0.872	0.600	0.477	0.641	0.591	SE
Portugal	10.407	78	1.02	6.0	0.848	0.662	0.912	0.630	0.657	0.719	0.592	SE
Romania	10.215	77	0.95	9.8	0.813	0.64	0.684	0.480	0.304	0.648	0.498	SE
Russian Federation	10.169	68	1.26	12.2	0.822	0.628	0.738	0.290	0.482	0.638	0.493	SE
Rwanda	7.576	49	0.56	12.5	0.529	0.563	0.588	0.550	0.120	0.437	0.261	Em
Saudi Arabia	10.764	64	1.19	0.7	0.856	0.541	0.768	0.490	0.462	0.575	0.402	Em
<i>Country</i>	<i>LN GDPpc by PPP</i>	<i>Ym+s</i>	<i>X/M</i>	<i>High Tech exports*</i>	<i>HDI</i>	<i>GINI**</i>	<i>Gender Index***</i>	<i>Corr. Index</i>	<i>Finance Index</i>	<i>Env Index</i>	<i>Index</i>	<i>Clasf GEDI<sup>1</sup></i>
	<i>x1</i>	<i>x2</i>	<i>x3</i>	<i>x4</i>	<i>x5</i>	<i>x6</i>	<i>x7</i>	<i>x8</i>	<i>x9</i>	<i>x10</i>	<i>GEDI</i>	
Senegal	8.079	70	0.61	2.2	0.510	0.597	0.476	0.450	0.164	0.495	0.253	Em
Seychelles	10.198	75	0.88	89.3	0.800	0.532	0.427	0.600	0.312	0.660	0.549	SE

Sierra Leone	7.404	34	0.54	0.1	0.435	0.643	0.354	0.300	0.090	0.425	0.039	V
Singapore	11.451	89	1.17	53.1	0.934	0.541	0.934	0.840	0.749	0.642	0.807	D
Slovak Republic	10.339	76	1.02	11.8	0.854	0.748	0.813	0.500	0.321	0.706	0.559	SE
Slovenia	10.509	77	1.12	6.5	0.899	0.758	0.947	0.610	0.382	0.676	0.580	SE
South Africa	9.450	73	1.05	5.2	0.704	0.37	0.576	0.430	0.627	0.447	0.390	Em
Spain	10.586	79	1.11	7.7	0.891	0.653	0.923	0.570	0.864	0.784	0.643	D
Sri Lanka	9.447	72	0.75	1.0	0.776	0.602	0.619	0.380	0.284	0.606	0.335	Em
St. Lucia	9.517	75	0.83	4.6	0.744	0.488	0.664	0.550	0.321	0.562	0.415	Em
Sweden	10.872	78	1.08	15.4	0.935	0.712	0.957	0.840	0.709	0.805	0.733	D
Switzerland	11.115	89	1.19	14.1	0.943	0.673	0.96	0.850	0.931	0.874	0.785	D
Tanzania	7.941	46	0.89	2.6	0.522	0.595	0.461	0.360	0.115	0.508	0.216	V
Thailand	9.763	84	1.25	24.7	0.762	0.635	0.614	0.370	0.699	0.499	0.544	SE
Togo	7.324	34	0.76	0.2	0.510	0.569	0.433	0.320	0.198	0.418	0.058	V
Tunisia	9.269	74	0.78	7.4	0.738	0.672	0.701	0.420	0.264	0.624	0.429	SE
Turkey	10.238	71	0.85	2.9	0.805	0.586	0.679	0.400	0.516	0.530	0.417	SE
Uganda	7.469	56	0.72	2.1	0.522	0.572	0.468	0.260	0.117	0.443	0.186	V
Ukraine	8.975	63	0.86	6.3	0.747	0.74	0.711	0.300	0.211	0.529	0.364	Em
United Arab Emirates	11.094	65	1.32	11.9	0.864	0.675	0.862	0.710	0.489	0.589	0.610	SE
United Kingdom	10.736	80	0.96	23.1	0.919	0.652	0.872	0.820	0.852	0.799	0.743	D
United States	11.001	89	0.80	19.7	0.919	0.586	0.798	0.750	0.877	0.712	0.691	D
Uruguay	9.968	73	1.17	8.1	0.807	0.605	0.724	0.700	0.269	0.647	0.513	SE
Uzbekistan	8.782	48	0.91	1.6	0.707	0.353	0.697	0.220	0.261	0.459	0.228	Em
Vietnam	8.876	57	1.03	41.4	0.690	0.643	0.682	0.350	0.290	0.470	0.441	SE
Zambia	8.156	60	1.04	4.5	0.589	0.429	0.457	0.370	0.132	0.510	0.262	Em

Notes: \* % of total manufacturing exports; \*\* Inverse =  $[1 - GINI]$ ; \*\*\* Inverse =  $[1 - \text{Gender inequality index}]$ .

D: developed; SE: successful emerging; Em: emerging; V: vulnerable.

Source: own elaboration with the GEDI data of emerging economies.

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