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Economic Gender Gap: Which Countries Are Falling Behind?

Summary: Economic parity continues to be one of the main challenges to achieving gender equality worldwide, even though disparities between countries in the economic gender gap are frequently neglected. In this paper, we use a fuzzy logic approach to measure the extent to which countries are narrowing this gap. Specifically, we evaluate the degree to which 110 countries evolved from 2006 to 2019 in each of the three dimensions of the World Economic Forum's Economic Participation and Opportunity Index (remuneration, participation and advancement). We focus on which countries have been left behind and to what extent they have pulled away from the rest. The findings reveal that differences across countries in advancement gender gaps are more evident than in the other dimensions. Moreover, while there are signs of convergence in the closure of the gender gaps in remuneration, we do not find such evidence for the advancement and participation gender gaps.

Key words: Economic gender gap, Fuzzy approach, "Leaving no one behind".

JEL: C02, J16, O57.

Progressing towards gender parity and building fairer and more inclusive societies should be goals of all international and national leaders. Sustainable Development Goal (SDG) 5 calls for achieving gender equality to ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life. Additionally, SDG 10 calls for reducing inequalities within and among countries according to the "leaving no one behind" (LNOB) principle underlying the 2030 Agenda for Sustainable Development at both individual and country levels (United Nations 2015; Stephan Klasen and Marc Fleurbaey 2018).

Without total equality between genders, a share of the world's talent will remain underdeveloped, the SDG will not be achieved, and shared prosperity will not be affordable. Gender inequalities remain in all stages of development, spheres of societies and dimensions of human beings. In this sense, the need to empower women through public policies aimed to increase political, social and economic equity, and to broaden their access to education and health should be kept especially in mind (Augusto Lopez-Claros and Saadia Zahidi 2005). According to the World Economic Forum (2019), it will take almost 100 years to achieve gender parity at the current pace of change, an unsustainable time frame in every respect. The higher divide remains in the political area, where only 24.7% of the gap has been closed to date (World Economic Forum 2019). However, progress in this area suggests that the divergence may be completely

closed within 95 years. Furthermore, the area in which it will take more years to completely close the gap is the economic one: it has narrowed by only 0.15 percentage points every year over the period 2006-2019 and at the current rate would take 257 years to close (World Economic Forum 2019). This brings to light that closing the gender gap is not a homogenous phenomenon across areas, but a complex goal that varies depending on each area and requires specific studies to monitor how the path to eradication is evolving.

This study focuses on tracking the economic gender gap. Apart from being the area in which the gap will take longer to completely close, evidence shows that economic gender equality, among other benefits, fosters economic growth, diversifies the economy, helps reduce income inequality and leads to an inclusive society (Kalpana Kochhar, Sonali Jain-Chandra, and Monique Newiak 2017). According to the International Labour Organization (ILO) (2017), just by closing 25% of the gender gap in terms of participation in the labour force by 2025, global GDP could increase by US$ 5.3 trillion. Furthermore, reducing the economic gender gap means empowering women and increasing their involvement in economic life. For instance, when women participate in controlling household spending, either through their own earnings or cash transfers, there is widespread benefit for the whole close environment (Luis Rubalcava, Graciela Teruel, and Duncan Thomas 2009). Thus, increasing women's economic involvement in domestic issues contributes to reducing poverty, since they tend to prioritize the satisfaction of basic needs such as clothing, food or shelter.

The present paper attempts to contribute to the literature by providing an adequate measure to quantify how much countries are left behind in the economic gender gap. In particular, it examines each of the three dimensions of the World Economic Forum's (WEF) economic participation and opportunity gap, namely, remuneration, participation and advancement. In line with United Nations Women (2019), which underlines that more effort is needed to map existing data sources and to track progress of gender-specific indicators over time, our proposal develops a new measure based on fuzzy set theory that estimates the extent to which a country was left behind in the respective economic dimensions in 2006 and just before the pandemic in 2019, highlighting how progress has been shared among countries over this period and identifying those countries that have pulled away from the rest.

This approach may be particularly interesting from a policy viewpoint, as it could shed light on the nature and magnitude of the economic gender gap across countries from a relative perspective that goes beyond absolute measures by taking better performing countries as a benchmark. It may be especially relevant in a context where the COVID-19 crisis might disproportionally impact women and where the progress made in reducing economic gender gap over the last decades is likely to suffer huge setbacks in some economically developed and developing countries (Titan Alon et al. 2020; Claudia Hupkau and Barbara Petrongolo 2020).

The remainder of the paper is as follows. Section 1 presents the three dimensions of the gender gap in economic participation and opportunity. Section 2 describes our methodological approach. Section 3 presents and discusses the main results. Finally, Section 4 provides some conclusions.

1. Gender Gaps in Economic Participation and Opportunity

The economic gender gap reveals inequalities both in the quantity and quality of women's economic involvement, with significant implications in terms of promoting economic growth and reducing poverty. In line with the Gender and Development (GAD) theories developed at the end of the 1980s and 1990s focusing on the unequal relations and mechanisms that generated gender inequality, Amartya Sen (1999) contributed to expand the idea that the world needs women as dynamic agents of social transformation and not as passive recipients of help. Those contributions helped consider employment, education and ownership rights as key instruments that allow women to manage their close environment and encourage economic performance. Thus, regarding the quantitative presence of women in the labour force, even when 70% of women would like to participate in the labor market as wage earners, only 50% of them achieve this goal (76% if we refer men) (Gallup and International Labour Organization 2017). Furthermore, the quantity of female economic involvement concerns not only the total share of women taking part in the workforce, but also a fair remuneration in comparison to men. Women not only earn less than men on average[1], but their wages are also lower for similar work (World Economic Forum 2019). According to International Labour Organization (2016), the gender wage gap, i.e. differences in salary for similar work, is estimated to be 23 percent and if the trend prevails, it will take more than 70 years to completely close it. On the other hand, the quality of women's economic involvement concerns the existence of equal opportunities for women, beyond their mere presence as workers. Even when women may take part in the labour force, their jobs are mainly concentrated in low paid niches (also called horizontal segregation or "glass walls") with an absence of opportunities and scarce upward mobility. Thus, women tend to occupy mostly pink-collar professions, such as care-oriented tasks, administrative office work or teaching, where the prevailing societal norms confine them to lower job categories than men and offer limited opportunities for advancement. That means that, even when women might be wage-earners in similar rates as men, the presence of women in executive positions and other positions entailing high status and power is much smaller. In fact, they make up less than 25 percent of management positions globally, 22 percent in ministerial and parliamentary roles (Georges Desvaux et al. 2017) and entail around 26 percent of all CEOs (International Labour Organization 2015).

In order to evaluate the economic gender gap across countries, this research uses the WEF's Global Gender Gap Index (GGI). Since 2006, the GGI has served as a compass to track progress on relative gaps between women and men across four areas (health, education, economy and politics) (see. e.g. Eun Mee Kim 2017; Binli Chen and Hailan He 2020; Taniya Ghosh and Sanika S. Ramanayake forthcoming). Together with the Gender Inequality Index (GII) and the Social Institutions and Gender Index (SIGI), the GGI is considered in the literature one of the three main gender equality indices (Nour Barnat, Steve Macfeely, and Anu Peltola 2019). Nevertheless, in comparison to the others, it has the widest country coverage and is regularly updated, so

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[1] According to the World Economic Forum (2019), the global average of woman's income is about $11,000 (in Purchasing Power Parity, PPP), while the average income of a man is $21,000 (in PPP).

the data are reasonably fresh and future comparisons are easily performed. Further-more, in relation to the economic area, the GGI provides data information about five indicators grouped in three dimensions (see Table 1), while SIGI presents four indica-tors (secure access to land assets, secure access to non-land assets, secure access to formal financial services, workplace rights) and GII only one (female labour force par-ticipation rate), what might help us to propose a more varied and holistic vision of the economic gender gap.

The overall GGI score is a synthesis of performances in the relative gaps be-tween women and men in four major areas: health and survival, educational attain-ment, economic participation and opportunity, and political empowerment. As such, particular aspects of gender gaps across dimensions might be disguised. With regards to the economic area, following the methodology of the index since its original con-ception in 2006 (Ricardo Hausmann, Laura D. Tyson, and Saadia Zahidi 2006), the economic participation and opportunity (EPO) index focuses on the differences be-tween women and men in three key aspects related to opportunities and economic per-formance: (i) the participation gap (P); (ii) the remuneration gap (R); and (iii) the ad-vancement gap (A). More specifically, the *participation gap* refers to the difference between women and men in labour force participation rates. The *remuneration gap* concerns differences across payment received in wages and is captured by two main indicators: the ratio of estimated female-to-male earned income and a qualitative index gathered from the WEF's annual Executive Opinion Survey (wage equality for similar work). Finally, the *advancement gap* captures the unequal representation of both sexes in management and responsibility positions in both public and private spheres through the ratio of women to men among legislators, senior officials and managers, as well as the ratio of women to men among technical and professional workers (World Economic Forum 2019). The EPO index is computed as the average of the normalized underlying indicators of the three dimensions.

Table 1 Economic Participation and Opportunity (EPO) Index

Dimensions	Indicator	Source
Participation gap (P)	Labour force participation rate (%)	International Labour Organization
Remuneration gap (R)	Estimated earned income (PPP, international $)	International Labour Organization
	Wage equality for similar work (survey, 1-7 scale)	World Economic Forum, Executive Opinion Survey (EOS)
Advancement gap (A)	Legislators, senior officials and managers (%)	International Labour Organization
	Professional and technical workers (%)	

Source: Own elaboration from World Economic Forum (2019).

Both the EPO index and its dimensions are composed on a scale from 0 (impar-ity) to 1 (parity). The higher the score, the lower the gap between women and men. The Global Gender Gap Report 2020 benchmarks 153 countries, of which we consider 110 that have been included both in the report when the first edition was launched in 2006 and the 2019 edition.

Some assumptions that are important for clarifying the meaning of the scores should be noted. First, the index focuses on differences between men and women rather than the level of development in economic participation and opportunities. Hence,

countries with a high level of development may obtain low scores if disparity between men and women is steep, while countries with low levels of development might rank higher if there is no inequality in terms of gender. Thus, the EPO index penalizes or rewards countries based on the size of the gap between males and females in the indicators mentioned in Table 1, but not for the overall levels of economic development in the country.

Second, the index addresses gender equality rather than women's empowerment, as it focuses on disparities between men and women regardless of the general status of women in society. This means that countries rank higher or lower depending on the differences in men's and women's scores in the selected indicators. Therefore, the index identifies the countries in which the outcomes for women equal those for men, taking into account that cases where women perform better than men, the score will be equal to 1 (and not higher).

Finally, the three dimensions of the EPO index attempt to draw a picture of the status of a country in terms of opportunities and economic participation, so questions related to country-specific policies, rights, culture and customs - factors that are not considered in the World Economic Forum index. Consequently, the indicators focus on the "outcomes" rather than on "input" or "means". The idea is to provide information on each country's situation without analysing the contextual factors that might have contributed to it, thus leaving the path open for an analysis of potential causes and implications on the basis of the results.

2. Measuring how Far a Country Is Left Behind

For each of the three dimensions of the EPO, the WEF provides country performances that allow for effective comparisons across country peers. For instance, according to the EPO index, while the top 10 countries have closed at least 80% of the gap between men and women in the workplace, the bottom 10 countries have only closed 40% (World Economic Forum 2019). This highlights that some countries have significantly progressed, whilst others seem to be left behind in this facet, with the implications that this may entail in terms of meeting the SDGs. These assessments are designed to create global awareness of the challenges posed by gender gaps and the opportunities created by reducing them.

Our proposal allows us to go further in evaluating countries' performance in the different dimensions and captures the extent of countries' shortfalls, which are assessed not with respect to some adequacy threshold but instead relative to the "best-performing" countries with lower gender gaps, thus introducing a relative assessment. We could apply widely used indices such as the coefficient of variation, the Gini index or the Palma index to analyse between-country inequality in economic gender gaps. Nonetheless, even though these indices could be relevant, they are global measures that quantify inequality but do not evaluate the extent to which a country is left behind or how progress is shared among specific countries, as we propose with our measure. We propose the application of fuzzy set theory to quantify the extent to which countries are left behind in the three dimensions of the EPO index. Fuzzy logic has been applied previously in many fields of knowledge, from control systems in consumer electronics or artificial intelligence to the measurement of poverty or human development (see,

e.g., Francisca García-Pardo and Elena Bárcena-Martín forthcoming). In our case, we focus on the economic gender gap across countries and define fuzzy sets to measure the concept of leaving a country behind - that is, we address the shortfalls of countries with respect to those with the smallest economic gender gaps (higher EPO index values). We use the definition of fuzzy set initiated by Lotfi A. Zadeh (1965). Given a set X of elements $x \in X$ any fuzzy set A of X will be defined as follows: $A = \{x, \mu_A(x)\}$ where $\mu_A: X \to [0,1]$ is called the membership function in the fuzzy set A. The value $\mu_A(x)$ indicates the degree of membership of x in A. Thus $\mu_A(x) = 0$ means that x does not belong to A, whereas $\mu_A(x) = 1$ means that x belongs to A completely and when $0 < \mu_A(x) < 1$ then x partially belongs to A.

Our aim is to measure the concept of being left behind (LB) in each specific dimension of the EPO index (P, R and A) by assigning a value between 0 and 1 that indicates the degree a country is left behind. To this end, we define a fuzzy set for each dimension and use the membership function proposed by García-Pardo, Bárcena-Martín, and Salvador Pérez-Moreno (2020), which is based on the concept of mean deprivation introduced by Peter J. Lambert and John D. Hey (1979). Hence, for country i, $LB(i)$ represents the *degree country i is left behind in each dimension h of the economic gender gap* and is defined as[2]:

$$LB_h(i) = \frac{\sum_{j=i+1}^{k}(x_j - x_i)}{k\,\eta} = 1 - L\big(F(x_i)\big) - \frac{x_i}{\eta}\big(1 - F(x_i)\big), \qquad (1)$$

where x_i is the aggregated values of indicator h for country i, countries are ranked in ascending order of this indicator, $x_1 < x_2 < \cdots < x_k$ - we study k countries - and η is the average value of x for all countries considered. $F(x_i)$ is the distribution function and $L\big(F(x_i)\big) = \frac{\sum_{j=1}^{i} x_j}{\sum_{j=1}^{k} x_j}$ is the value of the Lorenz curve for country i. That is, the value of the membership function assigned to each country is the average of the relative shortfalls of the value of country's i dimension with respect to countries with a better performance divided by the average of the dimension.

Thus, the three previously defined fuzzy sets assign the degree to which a country i is left behind in each dimension of the economic gender gap (P, R and A). A country i is completely left behind in dimension h if $LB_h(i) = 1$, that is, it is at the bottom of the distribution, while if it is leading the ranking in a dimension h then $LB_h(i) = 0$.

The information provided by these fuzzy sets (i.e. the extent to which countries are left behind) may be regarded as complementary to the level of achievement in the sense that even a country with a high value in a particular dimension may be at the bottom of the distribution. For instance, a country can have an index of 0.9 in a dimension even though this value on its own does not assess the relative performance of that country. That is, although it may be a high value for the dimension, the country could

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[2] $LB_h(i) = \frac{\sum_{j=i+1}^{k}(x_j-x_i)}{k\,\eta} = \frac{\sum_{j=i+1}^{k}x_j}{k\,\eta} - \frac{(k-i)x_i}{k\,\eta}$. On the one hand, $\frac{\sum_{j=i+1}^{k}x_j}{k\,\eta} = 1 - \frac{\sum_{j=1}^{i}x_j}{\sum_{j=1}^{k}x_j} = 1 - L\big(F(x_i)\big)$. On the other hand, $\frac{(k-i)x_i}{k\,\eta} = \left(1 - \frac{i}{k}\right)\frac{x_i}{\eta} = (1 - F(x_i))\frac{x_i}{\eta}$. Therefore $LB_h(i) = \frac{\sum_{j=i+1}^{k}(x_j-x_i)}{k\,\eta} = 1 - L\big(F(x_i)\big) - \frac{x_i}{\eta}\big(1 - F(x_i)\big)$.

be at the lower tail of the distribution if most of the other countries have higher values. Hence, our measures assist us in quantifying to what extent the values of country i in the respective dimensions of the economic gender gap are a good/bad relative achievement and how much that country is falling behind.

From a dynamic standpoint, we can assess the change in $LB_h(i)$ between time t and $t - s$ as:

$$\Delta LB_h(i) = LB_{h_t}(i) - LB_{h_{t-s}}(i). \tag{2}$$

Therefore, we can determine if countries with an initially lower $LB_{h_{t-s}}(i)$ have experienced larger increases such that countries initially more left behind in terms of economic gender gaps are those that have closed the shortfalls to a greater extent than those with an initially better position. In this way, we could talk about convergence.

3. Which Countries Are Left Behind?

We analyse data on the three dimensions of the economic participation and opportunity gender gap (participation gap P, remuneration gap R and advancement gap A) for 110 countries in 2006 and 2019, which are the first and last year with available data. These countries have consistently reported information on the participation, remuneration and advancement gaps for the two years analysed. Table A1 in the Appendix shows the list of countries analysed.

We proceed in two steps. First, we compute the extent to which each country is left behind in each dimension. Second, we aggregate information across countries to obtain a measure of the overall degree countries are left behind in terms of each LB_h dimension. These measures, LB_h, are displayed in Table A1 of the Appendix and are represented in Figure 1. Let us recall that the higher the LB_h, the more left behind the country.
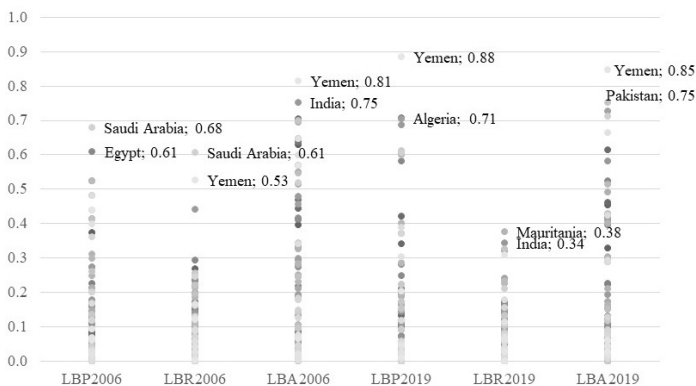

Notes: The mean values of the dimensions for 2006 and 2019 are $LB_{P_{2006}}$: 0.128; $LB_{R_{2006}}$: 0.099; $LB_{A_{2006}}$: 0.207; $LB_{P_{2019}}$: 0.134; $LB_{R_{2019}}$: 0.082; $LB_{A_{2019}}$ 0.161.

Source: Authors' computation based on data from Hausmann, Tyson, and Zahidi (2006) and World Economic Forum (2019).

Figure 1 LB_P, LB_R and LB_A for 2006 and 2019

First of all, in respect to the mean values it should be noted that the remuneration gap is the dimension in which countries fall less behind: ($LB_{R_{2006}}$ and $LB_{R_{2019}}$ are 0.099 and 0.082, respectively). In other words, the average level at which countries are left behind in remuneration is lower than in the other two dimensions. Advancement is the dimension with the highest degrees of LB, but is also the dimension that has most reduced the average degree to which countries are left behind (0.207 in 2006 to 0.161 in 2019). Even though the countries reduced, on average, the remuneration and advancement gap in the period 2006-2019, the extent to which they were left behind in the participation gap increased. In terms of specific countries, Saudi Arabia (0.68) and Egypt (0.61) in 2006, as well as Yemen (0.88) and Algeria (0.71) in 2019, were the countries with the highest LB in the participation gap, while Saudi Arabia (0.61) followed by Yemen (0.53) in 2006 and Mauritania (0.38) and India (0.34) in 2019, fell significantly behind in remuneration. Yemen is the most left behind country in the advancement gap with 0.81 in 2006 and 0.85 in 2019. Some countries, such as India (0.75) in 2006 and Pakistan (0.75) in 2019, also fell significantly behind the rest in this dimension.

As regards each dimension h, we focus on the changes in LB_h between 2006 and 2019 in relation to LB_h in 2006 (Figures 2, 3 and 4).
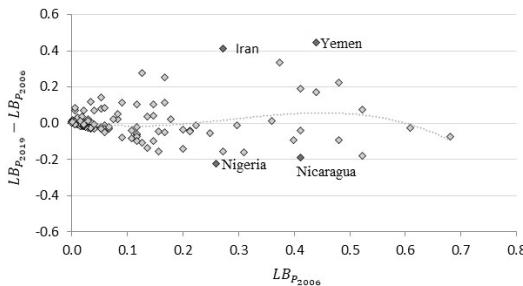
Source: Authors' computation based on data from Hausmann, Tyson, and Zahidi (2006) and World Economic Forum (2019).

Figure 2 Changes in $\Delta LB_P = LB_{P_{2019}} - LB_{P_{2006}}$ compared to $LB_{P_{2006}}$

Regarding the changes in the level of being left behind in the participation gap (*P*) between 2006 and 2019, in Figure 2 we observe a large concentration of spots around the origin of the coordinates. This indicates that countries presenting a low LB_P index in 2006 continue to lead the ranking of countries with less participation gap inequality. The most left behind countries in 2006 exhibit a varied behaviour as some of them increased the distance with less unequal countries, while others reduced the distance. Half of the countries within the 10 highest LB_P indices in 2006 (i.e. those with greater gender inequality in terms of the labour force participation rate) improved their position (i.e. reduced inequality), while the other half worsened. Yemen and Iran stand out negatively since these countries increased their degrees of being left behind over the study period by 0.45 and 0.41, respectively. On the other hand, Nigeria (-0.22) and Nicaragua (-0.19) are the top two countries that most reduced their degrees of being left behind.
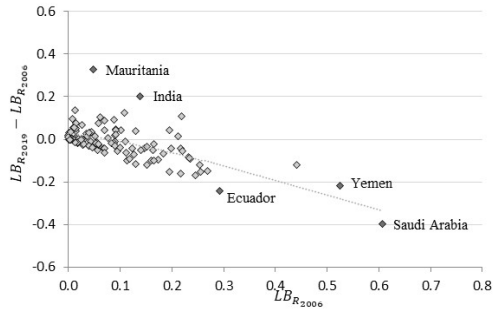
Figure 3 Changes in $\Delta LB_R = LB_{R_{2019}} - LB_{R_{2006}}$ compared to $LB_{R_{2006}}$

With regard to the remuneration gap (R), it should be highlighted that the 10 worst performing countries in LB_R in 2006 significantly reduced their distance from better situated countries (Figure 3). In fact, 7 of these countries are among the top 10 that have most reduced the distance during the period. In particular, Saudi Arabia (-0.40), Ecuador (-0.24) and Yemen (-0.22) were the countries that improved the most. On the other hand, 7 out of the 10 countries that were least behind (i.e. the best per-forming in 2006) slightly worsened their situation over the period 2006-2019 in rela-tive terms, as they increased their degrees of falling behind, which seems to reflect a certain trend towards convergence. Mauritania (+0.33) and India (+0.20) are the coun-tries that fell most behind in R during this period.
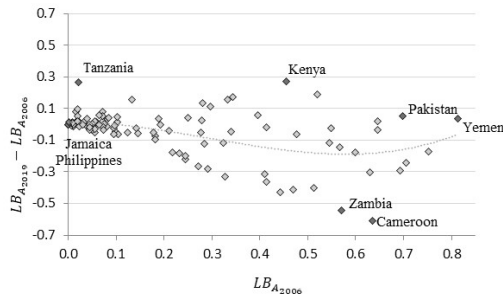
Figure 4 Changes in $\Delta LB_A = LB_{A_{2019}} - LB_{A_{2006}}$ compared to $LB_{A_{2006}}$

Despite the fact that the advancement gap (A) is the indicator that improved the most during the study period, it continues to display the highest degrees in left behind - that is, the highest cross-country disparity (Figure 4). The two best-performing coun-tries in 2006 (Jamaica and Philippines) continue to have the smallest advancement gaps. This conclusion could be broadly extended to the best performing countries, which present a similar situation 13 years later with only slight changes. On the other hand, most of the worst-performing countries in 2006 have improved their situation,

excepting Yemen (last country in 2006) and Pakistan. Special attention should be given to Cameroon and Zambia, two of the worst-performing countries in 2006 that improved most in terms of the advancement gap over this period (-0.61 and -0.54, respectively).

Overall, it is noteworthy that the percentage of countries that improved their relative position (i.e. reduced the degree to which they were left behind) over the period 2006-2019 is 60.91%, 59.09% and 56.36% for LB_P, LB_R and LB_A, respectively. With the purpose of detecting possible patterns by country groups, we categorise the countries by region and income level according to the World Bank classification (World Bank 2020). First, we find that countries in the Middle East and North Africa as well as South Asia were, on average, left behind at higher degrees than the rest of regions in all the participation, remuneration and advancement gaps in 2006 (see Table 2a). By contrast, countries in Europe and Central Asia and North America showed lower degrees of falling behind. In terms of progress, it should be highlighted that the advancement gap is the dimension in which all regions (excepting the 2 countries of North America) performed better in 2019 than in 2006.

Table 2a Average LB in Each Dimension of Economic Gender Gap by Regions

Region	# of countries	2006			2019			ΔLB_h		
		LB$_P$	LB$_R$	LB$_A$	LB$_P$	LB$_R$	LB$_A$	LB$_P$	LB$_R$	LB$_A$
East Asia & Pacific	11	0.084	0.023	0.170	0.080	0.028	0.111	-0.004	0.006	-0.059
Europe & Central Asia	39	0.056	0.069	0.088	0.044	0.050	0.078	-0.012	-0.018	-0.010
Latin America & Caribbean	20	0.154	0.182	0.113	0.164	0.104	0.045	0.010	-0.078	-0.068
Middle East & North Africa	12	0.401	0.221	0.457	0.477	0.172	0.452	0.076	-0.049	-0.005
North America	2	0.013	0.019	0.011	0.015	0.022	0.031	0.002	0.003	0.019
South Asia	5	0.303	0.161	0.564	0.401	0.211	0.500	0.098	0.050	-0.064
Sub-Saharan Africa	21	0.075	0.041	0.326	0.050	0.074	0.218	-0.025	0.033	-0.107

Notes: $\Delta LB_h = LB_{h_{2019}} - LB_{h_{2006}}$.

Source: Own elaboration.

Regarding the evolution by number of countries during 2006-2019, we find that a significant number in Europe & Central Asia improved their degrees of LB (i.e. they reduced cross-country distances) in terms of participation and remuneration (see Table 2b). The Latin America and Caribbean region also showed a notable improvement in remuneration and advancement, while most countries in Sub-Saharan Africa improved their situation only in terms of advancement. Conversely, the regions of Europe and Central Asia, as well as North America, worsened in advancement (i.e. increased inequality), while Sub-Saharan Africa worsened in terms of remuneration.

By income level, we find that low- and high-income countries display lower degrees of falling behind in participation and remuneration gap both in 2006 and 2019, while lower and upper-middle income countries are more left behind (see Table 3). These results might indicate the "feminization U", a U-shaped line that reflects trends of female labour force participation (see, e.g. Orazio Attanasio, Hamish Low, and Virginia Sanchez-Marcos 2005; Isis Gaddis and Stephan Klasen 2014). According to this hypothesis, women's participation in the labour force is high at an early stage of development through employment in the agricultural sector, but as an area develops

and the industrial sector grows, women's participation in the labour force decreases as they are displaced from agriculture and excluded from manufacturing and administration tasks. Finally, in a third stage, female workforce participation increases in areas with a higher level of development due to structural reforms, the higher educational level of women and a decrease in fertility rates.

Table 2b Number of Countries by Regions by Change in Average LB in Each Dimension of Economic Gender

| Region | # of countries | ΔLB_h | | | | | |
| | | LB_P | | LB_R | | LB_A | |
		-	+	-	+	-	+
East Asia & Pacific	11	6	5	4	7	6	5
Europe & Central Asia	39	30	9	26	13	16	23
Latin America & Caribbean	20	10	10	17	3	16	4
Middle East & North Africa	12	7	5	7	5	5	7
North America	2	1	1	1	1	0	2
South Asia	5	1	4	2	3	4	1
Sub-Saharan Africa	21	12	9	8	13	15	6

Notes: Negative sign reflects the number of countries that improved their left behind level between 2006 and 2019 (reduced distances). Positive sign reflects number of countries that worsened their left behind level between 2006 and 2019 (increased distances). $\Delta LB_h = LB_{h_{2019}} - LB_{h_{2006}}$.

Source: Own elaboration.

In our analysis in particular, we find that in 2006 the left behind level decreases in the advancement gap as the income level is higher, while in 2019 upper middle-income countries present even lower degrees of left behind than high-income countries. Additionally, our findings show that high-income countries improved their situation (lower degrees of being left behind) in remuneration, and especially in terms of participation, while they practically do not improve in advancement.

Table 3 Average LB by Income Level

| Income level | # of countries | 2006 | | | 2019 | | | ΔLB_h | | |
		LB_P	LB_R	LB_A	LB_P	LB_R	LB_A	LB_P	LB_R	LB_A
Low income	8	0.061	0.087	0.459	0.140	0.096	0.371	0.079	0.009	-0.088
Lower middle income	28	0.180	0.080	0.326	0.209	0.108	0.227	0.028	0.028	-0.099
Upper middle income	28	0.145	0.125	0.155	0.168	0.094	0.099	0.023	-0.031	-0.056
High income	46	0.098	0.098	0.121	0.065	0.058	0.122	-0.032	-0.040	0.001

Notes: $\Delta LB_h = LB_{h_{2019}} - LB_{h_{2006}}$.

Source: Own preparation.

4. Conclusions

In line with SDG 5 calling for gender equality and women's empowerment and SDG 10 to reduce inequality within and among countries, and following the "leaving no one behind" principle underlying the 2030 Agenda for Sustainable Development, this paper attempts to provide an adequate measure to assess the extent to which countries are left behind in terms of the economic gender gap. We use World Economic Forum data on each of the dimensions of the economic participation and opportunity gap -

remuneration, participation and advancement - as a framework for capturing the magnitude of gender-based disparities and tracking their progress over time. In particular, we examine 110 countries in 2006 and in 2019, the last pre-pandemic year. We evaluate which countries are being left behind and how much they are left behind in each dimension of the economic gender gap, as well as the extent to which the progress in closing the gaps over that period has been homogeneous across countries or has taken place in certain groups of countries.

Our analysis highlights that, among the dimensions of economic participation and opportunity, remuneration is the dimension in which countries are left less behind, while countries fall furthest behind in the advancement gap. Likewise, over the period 2006-2019, advancement is the dimension that has most reduced the extent to which countries are left behind and remuneration also reduces the degree countries are left behind (there is lower cross-country inequality), while the opposite occurs for participation (more cross-country inequality).

The computations confirm that the extent to which countries are left behind and the progress in reducing the extent to which countries are left behind in the respective economic gender gaps significantly differ across the world. Countries in the Middle East and North Africa and in South Asia present, on average, higher degrees of being left behind than the rest of the regions in all participation, remuneration and advancement gaps, whereas countries in Europe and Central Asia and North America are left behind to a lower degree. It is worth underlining, nevertheless, that, while a significant number of high-income countries improved their situation (lowering their left behind degrees) in remuneration and especially in terms of participation, the opposite occurs when focusing on advancement. Furthermore, we observe that, overall, countries presenting lower left behind levels in participation in 2006 continue to lead the ranking of countries with a lower participation gap, even though this circumstance is not so remarkable in the two remaining dimensions, which show more varied experiences.

From a policy viewpoint, our approach sheds light on the magnitude of the economic gender gap from a global comparative perspective, as it assesses a country's performance with respect to the rest of countries, specifically with respect to better performing countries. Thus, our proposal complements the information on economic gender gaps provided by international institutions and organisations by offering a novel measure that reveals the relative performance of countries in comparison to the most successful ones in terms of economic gender gaps. Such information could serve to raise awareness about the possibilities of countries to act both nationally and internationally in closing the economic gender gap in its different dimensions, taking into consideration what works and what does not in terms of promoting gender equality in different situations and contexts. Obviously, the appropriate set of policies will depend, among other things, on each country's level of development. In any event, the adoption of gender-oriented public policies, from fiscal (such as investing in education and infrastructure, subsidising childcare and offering parental leaves) to labour market policies (legislation aimed at ensuring equal employment opportunities and equal pay) should be country-specific and tailored to the needs of the socioeconomic reality in question.

Finally, attention should be drawn to the gendered impacts of the COVID-19 crisis, which have substantial potential implications in terms of gender inequality in economic participation and opportunity. In this vein, the International Monetary Fund has recently made a call for policymakers to further strengthen efforts and adopt measures to limit the scarring economic effects of the pandemic on women (Kristalina Georgieva et al. 2020). Indeed, the COVID-19 crisis may mark a milestone in the progress towards gender equality in numerous countries, with a potential increase in cross-county inequality depending on the incidence of the pandemic and the policy responses in each territory. Our approach provides a policy tool to track changes in the economic gender gap across countries from a relative global perspective, identify countries falling behind in terms of the economic gender gap and those pursuing more effective gender equality policies.

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Appendix

Table A1 Left Behind: Degrees in Participation, Remuneration and Advancement by Country

	Country	Region	Income group	2006			2019			Changes 2019-2016		
				LB$_{P2006}$	LB$_{R2006}$	LB$_{A2006}$	LB$_{P2019}$	LB$_{R2019}$	LB$_{A2019}$	LB$_P$	LB$_R$	LB$_A$
1	Albania	Europe & Central Asia	Upper middle income	0.08	0.03	0.06	0.11	0.00	0.07	0.02	-0.02	0.02
2	Algeria	Middle East & North Africa	Lower middle income	0.37	0.09	0.63	0.71	0.14	0.33	0.33	0.05	-0.30
3	Angola	Sub-Saharan Africa	Lower middle income	0.02	0.04	0.40	0.00	0.04	0.45	-0.02	-0.01	0.06
4	Argentina	Latin America & Caribbean	Upper middle income	0.08	0.24	0.08	0.13	0.14	0.07	0.05	-0.09	-0.01
5	Australia	East Asia & Pacific	High income	0.02	0.01	0.02	0.02	0.05	0.03	0.00	0.04	0.01
6	Austria	Europe & Central Asia	High income	0.04	0.27	0.08	0.01	0.12	0.10	-0.03	-0.15	0.02
7	Bahrain	Middle East & North Africa	High income	0.52	0.15	0.71	0.34	0.10	0.46	-0.18	-0.04	-0.25
8	Bangladesh	South Asia	Lower middle income	0.17	0.22	0.65	0.42	0.17	0.61	0.25	-0.04	-0.03
9	Belgium	Europe & Central Asia	High income	0.06	0.10	0.06	0.02	0.04	0.06	-0.04	-0.05	0.00
10	Benin	Sub-Saharan Africa	Lower middle income	0.16	0.00	0.44	0.00	0.00	0.01	-0.16	0.00	-0.43
11	Bolivia	Latin America & Caribbean	Lower middle income	0.05	0.22	0.10	0.13	0.17	0.05	0.08	-0.05	-0.05
12	Botswana	Sub-Saharan Africa	Upper middle income	0.11	0.01	0.04	0.02	0.01	0.03	-0.08	0.00	-0.01
13	Brazil	Latin America & Caribbean	Upper middle income	0.07	0.20	0.01	0.10	0.16	0.02	0.02	-0.04	0.01
14	Bulgaria	Europe & Central Asia	Upper middle income	0.03	0.04	0.25	0.01	0.07	0.03	-0.02	0.03	-0.22
15	Burkina Faso	Sub-Saharan Africa	Low income	0.01	0.00	0.57	0.07	0.03	0.42	0.07	0.03	-0.14
16	Cambodia	East Asia & Pacific	Lower middle income	0.00	0.00	0.47	0.02	0.01	0.06	0.02	0.01	-0.41
17	Cameroon	Sub-Saharan Africa	Lower middle income	0.13	0.07	0.64	0.02	0.11	0.03	-0.11	0.04	-0.61
18	Canada	North America	High income	0.01	0.01	0.02	0.00	0.02	0.04	-0.01	0.01	0.02
19	Chad	Sub-Saharan Africa	Low income	0.01	0.03	0.41	0.04	0.06	0.09	0.03	0.02	-0.32
20	Chile	Latin America & Caribbean	High income	0.27	0.23	0.09	0.12	0.15	0.13	-0.15	-0.08	0.04
21	China	East Asia & Pacific	Upper middle income	0.01	0.04	0.28	0.04	0.05	0.22	0.03	0.02	-0.05
22	Colombia	Latin America & Caribbean	Upper middle income	0.04	0.09	0.01	0.11	0.08	0.00	0.07	-0.01	-0.01
23	Costa Rica	Latin America & Caribbean	Upper middle income	0.22	0.15	0.18	0.21	0.12	0.11	-0.01	-0.03	-0.07
24	Croatia	Europe & Central Asia	High income	0.05	0.04	0.07	0.02	0.08	0.09	-0.03	0.04	0.02
25	Cyprus	Europe & Central Asia	High income	0.04	0.15	0.19	0.01	0.03	0.22	-0.03	-0.12	0.03
26	Czech Republic	Europe & Central Asia	High income	0.03	0.09	0.07	0.04	0.07	0.15	0.01	-0.02	0.08
27	Denmark	Europe & Central Asia	High income	0.01	0.01	0.07	0.00	0.01	0.13	-0.01	0.00	0.06
28	Dominican Republic	Latin America & Caribbean	Upper middle income	0.21	0.17	0.05	0.17	0.08	0.04	-0.04	-0.09	-0.01
29	Ecuador	Latin America & Caribbean	Upper middle income	0.06	0.29	0.22	0.14	0.05	0.04	0.08	-0.24	-0.18
30	Egypt	Middle East & North Africa	Lower middle income	0.61	0.10	0.55	0.58	0.14	0.52	-0.03	0.04	-0.02
31	El Salvador	Latin America & Caribbean	Lower middle income	0.15	0.13	0.10	0.25	0.17	0.07	0.10	0.04	-0.02
32	Estonia	Europe & Central Asia	High income	0.02	0.05	0.02	0.01	0.03	0.04	-0.02	-0.02	0.02
33	Ethiopia	Sub-Saharan Africa	Low income	0.03	0.06	0.41	0.02	0.16	0.40	-0.01	0.10	-0.02
34	Finland	Europe & Central Asia	High income	0.01	0.00	0.06	0.00	0.00	0.08	-0.01	0.00	0.02
35	France	Europe & Central Asia	High income	0.03	0.14	0.41	0.01	0.09	0.05	-0.01	-0.05	-0.36
36	Georgia	Europe & Central Asia	Upper middle income	0.12	0.03	0.06	0.09	0.09	0.01	-0.02	0.07	-0.05
37	Germany	Europe & Central Asia	High income	0.03	0.07	0.02	0.01	0.02	0.10	-0.03	-0.04	0.08
39	Greece	Europe & Central Asia	High income	0.11	0.11	0.10	0.07	0.05	0.12	-0.04	-0.06	0.02
40	Guatemala	Latin America & Caribbean	Upper middle income	0.41	0.23	0.27	0.37	0.15	0.01	-0.04	-0.09	-0.26
41	Honduras	Latin America & Caribbean	Lower middle income	0.17	0.22	0.33	0.28	0.06	0.00	0.11	-0.16	-0.33
42	Hungary	Europe & Central Asia	High income	0.06	0.09	0.02	0.05	0.13	0.03	-0.01	0.04	0.00
43	Iceland	Europe & Central Asia	High income	0.01	0.02	0.05	0.00	0.00	0.01	0.00	-0.02	-0.04
44	India	South Asia	Lower middle income	0.41	0.14	0.75	0.60	0.34	0.58	0.19	0.20	-0.17
45	Indonesia	East Asia & Pacific	Upper middle income	0.18	0.02	0.29	0.20	0.06	0.01	0.02	0.05	-0.28
46	Iran	Middle East & North Africa	Upper middle income	0.27	0.44	0.48	0.69	0.32	0.42	0.41	-0.12	-0.06
47	Ireland	Europe & Central Asia	High income	0.05	0.07	0.05	0.03	0.03	0.04	-0.02	-0.04	-0.01
48	Israel	Middle East & North Africa	High income	0.01	0.11	0.05	0.01	0.10	0.06	0.00	-0.01	0.00
49	Italy	Europe & Central Asia	High income	0.16	0.16	0.19	0.11	0.14	0.19	-0.05	-0.02	0.00
50	Jamaica	Latin America & Caribbean	Upper middle income	0.06	0.05	0.00	0.03	0.07	0.00	-0.03	0.01	0.00
51	Japan	East Asia & Pacific	High income	0.12	0.10	0.28	0.05	0.06	0.42	-0.06	-0.04	0.14

52	Jordan	Middle East & North Africa	Upper middle income	0.48	0.19	0.30	0.70	0.24	0.41	0.22	0.04	0.11
53	Kazakhstan	Europe & Central Asia	Upper middle income	0.01	0.03	0.02	0.01	0.03	0.03	0.01	0.00	0.01
54	Kenya	Sub-Saharan Africa	Lower middle income	0.03	0.00	0.46	0.00	0.02	0.73	-0.03	0.02	0.27
55	Kuwait	Middle East & North Africa	High income	0.20	0.08	0.13	0.16	0.08	0.29	-0.04	0.01	0.15
56	Kyrgyz Republic	Europe & Central Asia	Lower middle income	0.05	0.01	0.06	0.20	0.09	0.03	0.14	0.07	-0.03
57	Latvia	Europe & Central Asia	High income	0.03	0.04	0.01	0.00	0.01	0.01	-0.03	-0.03	0.00
58	Lesotho	Sub-Saharan Africa	Lower middle income	0.15	0.06	0.10	0.05	0.13	0.04	-0.10	0.07	-0.06
59	Lithuania	Europe & Central Asia	High income	0.02	0.04	0.01	0.00	0.01	0.02	-0.01	-0.03	0.01
60	Luxembourg	Europe & Central Asia	High income	0.09	0.11	0.21	0.01	0.01	0.17	-0.08	-0.10	-0.04
61	Macedonia	Europe & Central Asia	Upper middle income	0.15	0.01	0.06	0.19	0.06	0.12	0.04	0.05	0.06
62	Madagascar	Sub-Saharan Africa	Low income	0.00	0.06	0.51	0.00	0.00	0.11	0.00	-0.05	-0.40
63	Malawi	Sub-Saharan Africa	Low income	0.00	0.01	0.33	0.01	0.06	0.49	0.01	0.05	0.16
64	Malaysia	East Asia & Pacific	Upper middle income	0.21	0.02	0.25	0.17	0.02	0.29	-0.05	0.00	0.04
65	Mali	Sub-Saharan Africa	Low income	0.01	0.01	0.28	0.09	0.10	0.30	0.08	0.10	0.02
66	Malta	Middle East & North Africa	High income	0.31	0.08	0.32	0.15	0.06	0.21	-0.16	-0.02	-0.12
67	Mauritania	Sub-Saharan Africa	Lower middle income	0.13	0.05	0.69	0.40	0.38	0.40	0.28	0.33	-0.29
68	Mauritius	Sub-Saharan Africa	High income	0.25	0.18	0.28	0.19	0.12	0.16	-0.06	-0.07	-0.12
69	Mexico	Latin America & Caribbean	Upper middle income	0.30	0.21	0.23	0.28	0.22	0.05	-0.01	0.01	-0.18
70	Moldova	Europe & Central Asia	Lower middle income	0.02	0.01	0.01	0.01	0.01	0.02	-0.01	0.00	0.01
71	Mongolia	East Asia & Pacific	Lower middle income	0.12	0.00	0.04	0.06	0.02	0.02	-0.06	0.01	-0.02
72	Morocco	Middle East & North Africa	Lower middle income	0.52	0.11	0.34	0.60	0.23	0.51	0.08	0.13	0.17
73	Namibia	Sub-Saharan Africa	Upper middle income	0.05	0.13	0.04	0.02	0.01	0.01	-0.03	-0.12	-0.04
74	Nepal	South Asia	Lower middle income	0.14	0.16	0.55	0.00	0.06	0.43	-0.14	-0.10	-0.12
75	Netherlands	Europe & Central Asia	High income	0.03	0.06	0.10	0.01	0.03	0.15	-0.02	-0.03	0.05
76	New Zealand	East Asia & Pacific	High income	0.02	0.03	0.02	0.01	0.03	0.02	0.00	0.00	0.00
77	Nicaragua	Latin America & Caribbean	Lower middle income	0.41	0.19	0.25	0.22	0.04	0.05	-0.19	-0.15	-0.20
78	Nigeria	Sub-Saharan Africa	Lower middle income	0.26	0.03	0.10	0.03	0.01	0.09	-0.23	-0.02	-0.01
79	Norway	Europe & Central Asia	High income	0.01	0.01	0.04	0.00	0.00	0.04	0.00	-0.01	0.00
80	Pakistan	South Asia	Lower middle income	0.44	0.22	0.70	0.61	0.33	0.75	0.17	0.11	0.05
81	Panama	Latin America & Caribbean	High income	0.14	0.09	0.01	0.17	0.06	0.00	0.04	-0.03	-0.01
82	Paraguay	Latin America & Caribbean	Upper middle income	0.03	0.25	0.09	0.15	0.13	0.03	0.12	-0.12	-0.06
83	Peru	Latin America & Caribbean	Upper middle income	0.07	0.26	0.14	0.04	0.10	0.12	-0.03	-0.15	-0.03
84	Philippines	East Asia & Pacific	Lower middle income	0.12	0.02	0.00	0.22	0.00	0.00	0.11	-0.01	0.00
85	Poland	Europe & Central Asia	High income	0.03	0.12	0.02	0.05	0.08	0.01	0.02	-0.04	-0.01
86	Portugal	Europe & Central Asia	High income	0.03	0.05	0.03	0.00	0.04	0.06	-0.02	-0.01	0.02
87	Romania	Europe & Central Asia	High income	0.02	0.05	0.04	0.09	0.01	0.08	0.07	-0.04	0.04
88	Russian Federation	Europe & Central Asia	Upper middle income	0.02	0.05	0.01	0.02	0.04	0.01	0.00	-0.02	0.00
89	Saud. Arab.	Middle East & North Africa	High income	0.68	0.61	0.52	0.60	0.21	0.71	-0.08	-0.40	0.19
90	Singapore	East Asia & Pacific	High income	0.12	0.01	0.15	0.04	0.00	0.09	-0.07	-0.01	-0.06
91	Slovak Republic	Europe & Central Asia	High income	0.04	0.09	0.02	0.03	0.11	0.07	-0.01	0.02	0.05
92	Slovenia	Europe & Central Asia	High income	0.02	0.07	0.03	0.00	0.00	0.03	-0.02	-0.06	0.00
93	South Africa	Sub-Saharan Africa	Upper middle income	0.20	0.09	0.18	0.06	0.11	0.09	-0.14	0.02	-0.09
94	Spain	Europe & Central Asia	High income	0.12	0.25	0.08	0.02	0.08	0.08	-0.10	-0.17	0.01
95	Sri Lanka	South Asia	Lower middle income	0.36	0.07	0.18	0.37	0.15	0.13	0.01	0.09	-0.05
96	Sweden	Europe & Central Asia	High income	0.01	0.01	0.04	0.00	0.01	0.03	0.00	0.00	-0.02
97	Switzerland	Europe & Central Asia	High income	0.02	0.00	0.12	0.01	0.01	0.07	-0.01	0.01	-0.05
98	Tanzania	Sub-Saharan Africa	Lower middle income	0.00	0.00	0.02	0.00	0.01	0.29	0.00	0.01	0.27
99	Thailand	East Asia & Pacific	Upper middle income	0.02	0.00	0.07	0.05	0.00	0.06	0.03	0.00	-0.01
100	Trinidad and Tobago	Latin America & Caribbean	High income	0.17	0.13	0.01	0.12	0.05	0.01	-0.05	-0.07	0.00
101	Turkey	Europe & Central Asia	Upper middle income	0.48	0.09	0.60	0.39	0.18	0.42	-0.09	0.09	-0.18
102	Uganda	Sub-Saharan Africa	Low income	0.00	0.00	0.34	0.01	0.04	0.29	0.01	0.03	-0.05
103	Ukraine	Europe & Central Asia	Lower middle income	0.03	0.06	0.01	0.04	0.04	0.02	0.01	-0.02	0.01
104	United Arab Emirates	Middle East & North Africa	High income	0.40	0.16	0.65	0.30	0.11	0.66	-0.10	-0.05	0.02
105	United Kingdom	Europe & Central Asia	High income	0.02	0.04	0.07	0.01	0.07	0.04	-0.01	0.03	-0.03
106	United States	North America	High income	0.02	0.02	0.00	0.03	0.02	0.02	0.01	0.00	0.01
107	Uruguay	Latin America & Caribbean	High income	0.07	0.16	0.02	0.05	0.06	0.04	-0.02	-0.10	0.02
108	Venezuela	Latin America & Caribbean	Upper middle income	0.09	0.12	0.06	0.20	0.03	0.06	0.11	-0.09	0.00

109	Yemen	Middle East & North Africa	Low income	0.44	0.53	0.81	0.88	0.31	0.85	0.45	-0.22	0.03
110	Zambia	Sub-Saharan Africa	Lower middle income	0.06	0.00	0.57	0.01	0.00	0.03	-0.05	0.00	-0.54

Source: Own elaboration based on data from Hausmann, Tyson, and Zahidi (2006) and World Economic Forum (2019).