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Cross – country dynamics in income inequality: Where do we stand?

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Abstract

The present paper explores the cross-country dynamics in income inequality using the WID dataset over the period 1980 – 2022. Employing the Markov chain transition matrix and a set of mobility indices, we find evidence of a very weak transition of countries among different states of income inequality. Furthermore, many countries have been caught in a low-equality trap and escaping from this trap is a low probability proposition. Lastly, the convergence towards the same state of income equality has been still an unachieved goal ever short – or long-runs.

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1. Introduction

Widening and persistent income inequality is the challenge in our time. Chancel et al. (2022) suggest that on average, an individual from the top 10% of the global income distribution earns USD122,100 per year, whereas an individual from the poorest half of the global income distribution earns only USD3,920 per year. The authors also argue that income inequality has been on the rise nearly everywhere since the 1980s. This trend has not been uniform due to the different forms of deregulation and liberalization programs in different countries: spectacular increases in inequality in certain countries (e.g. the US, Russia and India) but relatively smaller ones in others (e.g. European countries and China).

The literature on income inequality spawns from the seminal paper of Kuznets (1955) who considers the link between economic growth and income distribution as an inverted U-shaped curve: economic growth resulting in more inequality in the initial stages of development but greater equality at the advanced stages. Despite the abundance of literature, there is no consensus on the relationship between income inequality and growth. This ambiguous relationship is due to the different channels through which income inequality affects growth and vice versa (Iradian, 2005). Recently, Gradín (2024) mentions that the mixed and garmented results in the literature on global inequality since the early 2000 have been due to the lack of appropriate data and the use of different and even contradictory approaches.

Instead of extending the abundant but inclusive literature on the income inequality – economic growth nexus, the main contribution of this paper is to provide a simple econometrical approach to study the long-run cross-country dynamics in income inequality. To do so, our empirical analysis is based on the World Inequality Database (WID) covering the period 1980 – 2022. The following section, Section 2, provides a data description and also checks if there is a persistent tendency of income inequality. Section 3 employs the Markov chain transition matrix as well as two mobility indices (Shorrocks index and Fields-Ok index) to explore the dynamics in the cross-country income inequalities. Concluding remarks are in Section 4.

2. Data setting and Income inequality's time trend

In the relevant literature, income inequality has been measured by various metrics. Among others, the most common measures are the Gini coefficient and the percentile ratios, which provide nuance and depth to our understanding of how income is distributed inside a given country.[1] The Gini coefficient uses information from the entire income distribution but does not depend on the size of the economy and the population. The Gini coefficient follows the transfer principle that more income is transferred from a rich to a poor, lower income inequality is, but cannot show how poor the poorer person is. In addition, the change in Gini coefficient depends on what is considered in income measures – before or after tax income, consumption or wages.

Another straightforward but informative way of evaluating inequality is to consider the shares of population at different parts of income distribution, for example by dividing the population into different percentile groups. The percentile ratios are easy to calculate and focus on a specific distribution region. Although the percentile ratios fail to use all information since they ignore incomes between percentiles, they are transparent about what part of the distribution is driving the observed changes in the summary measure, which is more difficult to pinpoint when using the Gini coefficient. So that, this paper uses three different percentile ratios, which allow expressing income inequality as the degree of dispersion or "width" of the distribution.

[1] Other inequality measures include the Lorenz curve, the Palma ratio, Atkinson's index, and the income quintile ratio (S80/S20 ratio).

Regarding the inequality data, the World Income Inequality Database (WIID) provides the data on Gini index, which is released from household surveys. The WIID was first launched in 2000, continuing the monumental work of Deininger and Squire (1996), which collects many disparate surveys of income and expenditure inequality, and compiles those meeting certain criteria into a single panel data. However, according to Atkinson and Brandolini (2001), these inequality measures are based on various income definitions, reference units and different criteria from various sources, which cannot be wholly reconciled to each other. In addition, this data set lacks continuous and consistent inequality data over time, with very few "high quality" observations for many developing countries (Galbraith, 2009). Solt (2009) develops the Standardized World Income Inequality Database (SWIID) in which the Gini coefficient is based on net income. The SWIID combines information from Luxembourg Income Study (LIS) and WIID data to create a dataset with greater coverage than the LIS data and greater comparability than the WIID data.[2] Yet, Jenkins (2015) argue that SWIID provides plausible data but not sufficiently credible data because of the bias and precision issues of the multiple imputation model used in Solt (2009).

Due to these limitations, our present paper uses the World Inequality Database (WID.world) covering the period of 1980 – 2022 and a sample of 180 countries. The WID aims at releasing homogeneous income inequality series both on the macro-level structure of national income and national wealth, and on the micro-level distribution of income and wealth. However, the data series provided by the WID should not be seen as perfect. First, to provide a larger inequality database with longer time span, the WID combines national accounts and survey data with fiscal data sources. However, many countries, in particular developing countries, still either fail to release tax data or cannot provide the annual household surveys. To overcome this data source limitation, the WID releases inequality estimates by employing various statistical methods.[3] Thus, the data series provided by the WID are only statistical estimates, which are inherently more fragile than those based on raw and direct information. Moreover, the quality and reliability of the data sources of these estimates vary significantly between countries. This issue might lead to quality inconsistencies in the WID inequality estimates. Second, in several developing countries, a significant portion of economic activity occurs in the informal sector, which may not be captured accurately in both national accounts and tax data collections. This can lead to an underestimation of the WID inequality measures. Lastly, the data series provided by the WID are not definitive because they are continuously updated following new raw data releases or conceptual and methodological improvements. The regular updates are indispensable but can affect the comparability of inequality measures across years, since the historical data may not be directly comparable to more recent data. On the other hand, these changes in data collection methods and definitions over time could also challenge the existing empirical results based on older WID data series.

Despite the limitations mentioned above, the WID covering a large country sample and long time span remains a valuable database for empirical works focusing on understanding and addressing global inequality. So that, we employ the WID in this present paper. Moreover, the WID provides us the data on percentile ratios, notably (i) top 1% income share, (ii) top 10% income share, and (iii) bottom 50% income share that match our research goals.

As mentioned above, our empirical work stands in the continuation of research on long-run inequality trends since 1980. So that, the first single summary statistics based on the average 10-year income inequality could allow detecting the potential dynamic characteristics. The period 1980-2022 is thus divided into four sub-10-year periods: 1980-1990; 1991-2000; 2001-2010; and 2011-2022. Figure 1.1

[2] The SWIID is updated by Solt (2020).

[3] See further Alvaredo et al. (2020) for the WID history and all employed methods.

displays results from fitting linear time trends over 4 sub-periods, country by country for our sample of 180 countries. This figure displays a clearly positive relationship between a given stage of income inequality and the initial condition of income inequality over the period 1980 – 2022. However it does not show a significant movement neither smooth time trends in different income inequality measures. This view is also supported in Figure 1.2, which graphs and compares the standard deviation of income inequality over four sub-periods: the fluctuation in income inequality is not trendy neither similar among countries and over time.

Two interesting hypotheses could be drawn. First, the long-run dynamics in income inequality is unstable even does not exist: the income inequality level of each country appears to reach its own "steady-state". Second, these graphs also question the existence of long-run convergence in income equality at the global level since each country's income inequality shows a rising fluctuation over time.

The dynamics and convergence of income inequality have been also questioned in the existing literature. Piketty (2014) argues that the thesis of convergence, according to which inequality will automatically diminish due to capitalism's development, has fragile theoretical and empirical fundamentals. According to Piketty, it is possible that there are some forces of convergence but only between the advanced-capitalist countries, notably Europe, the U.S and Japan, and that some emerging countries can be included in this process of convergence. By contrast, the author affirms powerful pressures towards divergence of income distribution both within countries and at the global level. Alvaredo et al. (2017) evidence strong and contradictory forces of global inequality dynamics, which are characterized by rising top income and wealth shares in nearly all countries however with a substantially variant magnitude across countries. More recently, Batuo et al. (2022) also find evidence of income inequality divergence in Africa for the period 1980-2017. The authors show that inequality may be increasing in high income countries, while decreasing in low income or the least developed economies. Overall, our two hypotheses mentioned above seem to be strongly supported in prior studies.

3. Dynamic transition of income inequality

This section employs the Markov chain analysis to address the simplest question of whether there is a dynamic transition in terms of income inequality across countries. First, we divide the studied period into 2 sub-periods, notably 1980-2000 and 2000-2022, which allows capturing the impacts of different disturbances on the world economy before and after 2000. Second, for each sub-period, we use the median calculation to determine 4 levels of income distribution: (i) equality; (ii) low equality; (iii) inequality; and (iv) high inequality.[4] This choice allows us to divide the data sample into equal-sized sub-samples. Figure 2 displays the different evolutions in terms of income share across different groups. For instance, within the "equality" group, the income share of Top 1% and Top 10% seems to be increasing, while this figure is slightly lowering within the "High inequality" group. This is consistent with the fact that income inequality has been on the rise nearly everywhere since the 1980s (Chancel et al., 2022).

The Markov chain transition matrix helps reveal the evolution and the change in characteristics of income inequality at different levels by calculating the probability distribution as well as the evolution trend of each country. The properties of the first-order Markov chain is as follows:

$$P\{IN_{(t)} = j \big| IN_{(t-1)} = i, IN_{(t-2)} = i_{(t-2)} =, \dots, IN_0 = i_0\} = \{IN_{(t)} = J \big| IN_{(t-1)} = 1\} \quad \textbf{(1)}$$

[4] For 1980-2000, the benchmark values of income inequality are the 1980 medians. For 2000-2022, the benchmark values of income inequality are the 2000 medians.

where the random variable IN (inequality level) in phase $(t-1)$ influences the X level in state j of phase T.

$$P_{ij=}\frac{n_{ij}}{n_j} \qquad \textbf{(2)}$$

where P_{ij} is the transition probability of income inequality of a country from state i in year t to state j in year $(t+1)$, n_{ij} is the number of countries that transfer from state i to state j over the period $t/(t+1)$, and n_j the number of countries at the state j in the initial period t.

Considering different referenced values displayed in Figure 2, we discretize the possible values of income distribution into intervals at 1, 2, 3, 4 and 5. Low-numbered states correspond to low income inequality. For example, in Table 1, Top 1% income share in countries in "State 1" is less than 6.78% of national income, while Top 1% income share in countries in "State 5" is greater than 22.045% of national income in the referenced year 1980. Our Markov chain transition matrix is a 5×5 matrix, in which n_{ij} is the probability that a country in state i transits to state j in the following period. The Markov probability matrix is calculated based on the condition of a 1 year lag.

Table 1 reports the annual transition matrix from 1980 to 2000. The rows reflect the initial states, and the columns reflect the final states. For example, each year over the period 1980-2000, some 84.87% of the countries in the "*Equality*" state (considering Top 1% income share) remain their "*Equality*" state in the next year; the remaining 15.13% transit to the "*Low equality*" state. Table 1 shows such a high persistence in income inequality / equality over the period 1980-2000 since all diagonal values exceed 95%. The persistence is particularly important in the countries in the "inequality" states. For instance, considering Top 1% income share, we observe only 1 transfer from state 5 (very high inequality) to state 2 (low equality) and 15 transfers to state 4 (inequality) from 1980 to 2000. By contrast, two exceptional entries, which probability is 84.87% for Top 1% and 80.95% for Top 10%, suggest that some countries are more likely to lower their income equality level than to maintain their position in the "Equality" state. In other words, maintaining high level of income equality in state 1 seems not to be an easy task.

Table 2 reports the annual transition matrix over the period 2000-2022, in which five states are determined in function of the median values of income share in the referenced year 2000. Compared to the 1980-2000 matrix, all diagonal entries decrease but still maintain high values around 90%. It implies that the movement of countries across five different states becomes slightly dynamic. However, the direction of this dynamics is unclear. For instance, considering Top 1% income share, over the period 2000-2022, 6.97% of countries move from state 3 to states with higher equality, while 5.20% of countries even drop from state 3 to states with higher inequality. Moreover, as mentioned in Section 2, the benchmark values of income share to determine five states of income inequality in 2000-2022 are higher than those in 1980-2000. In other words, the 2000-2022 transition matrix is based on a rising trend of income inequality. So that, this result could be a favorable though if and only if the transition rate of a country from an "inequality" state to a "lower inequality" state is greater than the growth rate of income inequality's referenced values.

The weak mobility observed in Table 2 is also polarized, meaning that the movement is only made among the states with a relatively similar level of income equality/inequality. At higher income equality states (states 1 and 2), the greater tendency is to become more unequal despite some observed possibility for upward mobility to the state with a lower inequality level. Looking down the neighborhood of the diagonal (states 4 and 5), upward mobility to lower inequality level slightly dominates downward mobility. Even though this mobility is very weak, it can be considered as a

positive sign about the reduction of income inequality of low tail's countries. Expectedly, there is no transition between high-inequality (5) and equality (1) states.

We now pay our attention to the probability values reported in the last rows of Table 1 and 2, which correspond to average annual transitions across time and over the long horizon of 20 years. In both tables, we find evidence of an accumulation of distribution in the middle states, in particular in state 3. It implies an important concern that many countries have been caught in a low-equality trap over the long term. On the other hand, the probability values are smaller at both low and high tails, meaning once again the weak mobility of two extreme states – equality and high inequality states. In short, although details on total distributions differ between two tables, the structure of these distributions seems to be stable and supports the evidence of thinning out of two extreme states in favor of the low income inequality trap.

Finally, in Table 3, we report the result of two mobility indices[5], notably the Shorrocks index and the Fields-Ok index[6], which allows us to compare the dynamics of income inequality between two periods 1980-2000 and 2000-2022. The small values of two mobility indexes confirm once again a weak mobility of income distribution over both periods. We observe a very slightly higher mobility over the period 1980 – 2000 (except the group of bottom 50% income share). By contrast, these two studied periods experience a similar trend in income mobility: the level of income mobility depends on income group classification and the clearest mobility belongs to the richest group.

Robustness test

To check for the robustness of our empirical results, we extend the analysis by building the transition matrix for an alternative income inequality indicator, notably the Gini coefficient provided by the SWIID. Due to the SWIID's limited availability, the transition matrix is built for two periods 1990 – 2000 (instead of 1980 – 2000) and 2000 – 2022. The Gini transition matrix is summarized in Table 4. Despite using a different inequality measure, the empirical results reported in Table 4 are quantitatively consistent and robust with our previous results reported in Table 3. In particular, such a high value of all diagonal entries (over 90%) evidences once again the rigidity of income inequality movement over the time.

4. Conclusion

The gap between rich and poor is widening between and within countries rather than receding and 60% of people in the world have grown poorer – equating to almost 5 billion people (Riddell et al., 2024). In this context, the present paper stands in the continuation of the vast literature on income inequality by providing a simple Markov chain transition analysis. We provide a set of important findings. First, we find a persistence of income inequality's divergence across countries and over the period 1980-2022. This persistence is justified by a weak transition across time among different states of income inequality. Second, many countries have been caught in a low-equality trap and escaping from this trap is a low probability proposition. Third, over the last four decades, there is no observed miracle for country initially positioned at the low tail (State 5) to move to the highest tail of income

[5] For an extensive discussion of mobility indices, see Fields (2007) and Cowell and Flachaire (2018).

[6] The Shorrocks index is developed by Shorrocks (1978). This index measures a share movement of income by using the diagonal elements of the transition matrix. A Shorrocks index of 1 means that there is complete mobility. The Shorrocks mobility index's main advantage is that it formally links short-term and long-term inequality. A criticism regarding the Shorrocks index is that it is sensitive only to transitions which arise along the main diagonal. An alternative index which takes account of all changes in income inequality and not just those along the main diagonal is provided by Fields and Ok (1999).

equality (State 1). In other words, the convergence towards the same state of income equality has been still an unachieved goal ever short – or long-runs.

When we extend our analysis to the Gini coefficient – an alternative measure of income inequality, the findings are generally consistent and robust with the baseline Markov model findings. However the Markov chain model is limited by two major assumptions: memorylessness and state-transition probability. On one hand, according to the assumption of memorylessness, the subsequent income inequality state only depends on the present income inequality state, and not the sequence of preceding states. This limitation does not allow us to investigate the role of the initial level of income inequality on its future and potential mobility. On the other hand, the state-transition probability assumption suggests that the transition probabilities of changing from one state to another are assumed to remain constant. This assumption challenges us for the question of whether the income inequality's state-transition probabilities are invariant under the effects of socio-economic transitions as well as of external economic and political shocks over different time spans. These two major issues will be the main topic of our upcoming research.

To conclude, the dynamics in income equality transition across countries and across time is considerably weak. Furthermore, countries seem not to be behaving in the same transition path. In the context of income inequality acceleration, the question remains as to which strategies might be deployed to bridge the gap in income inequality within and among countries. Any strategy, either at the national or at the global level, should be consistent with the characteristics of each income inequality state. That is to say, the income inequality state of each country decides its suitable strategies for reducing and eradicating inequality. We also leave this important issue for our further study.

References

Alvaredo, F., Chancel, L., Piketty, T., Saez, E. and G. Zucman (2017) "Global inequality dynamics: New findings from WID. World" *American Economic Review* ***107*****(5)**, 404-409.

Alvaredo, F., Atkinson, A.B., Blanchet, T., Chancel, L., Bauluz, L., Fisher-Post, M., Flores, I., Garbinti, B., Goupille-Lebret, J., Martínez-Toledano, C. and M. Morgan (2020) "Distributional national accounts guidelines, methods and concepts used in the world inequality database", Doctoral dissertation, PSE (Paris School of Economics).

Atkinson, A.B., and A. Brandolini (2001) "Promise and pitfalls in the use of secondary data sets: Income inequality in OECD countries as a case study" *Journal of Economic Literature* **39**, 771-99.

Batuo, M.E., Kararach, G. and I. Malki (2022) "The dynamics of income inequality in Africa: An empirical investigation on the role of macroeconomic and institutional forces" *World Development* **157**, 105939.

Chancel, L., Piketty, T., Saez, E. and G. Zucman (2022) "World Inequality Report 2022", Harvard University Press.

Cowell, F.A. and E. Flachaire (2018) "Measuring mobility" *Quantitative Economics* **9(2)**, 865-901.

Deininger, K. and L. Squire (1996) "A new data set measuring income inequality" *The World Bank Economic Review* **10(3)**, 565-591.

Fields, G.S. and E.A. Ok (1999) "Measuring movement of incomes" *Economica* ***66*****(264)**, 455-471.

Fields, G.S. (2007) "Income Mobility" Cornell University ILR School Working Paper 19.

Galbraith, J.K. (2009) "Inequality, unemployment and growth: New measures for old controversies" *Journal of Economic Inequality* **7**, 189-206.

Gradín, C. (2024) "Revisiting the trends in global inequality" *World Development* ***179***, 106607.

Iradian, G. (2005) “Inequality, poverty, and growth: cross-country evidence” IFM Working Paper WP/05/28.

Jenkins, S.P. (2015) “World income inequality databases: an assessment of WIID and SWIID” *The Journal of Economic Inequality* **13**, 629-671.

Kuznets, S. (1955) “Economic Growth and Income Inequality” *American Economic Review* **45**, 1-28.

Piketty, T. (2014) *Capital in the Twenty-First Century*, Cambridge, MA: Harvard University Press.

Quah, D. (1993) “Empirical cross-section dynamics in economic growth” *European Economic Review* **37**, 426-434.

Riddell, R., Ahmed, N., Maitland, A., Lawson, M. and A. Taneja (2024) Inequality Inc. How corporate power divides our world and the need for a new era of public action.

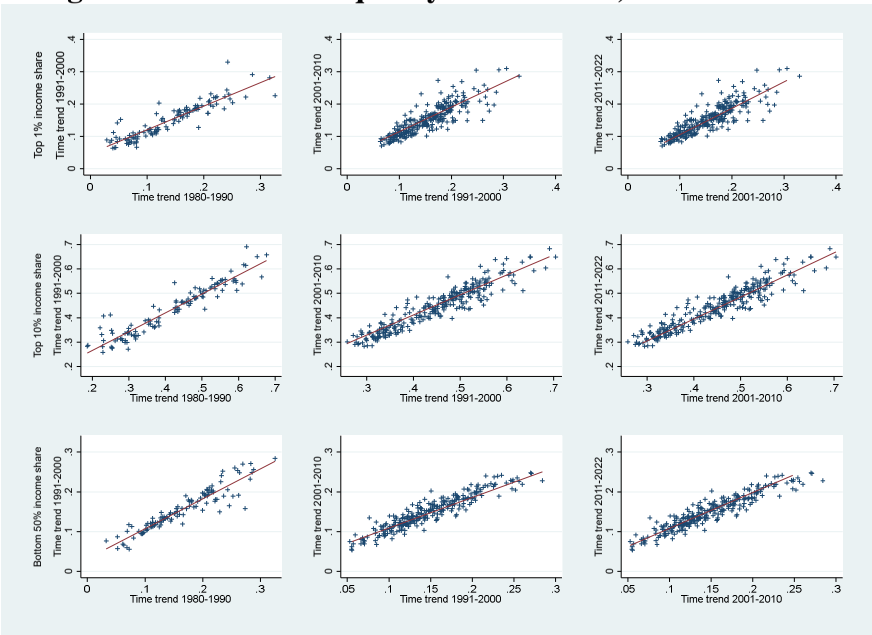
Shorrocks, A. F. (1978a) “Income inequality and income mobility”, *Journal of Economic Theory* **19**, 376-393.

Shorrocks, A. F. (1978b) “The measurement of mobility” *Econometrica* **46**, 1013-1024.

Solt, F. (2009) "Standardizing the World Income Inequality Database" *Social Science Quarterly* **90(2)**, 231-242.

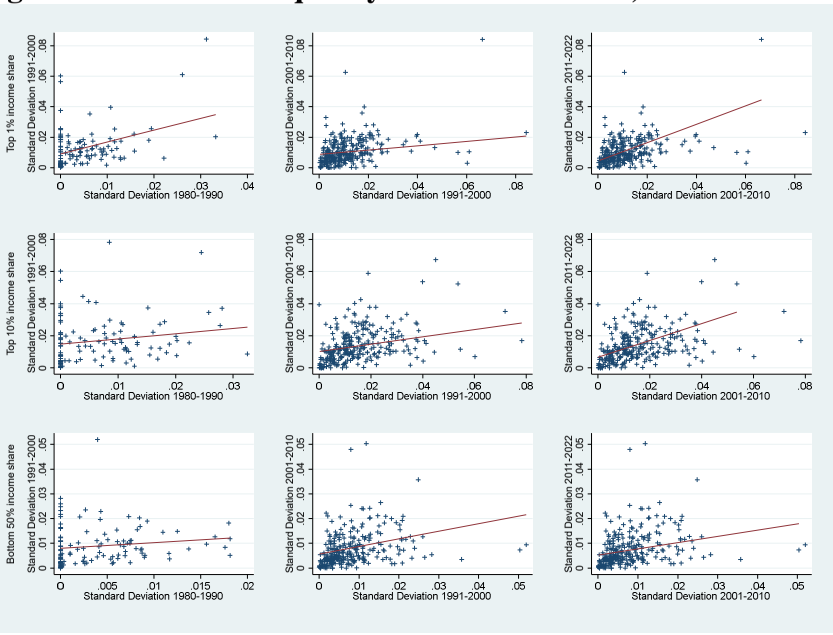
Solt, F. (2020) “Measuring Income Inequality Across Countries and Over Time: The Standardized World Income Inequality Database” *Social Science Quarterly* **101(3)**, p.1183-1199.

Figure 1.1: Income inequality's time trend, 1980 – 2022



Notes: The horizontal axe displays the 10-year mean income shares over the period N. The vertical axe displays the 10-year mean income shares over the period N+10.

Figure 1.2: Income inequality's time fluctuation, 1980 - 2022



Notes: The horizontal axe displays the standard error of 10-year income shares over the period N. The vertical axe displays the standard error of 10-year income shares over the period N+10.

Figure 2 : Benchmark values of income inequality

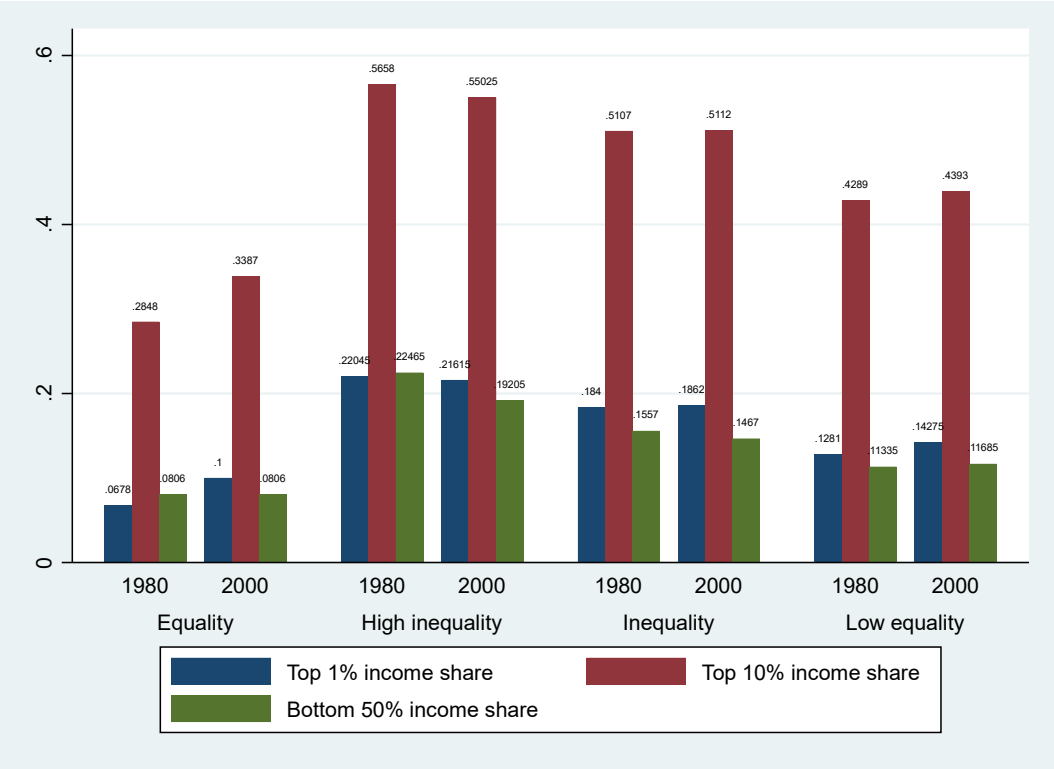


Table 1: Income inequality's Transition Matrix over 1980 – 2000

Top 1% income share						
Rank	**1**	**2**	**3**	**4**	**5**	**Total**
1	84.87 (202)	15.13 (36)	0.00 (0)	0.00 (0)	0.00 (0)	100 (238)
2	1.40 (14)	95.90 (959)	2.70 (27)	0.00 (0)	0.00 (0)	100 (1)
3	0.00 (0)	1.41 (13)	96.65 (894)	1.95 (18)	0.00 (0)	100 (925)
4	0.00 (0)	0.00 (0)	1.60 (15)	97.34 (915)	1.06 (10)	100 (940)
5	0.00 (0)	0.23 (1)	0.00 (0)	3.43 (15)	96.34 (421)	100 (437)
Total	6.10 (216)	28.50 (1009)	26.44 (936)	26.78 (948)	12.18 (431)	100 (354)

Top 10% income share						
Rank	**1**	**2**	**3**	**4**	**5**	**Total**
1	80.95 (34)	19.05 (8)	0.00 (0)	0.00 (0)	0.00 (0)	100 (42)
2	0.24 (3)	98.79 (122)	0.97 (12)	0.00 (0)	0.00 (0)	100 (1235)
3	0.00 (0)	0.85 (8)	97.88 (922)	1.27 (12)	0.00 (0)	100 (942)
4	0.00 (0)	0.00 (0)	1.30 (12)	98.05 (907)	0.65 (6)	100 (925)
5	0.00 (0)	0.00 (0)	0.00 (0)	3.03 (12)	96.97 (384)	100 (396)
Total	1.05 (37)	34.92 (1236)	26.72 (946)	26.30 (931)	11.02 (390)	100 (354)

Bottom 50% income share						
Rank	**1**	**2**	**3**	**4**	**5**	**Total**
1	97.97 (337)	2.03 (7)	0.00 (0)	0.00 (0)	0.00 (0)	100 (344)
2	0.00 (0)	98.22 (940)	1.78 (17)	0.00 (0)	0.00 (0)	100 (957)
3	0.00 (0)	0.99 (10)	97.93 (993)	1.08 (11)	0.00 (0)	100 (1014)
4	0.00 (0)	0.00 (0)	2.15 (19)	96.95 (858)	0.90 (8)	100 (885)
5	0.00 (0)	0.00 (0)	0.00 (0)	6.18 (21)	93.82 (319)	100 (340)
Total	9.52 (337)	27.03 (957)	29.07 (1029)	25.14 (890)	9.24 (327)	100 (354)

Notes: Values in the parentheses are the number of countries in transition. Lower rank – Lower inequality;

Top 1% income share: Rank 1 (Share < 0.0678) / Rank 2 (0.0678 ≤ Share < 0.1281) / Rank 3 (0.1281 ≤ Share < 0.184) / Rank 4 (0.184 ≤ Share < 0.22045) / Rank 5 (Share ≥ 0.22045)

Top 10% income share: Rank 1 (Share < 0.2248) / Rank 2 (0.2248 ≤ Share < 0.4289) / Rank 3 (0.4289 ≤ Share < 0.5107) / Rank 4 (0.5107 ≤ Share < 0.5658) / Rank 5 (Share ≥ 0.5658)

Bottom 50% income share: Rank 1 (Share < 0.0806) / Rank 2 (0.0806 ≤ Share < 0.11335) / Rank 3 (0.11335 ≤ Share < 0.1557) / Rank 4 (0.1557 ≤ Share < 0.22465) / Rank 5 (Share ≥ 0.22465)

Table 2: Income inequality's Transition Matrix over 2000 - 2022

Top 1% income share

Rank	1	2	3	4	5	Total
1	86.36 (399)	13.64 (63)	0.00 (0)	0.00 (0)	0.00 (0)	100 (462)
2	6.26 (65)	86.32 (896)	7.13 (74)	0.19 (2)	0.10 (1)	100 (1038)
3	0.09 (1)	6.88 (78)	87.82 (995)	4.85 (55)	0.35 (4)	100 (1133)
4	0.00 (0)	0.22 (2)	7.74 (69)	89.00 (793)	3.03 (27)	100 (891)
5	0.00 (0)	0.00 (0)	0.00 (0)	10.00 (37)	90.00 (333)	100 (370)
Total	11.94 (465)	26.68 (1039)	29.22 (1138)	22.78 (887)	9.37 (365)	100 (3894)

Top 10% income share

Rank	1	2	3	4	5	Total
1	89.70 (444)	10.30 (51)	0.00 (0)	0.00 (0)	0.00 (0)	100 (495)
2	5.33 (55)	89.63 (925)	4.84 (50)	0.10 (1)	0.10 (1)	100 (1032)
3	0.09 (1)	4.63 (52)	91.98 (1032)	3.21 (36)	0.09 (1)	100 (1122)
4	0.00 (0)	0.00 (0)	7.04 (50)	87.18 (619)	5.77 (41)	100 (710)
5	0.00 (0)	0.00 (0)	0.19 (1)	7.66 (41)	92.15 (493)	100 (535)
Total	12.84 (500)	26.40 (1028)	29.10 (1133)	17.90 (697)	13.76 (536)	100 (3894)

Bottom 50% income share

Rank	1	2	3	4	5	Total
1	90.25 (250)	9.75 (27)	0.00 (0)	0.00 (0)	0.00 (0)	100 (277)
2	2.49 (26)	93.19 (972)	4.22 (44)	0.00 (0)	0.10 (1)	100 (1043)
3	0.00 (0)	3.31 (35)	92.90 (981)	3.50 (37)	0.28 (3)	100 (1056)
4	0.10 (1)	0.10 (1)	3.01 (31)	92.91 (957)	3.88 (40)	100 (103)
5	0.00 (0)	0.00 (0)	0.41 (2)	7.79 (38)	91.80 (448)	100 (488)
Total	7.11 (277)	26.58 (1035	27.17 (1058)	26.50 (1032)	12.63 (492)	100 (3894)

Notes: Values in the parentheses are the number of countries in transition. Lower rank – Lower inequality;

Top 1% income share: Rank 1 (Share < 0.1) / Rank 2 (0.1 ≤ Share < 0.14275) / Rank 3 (0.14275 ≤ Share < 0.1862) / Rank 4 (0.1862 ≤ Share < 0.21615) / Rank 5 (Share ≥ 0.21615)

Top 10% income share: Rank 1 (Share < 0.3387) / Rank 2 (0.3387 ≤ Share < 0.4393) / Rank 3 (0.4393 ≤ Share < 0.5112) / Rank 4 (0.5112 ≤ Share < 0.55025) / Rank 5 (Share ≥ 0.55025)

Bottom 50% income share: Rank 1 (Share < 0.0806) / Rank 2 (0.0806 ≤ Share < 0.11685) / Rank 3 (0.11685 ≤ Share < 0.1467) / Rank 4 (0.1467 ≤ Share < 0.19205) / Rank 5 (Share ≥ 0.19205)

Table 3: Mobility Indexes

Income share	1980 - 2000		2000 - 2022	
	Fields - Ok index (in %)	Shorroks index	Fields - Ok index (in %)	Shorroks index
Top 1% income share	14.95	0.16184	14.46	0.11581
Top 10% income share	7.50	0.08848	7.39	0.06313
Bottom 50% income share	12.09	0.06524	13.06	0.07344

Table 4: Transition Matrix of Gini index

1990 - 2000						
Rank	**1**	**2**	**3**	**4**	**5**	**Total**
1	**85.06 (74)**	14.94 (13)	0.00 (0)	0.00 (0)	0.00 (0)	100 (87)
2	0.72 (2)	**93.86 (260)**	5.42 (15)	0.00 (0)	0.00 (0)	100 (277)
3	0.00 (0)	1.00 (4)	**98.00 (392)**	1.00 (4)	0.00 (0)	100 (400)
4	0.00 (0)	0.00 (0)	1.15 (4)	**97.41 (339)**	1.44 (5)	100 (348)
5	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	**100.00 (202)**	100 (202)
Total	5.78 (76)	21.08 (277)	31.28 (411)	26.10 (343)	15.75 (207)	**100 (1314)**

2000 - 2022						
Rank	**1**	**2**	**3**	**4**	**5**	**Total**
1	**98.20 (436)**	1.80 (8)	0.00 (0)	0.00 (0)	0.00 (0)	100 (444)
2	0.89 (9)	**98.41 (992)**	0.69 (7)	0.00 (0)	0.00 (0)	100 (1008)
3	0.00 (0)	2.70 (22)	**96.45 (787)**	0.86 (7)	0.00 (0)	100 (816)
4	0.00 (0)	0.00 (0)	1.97 (17)	**97.79 (842)**	0.23 (2)	100 (861)
5	0.00 (0)	0.00 (0)	0.00 (0)	5.78 (13)	**94.22 (212)**	100 (225)
Total	13.27 (445)	30.47 (1022)	24.18 (811)	25.70 (862)	6.38 (214)	**100 (3354)**

Notes: Values in the parentheses are the number of countries in transition. Lower rank – Lower Gini - Lower inequality;

For 1990 - 2000: Rank 1 (Gini < 24.65) / Rank 2 (24.65 ≤ Gini < 32.1) / Rank 3 (32.1 ≤ Gini < 40.8) / Rank 4 (40.8 ≤ Gini < 48.6) / Rank 5 (Gini ≥ 48.6)

For 2000 - 2022: Rank 1 (Gini < 29.35) / Rank 2 (29.35 ≤ Gini < 37) / Rank 3 (37 ≤ Gini < 42.4) / Rank 4 (42.4 ≤ Gini < 50.7) / Rank 5 (Gini ≥ 50.7)