Studying Mobility at the Top of the Pyramid: An Analysis based on Forbes Lists

Matheus Outeiro and Matheus Leal[1]

[1] Institute for Mobility and Social Development (Imds).

Summary. This technical note aims to analyze the mobility of the richest families in Brazil. In particular, the note proposes to identify possible differences between mobility at the top of the pyramid in Brazil, in other developing countries, such as China and India, and in the United States. With the exception of Brazil, there was an increase in the concentration of wealth in the list of the super-rich between 2013 and 2022. Brazil stands out as the only country in which concentration has been reduced and India stands out as a country with a considerable increase in power in the hands of the richest. As for mobility at the top of the pyramid, we found that China stands out positively, with 62 new families entering the list of 95 richest families in the period analyzed.

Introduction

Suppose it is possible, at any given time, to rank all the individuals in a society from the richest to the poorest. Given this ranking, questions about intragenerational mobility in this society arise quite naturally: how will these individuals be in the horizon of a few years? Are they in exactly the same position, or has there been a change in their relative position? Integrating different generations into this idea of society – and thus moving on to the consideration of intergenerational mobility – other possible questions are: how will the income of the second generation of the family be, after a few years, in relation to the income of the first? What will be the relative position of the second generation when compared to that of the first?

Several factors influence income transitions throughout life – and therefore social mobility – but these factors may affect different income brackets distinctly. For the less fortunate, for example, issues such as education and opportunity to access the labor market are crucial.

On the other hand, the business environment of each country is important to determine the social mobility of the richest families. The more dynamic the market, the greater the mobility tends to be at the extreme right end of the income distribution.

This study measures the social mobility at the top of the pyramid in Brazil and compares it to the patterns observed in other countries. Using data from Forbes, we characterize relative changes in the ranking of the wealthiest Brazilian families in recent years and identify possible differences between Brazil and other selected countries: China, India, and the United States. We chose these countries for comparison because the United States is a developed country of reference, and China and India are emerging countries with great social inequality.

Databases

The data used in this note comes from the well-known Forbes magazine lists[1], which rank the richest in some selected countries. In particular, we used public lists, which have information on the name of the individual or family, their position in the ranking, and the value of their wealth.

The magazine publishes an annual list of the 400 richest individuals in the United States, as well as the 100 richest for China and India. For Brazil, however, we do not have this volume of data with the same frequency, so it was only possible to access public databases for two years: 2013 and 2022. There are other public Forbes lists for Brazil. However, they include very few families, which makes them unsuited for the purposes of this study. Thus, the analysis is based only on these two points in time.

To calculate individual net worth, we consider all types of assets: stakes in public and private companies, real estate, airplanes, farms, jewelry, as well as debts and charitable donations. We calculate the value of each of these items in local currency and then convert it to US dollars according to the exchange rate of the day.

We aggregate the wealth of all individuals from the same family so that our measures of social mobility capture the emergence of new fortunes and not changes in the number of heirs. We consider parents, spouses, and children to be part of the same dynasty.

Since the individuals on the list are usually public figures, it is possible to link people from the same family through careful investigation using the internet.

The following examples illustrate the importance of linking members of the same family. Joseph Safra, founder of Banco Safra, was present on the Forbes list of the richest in Brazil until 2020, the year he died. His fortune was then divided between his children, Jacob, David, Esther and Alberto Safra, and his wife, Vicky Safra. When they inherited the patriarch's fortune, they entered the select list of the wealthiest individuals in Brazil. If we didn't associate these people to a single family, we would overestimate social

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[1] 1More information can be found at https://www.forbes.com/billionaires/

mobility by counting these heirs as emergent super-rich. Instead, our dataset includes the combined wealth of the Safra dynasty in 2013 and 2022, even if the members change over time.

The aggregation of fortunes at the family level is also important in cases where the source of wealth is similar, such as when multiple relatives control a certain company. For instance, the three brothers, José Roberto, João Roberto and Roberto Irineu Marinho, inherited control of Rede Globo, Brazil's largest media group. The Marinho brothers appear on the Forbes list as three different people, even if the origin of their wealth is the same. Thus, counting them as part of one single family paints a more accurate picture of social mobility.

Note that by consolidating members of the same family, the ranking we build ends up being more concise compared to the original list provided by Forbes. In order to maintain an even number of families in all countries, the final list consists of 95 families for each year, both in 2013 and in 2022.

Results

This section presents an analysis of the social mobility and wealth concentration of the 95 richest families in Brazil, India, China, and the United States.

We show that there was an increase in the concentration of wealth in the hands of the wealthiest among the 95 richest families in India, China and the United States, but not in Brazil. India stands out as having undergone a great increase in wealth concentration.

As for mobility at the top of the pyramid, China stands out as the most dynamic country on this list: of the 95 richest Indian families in 2022, 65% were not in the 2013 list. Brazil, in turn, is in second position, with 48% of the 2022 list being made up of new entrants, followed by the US and India, with 37% and 35%.

A. Concentration of Wealth. Figure 1 shows the portion of the combined wealth of the 95 richest families in each year that is held by the wealthiest dynasties on the list. In Brazil, there is a reduction in the concentration of wealth in the hands of the richest families on the list between 2013 and 2022. In 2013, the top-5 families held about 35% of the total wealth on the list, while in 2022, the top-5 held just over 25% (see Figure 2a).

However, this is not the case in the other countries. The richest family in China, for example, held 4.5% of the total wealth on the list in 2013. In 2022, that number increased to 7%. Likewise, there was an increase of about 8 p.p. in the share of wealth held by the richest family in India. In 2022, the family held almost 20% of the total wealth of the 95 richest families.

In the United States, there is no significant change in the concentration of wealth among the richest families between the years analyzed. Figure 1d depicts the share of the total wealth on the list that is held by each family according to their position on the wealth ranking of the US each year. The light gray series refers to 2013, while the black one refers to 2022. There is a detachment of the curves around the 10 richest families. In fact, in 2013, the top-10 richest dynasties in the U.S. held approximately 41.6% of the share of total wealth of billionaires, while in 2022, that same number held 49.5% of the total. From position 14 onwards of the ranking, however, the curve for the year 2013 remains consistently above the 2022 series, ratifying the idea of an increase in the concentration of wealth in the period.

Figure 2 compares the share of wealth of the top-5 and top-25 richest families on the list in 2013 and 2022, respectively. It shows that Brazil differs from the other countries. While in China, India and the U.S. the share of wealth held by the 5 richest dynasties has increased, in Brazil the opposite happened.

Another interesting fact is the magnitude of the concentration of wealth in the countries analyzed. Note that India stands out for having sustained a large increase in concentration, represented by an increase of 7 percentage points – driven in large part by the two richest Indian families, which together concentrated 30% of income, compared to 16.7% in 2013. China and the United States recorded similar changes, adding two and one percentage points, respectively.

Extending the list of families analyzed a little further, we arrive at Figure 2b. Here, China and India change little in concentration for the period analyzed - less than 1 percentage point. On the other hand, Brazil and the U.S. maintain the trend seen previously: while the 25 richest families in Brazil deconcentrate income, going from 68% to 64% of the total wealth of the list, the 25 richest families in the U.S. absorb an even larger share, reaching 71% of the wealth analyzed (against 63% in 2013).

B. Mobility. This subsection, in turn, will address the topics related to mobility within the list of the super-rich. In order to effectively study mobility, it is necessary to identify the families that are present at both points in time and the new families that entered the list in 2022. These are what we call incoming families, which express the degree of mobility of the super-rich.

One way to measure mobility at the top of a country's distribution of wealth is to assess the number of new families on the list in the period analyzed. Table 1 presents these figures, as well as the average position occupied by the families - entrants - for each of the countries analyzed.

China was the country with the highest degree of mobility in super-rich families, with 62 new dynasties entering the list between 2013 and 2022. These families enter, on average, in the 53rd position on the list. Brazil ranks second according to the degree of mobility, with 46 new dynasties in the

Figure 1. Share of wealth according to ranking position

(a) Brazil

(b) China

(c) India

(d) US
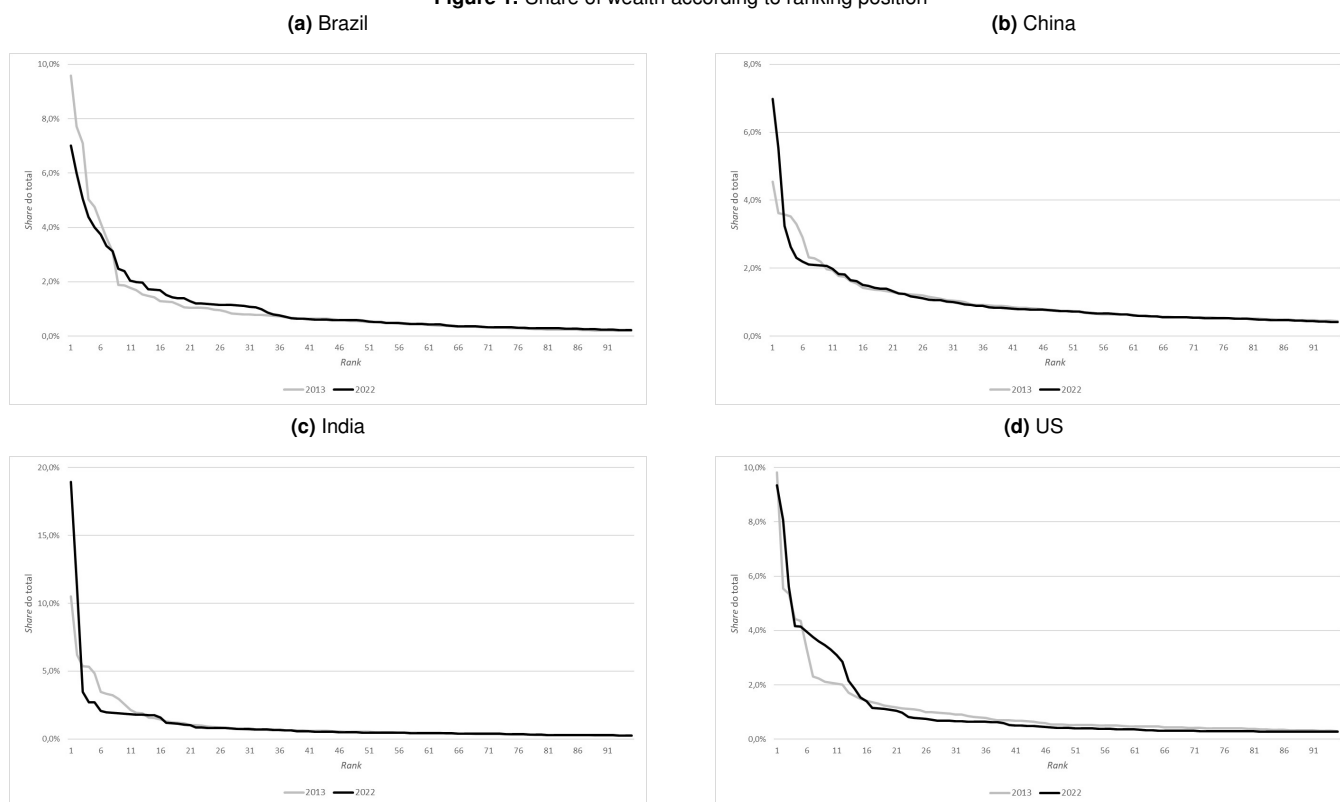
Note: The graphs show, for each country, the percentage of wealth held by the family according to its position in the ranking in relation to the total wealth of the 95 families on the list.

Figure 2. Share of wealth held by top-5 and top-25 families

(a) Top-5

(b) Top-25
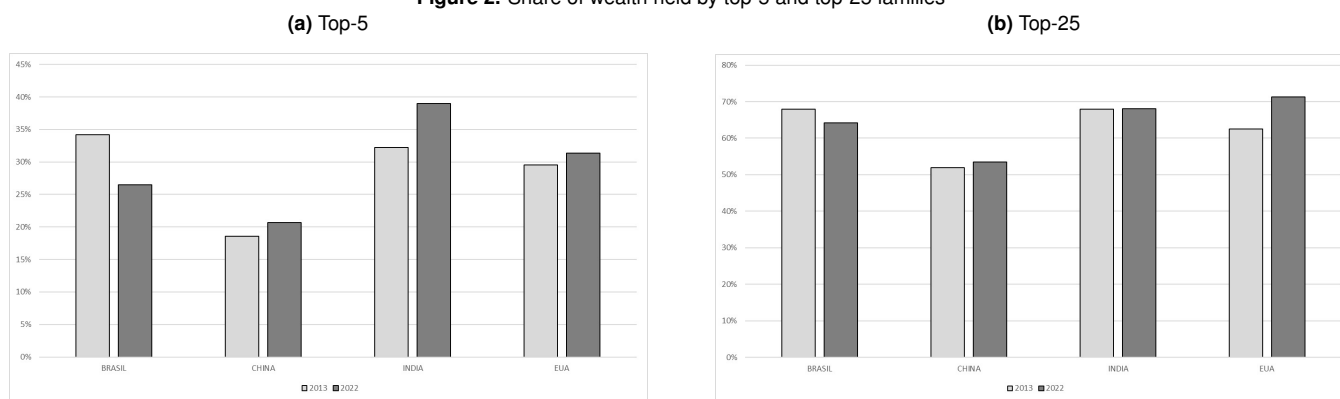
Note: Graph 2a shows the percentage of wealth held by the first 5 families in the ranking in relation to the total wealth of the 95 families on the list. Graph 2b shows this same percentage for the first 25 families in the ranking.

Table 1. Entrants on the list of richest families

| Country	Qtd.	Average position
Brazil	46	53
China	62	53
India	33	64
US	35	65

Nota: The table shows the number of new families that are present on the list of the 95 richest families in each country in 2022 but were not present in 2013. Since the number of families on each list is equal across countries, it is sufficient to present only the absolute number. The average position of the incoming families is also presented, indicating in which position on the list, on average, mobility has occurred.

period analyzed. The United States and India showed a considerably lower degree of mobility, with only 35 and 33 new families occupying the list of the 95 richest families in each country in this period, respectively.

To have a better description of the new entrant families, we present the distribution of these new entrants according to the position they have occupied in the respective lists (Figure 3).

In Brazil and India, these new families mainly enter between positions 32-48. However, in Brazil, there is a higher share of entrants at the top of the list. In both China and the United States, the entry is at the bottom of the list, between positions 63-79. However, as in the first case, China has a larger share

Figure 3. Histogram of the ranking of incoming families

(a) Brazil

(b) China

(c) India

(d) US
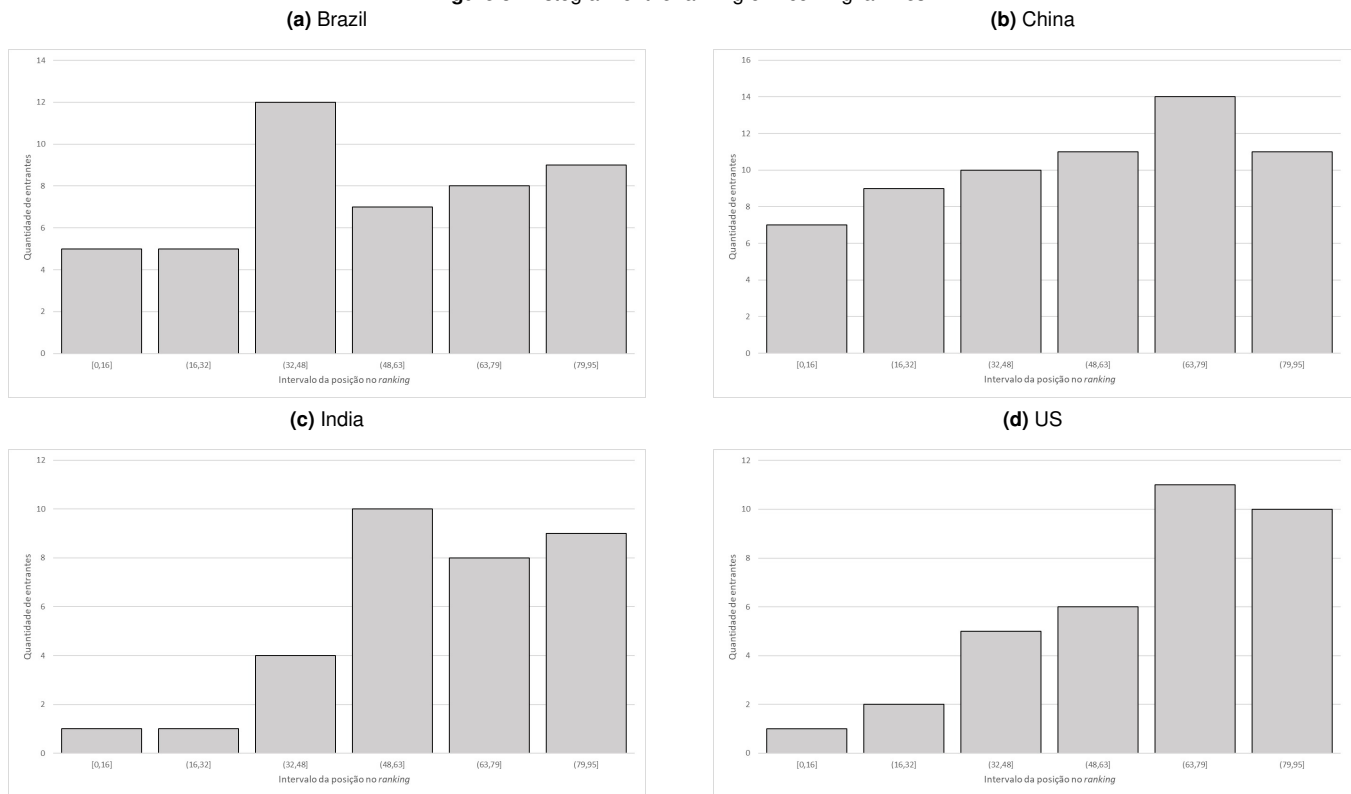
Note: The graphs above present the histogram of the position occupied by new families that are present in the list of the 95 richest families in each country in 2022 but were not on the list in 2013.

of entrants at the top of the list.

To analyze the issue from another point of view, i.e., the families that remained on the list, we arrive at Figure 4. Each scatter plot spells out the position in which each family was in 2013 and what position it went to in 2022. Notice that the dotted line mirrors the axes, a 45° line. Therefore, the closer to this line the data is concentrated, the less variability. The dashed lines represent a standard deviation plus and minus with respect to the line "$y = x$", that is, if there were no variability in the data. This interval between the dashed lines then represents the degree of variability among the positions of the families that remained on the list in the two years.

By analyzing each graph, it is possible to observe both the same patterns and the idiosyncrasies of each country. In general, it is possible to observe that almost all the source of variability comes from families that were in a position lower than the fortieth in 2013, but lost space, going to much higher positions in 2022. China, however, is a singular case that, in addition to the pattern described, also appears to have "contrary" movements, that is, dynasties that were badly placed in 2013, but gained positions.

The average position differential (2013 minus 2022) corroborates the argument. For Brazil, families that remained on the list in both years lost, on average, 13.9 positions. Indian and Chinese families lost an average of 12 and 12.6 positions, respectively, while U.S. families lost an average of 5.5 positions. Such data reflect, therefore, that the

US not only has had less mobility (new entrants), but also the families that remained moved less, while China, India, and Brazil, above all, vary more.

In addition, we can see in Figure 4 for the graphs of Brazil and the US that families that were at the top of the list tended to remain at the top, in almost unchanged positions. In particular, the U.S. has less variability in the data, so the points are much closer to the 45-degree line– in fact, taking the standard deviation of the difference between the 2013 position and 2022, the U.S. standard deviation is almost 40% smaller than the second lowest (India).

On the other hand, the data from China have great variability, being the country that has the highest standard deviation of the ranking differential. This fact boosts the idea of mobility in China: not only does it have the largest number of new entrants, but also, among those who remained, it is the country in which there was the greatest variation. India, finally, seems to accumulate a high number of families that remain at the top - note the density of dots between the 20 position marks on both axes. This accumulation of families, it should be said, is in line with Figure 1c, which shows the concentration of income of the richest families in India, higher than that of similar countries.

Concluding Remarks

This technical note contributes to the debate on social mobility by analyzing the concentration of wealth and social

Table 2. Concentration Indices

Country	Brazil		China		India		US	
Index	2013	2022	2013	2022	2013	2022	2013	2022
HHI	339.6	251.8	165.7	191.6	324.0	571.5	278.2	336.8
Var. %	-	-26%	-	16%	-	76%	-	21%
Dominância	0.141	0.088	0.048	0.101	0.157	0.442	0.157	0.128
Var. %	-	-38%	-	113%	-	182%	-	-18%
Theil	0.614	0.466	0.215	0.259	0.578	0.761	0.460	0.639
Var. %	-	-24%	-	20%	-	32%	-	39%

Note: The table presents concentration indices - expressing the concentration of wealth in the list of the 95 richest families in each country in the years analyzed. For an explanation of the indexes presented, see Appendix 1.
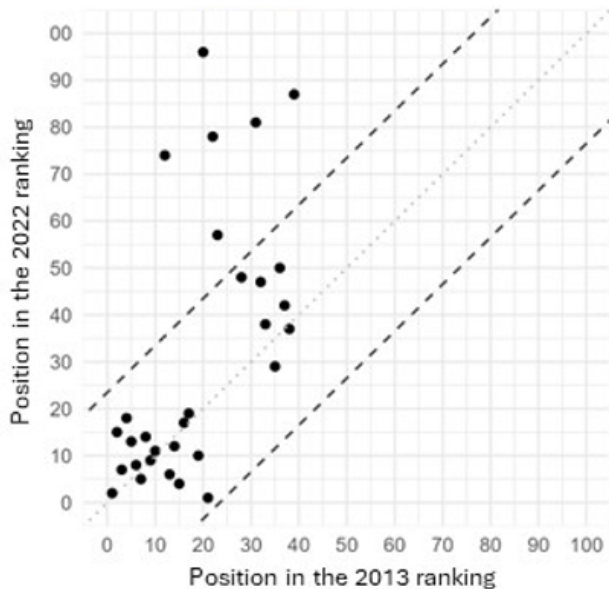
Figure 4. Correlation between the positions in ranking in 2013 and in 2022

(a) Brazil
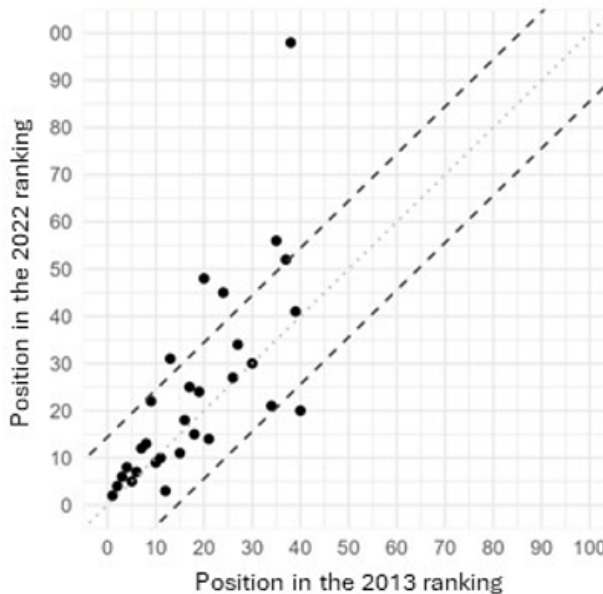
(b) China

(c) India

(d) US
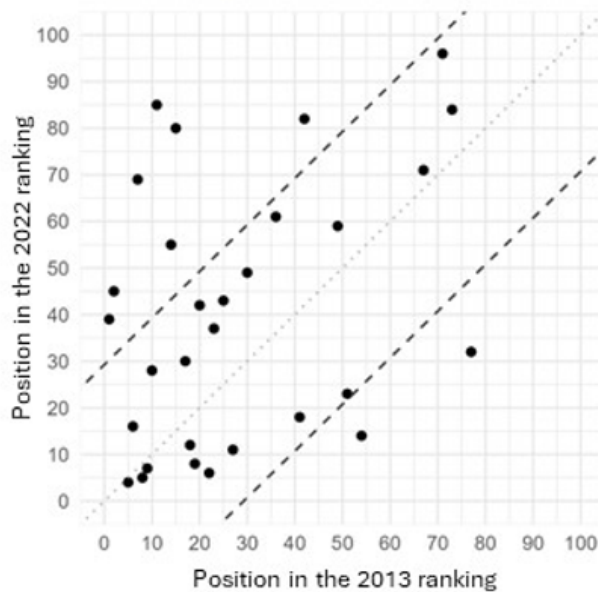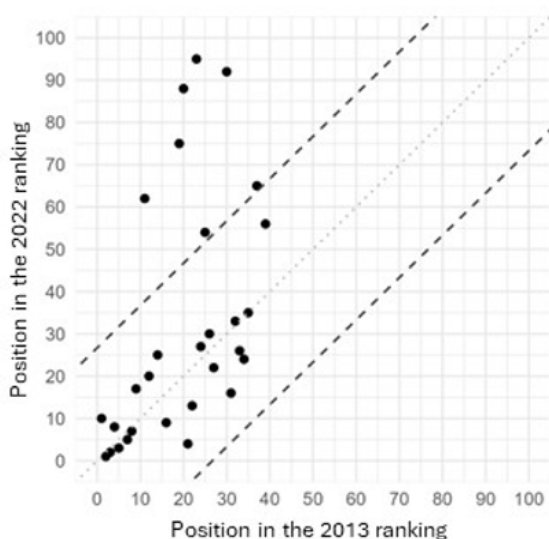
Note: The graphs above show the dispersion of the ranking positions of the families present in 2013 (abscissas) and 2022 (ordinated). The dotted line (in gray) refers to the identity function—that is, it mirrors the axes—while the dashed lines represent a range of one standard deviation for each country.

mobility at the top of the pyramid in Brazil and other selected countries: China, India, and the United States. In particular, we looked at the 95 richest families in each of the countries at two time points: 2013 and 2022.

Figure 2a, shows that, in 2013, Brazil had the highest concentration of wealth in the top-5 families on the list, being surpassed, in 2022, by India, with almost 40% of the wealth on the list concentrated in the top 5 families. By extending the list a little further and analyzing the top-25 families, Brazil and India have the highest concentration in 2013. In 2022, this place will be occupied by the United States, in which the top-25 families will hold more than 70% of the wealth on the list (Figure 2b).

In the other countries, there was an increase in the concentration of wealth at the top of the list. In India, in particular, there has been a significant increase in the concentration of wealth in the top 5 families. This episode stems, mainly, from the greater concentration of wealth in the richest family in the country. In 2013, the richest Indian family held just over 10% of the wealth on the list, while in 2022, this figure increased to almost 20%. In comparison, no other family, in either year, held 10% of the total wealth on the list (Figure 1).

In China, the increase in concentration is also more pronounced for the first families on the list – in particular, in the country's two richest families. In the United States, on the other hand, there was an increase in the share of wealth held by the top-25 families on the list. This result was driven by families in positions 6-14.

To analyze the mobility of the super-rich in each country, we present the number of new families entering the list in the analyzed period (Table 1). China surprised by showing the greatest mobility in the top 95 richest families, with 62 new dynasties occupying the list between 2013 and 2022. This number was considerably higher than in the other countries analyzed. Brazil, the country with the second highest degree of social mobility, had 46 new incoming dynasties in this period. India and the United States showed a considerably lower degree of mobility, with only 33 and 35 new families occupying the list between 2013 and 2022, respectively. A highlight of the distribution of incoming families is that, compared to India and the United States, Brazil and China have a larger share of incoming dynasties at the top of the list (Figure 3).

Apêndice 1: Brief Explanation of Indexes

- **1. Herfindahl-Hirschman Index (HHI)**: It is a measure of market concentration that assesses the dominance of companies in a specific industry. The higher the value of the index, the more concentrated the market. It is calculated by adding up the squares of the market shares of all the companies in the industry. HHI highlights the relative importance of dominant firms and competition in the market. It ranges from 0 to 10000, so the higher the index, the more concentrated the market is:

$$\text{HHI} = \sum_{i=1}^{n} s_i^2$$

  Where:
  n: number of companies in the sector
  s_i: company's market share i

- **Dominance Index (ID)**: It evaluates the degree to which one or more firms exert control over a market. This ratio is often used to measure the influence of a leading company or a small group of companies relative to competitors. The higher the index, the greater the dominance of firms in the market.

$$\text{ID} = \sum_{i=1}^{n} \frac{s_i}{(\text{HHI})^2}$$

  Where:
  n: number of companies in the sector
  s_i: company's market share i

- **Theil's Index (IT)**: It evaluates how far a given income distribution deviates from a perfect uniform distribution (each person/firm receives $1/n$ of total income). That is, considering how much each person contributes to the total income, it is estimated how close the distribution in question is to a perfect uniform. Note that the lower the index, the more it resembles equal distribution (in particular, if IT $= 0$, it is the uniform distribution itself.)

$$\text{IT} = \sum_{i=1}^{n} s_i \cdot \ln\left(\frac{s_i}{\frac{1}{n}}\right)$$

  Where:
  n: number of companies in the sector
  s_i: company's market share i