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DE ECONOMÍA



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On the World Economic Elite

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## ON THE WORLD ECONOMIC ELITE

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### Abstract

Economic elites have not received enough attention in the economic literature. The obvious reason is limited access of information. This paper contributes to the contemporary knowledge in three ways. First, it uses a new unique data set on the world economic elite covering 2002-2014; second, it develops a method to measure the degree of circulation of elites; and finally provides a theoretical explanation of the observed facts. The empirical finding is that the world economic elite shows a low degree of circulation. In spite of so much globalization, liberalization, long-term economic growth, and a recent grand economic recession, the core of the elites remain mostly unchanged. Our theory is able to explain this fact and makes the distinction between market competition and elite competition, which is a kind of meta-competition. Thus the following relationship is derived from the theory: The low circulation of elites, namely, the low meta-competition, underlies the oligopolistic market structures that we observe in the real world.

Keywords: Economic elites, elite competition, wealth concentration.

JEL Classification: D31, D40, O24.

### Resumen

Las élites económicas no han recibido suficiente atención en la literatura económica. La razón evidente es el acceso limitado a información. Este estudio contribuye al conocimiento contemporáneo en tres aspectos. En primer lugar, se utiliza una nueva base de datos de las élites económicas mundiales que cubre el periodo 2002-2014. En segundo lugar, se desarrolla un método para medir el grado de circulación de las élites. Finalmente, se ofrece una explicación teórica de los hechos observados. El hallazgo empírico consiste en que la élite económica mundial muestra un bajo grado de circulación. A pesar de la mayor globalización, liberalización, crecimiento económico de largo plazo y una gran recesión económica reciente, el núcleo de las élites permanece casi inmutable. Nuestra teoría explica este hecho y distingue entre competencia de mercado y competencia de la élite, la cual es una especie de meta-competencia. Luego, la siguiente relación es derivada de la teoría: el bajo nivel de circulación de las élites, es decir, la baja meta-competencia, subyace a las estructuras oligopolísticas de mercado que se observan en el mundo real.

Palabras clave: Élite económica, competencia de la élite, concentración de la riqueza.

Códigos JEL: D31, D40, O24

## ON THE WORLD ECONOMIC ELITE

Adolfo Figueroa\*  
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### 1. INTRODUCTION

Economic analysis of the economic elites is not common. Compared to the thousands of studies about poverty, economic elites have received less attention in the literature. The obvious reason is lack of information. Researchers and interviewers can easily visit poor households and ask them the questions they want by a direct contact. Studying the economic elites is not viable using this method; in a sense, the researcher is faced with the problem of using the method of the astronomer, trying to study the wealthy households at a distance, but without the help of a telescope.

The only sources available to study the economic elites come from private firms that have access to the financial management of the very wealthy people and are able to disclose some information, such as Forbes and Credit Swiss. Ranking of the very wealthy people is the most common information. These sources do not reveal their methods of calculations. How reliable the information might be is a mystery. However, that is all we researchers can have.

Recently, Oxfam has published a data set on the net worth of the world wealthiest people for the period 2002-2014 using the yearly Forbes' billionaires list (Oxfam 2015).<sup>1</sup> This new data set is very valuable for we have a relatively long period of observation, in which the method of calculation (whatever it is) is expected to be uniform, making the data set comparable. Moreover, it includes the 80 richest people in the world for each year. This is a unique data set to know something about the world economic elite.

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<sup>1</sup> The referred study was presented two days before the World Economic Forum of 2015, a meeting where Oxfam International's Executive Director Winnie Byanyima was invited to be a co-chair.

Elites are defined as those social groups at the top of any rankable social-power scale (Bodley 1999). Hence, the economic elite can be seen as the social group at the top of a rankable wealth scale. The study of the elite is important because of the economic power it concentrates. Economic and political elites constitute the fundamental power structure of capitalism. Paradoxically, as noted above, our knowledge about world economic elites is still incipient.

This paper seeks to contribute to the literature in three ways. First, it analyzes the new data set collected by Oxfam on the world economic elite; second, it develops a method to measure the mobility within the elites (the index of circulation of elites); and finally provides a theoretical explanation of the observed facts.

## 2. THE FACTS

Table 1 shows the annual aggregate data of net worth of the individuals conforming the world economic elite for the period 2002-2014. The value of net worth is measured in nominal dollars of each year. Trends in real values are unavailable. However, the fall in the total and mean values in the years 2009 and 2010, in nominal values, indicates that the global financial crisis had a significant effect upon the net worth of the world economic elite, which took around four years to recuperate. By comparison, we estimate that the 80 wealthiest people of 2014 had a total wealth that is equivalent to 12% of the US GDP of the same year, as reported by the World Bank (2014, p. 297).

On the dispersion of the mean value within the group of eighty people, measured by the Pearson coefficient of variability, we can see that it tends to decrease over time. The differences in the extreme values also tend to diminish. The data set shows that in 2014 the richest billionaire owned 76 billion dollars, whereas the poorest had 13 billion, a difference of six times. In the first years of the period, the gap was around ten times. Hence, the elites of years 2013-14 tend to be more homogeneous in the distribution of net worth compared to the list of 2002-03.

Table 1. Net worth of the eighty richest people of the world, 2002-2014 (\$ mil)

<b>Year</b>	<b>Total</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>CV</b>	<b>Min.</b>	<b>Max.</b>
2002	772 000	9 650	7 951	82%	4 300	52 800
2003	701 600	8 770	6 198	71%	4 000	40 700
2004	871 400	10 893	7 263	67%	5 200	46 600
2005	936 600	11 708	7 341	63%	5 600	46 500
2006	1 022 900	12 786	7 251	57%	6 700	50 000
2007	1 270 000	15 875	8 875	56%	8 500	56 000
2008	1 532 900	19 161	10 801	56%	10 000	62 000
2009	942 000	11 775	6 631	56%	6 000	40 000
2010	1 289 000	16 113	8 798	55%	8 500	53 500
2011	1 512 700	18 909	10 499	56%	10 100	74 000
2012	1 516 200	18 953	10 029	53%	10 900	69 000
2013	1 659 700	20 746	11 517	56%	12 000	73 000
2014	1 898 600	23 733	12 901	54%	13 400	76 000

Note: Current FX, money of the day.

Source: Oxfam (2015). Own elaboration.

Table 2 depicts the rotation or circulation of the people in the list of the eighty people over time. The total number of people that ever appeared in the Forbes' list is 193 in the period covering 13 years. According to this table, 21 people appeared in the list every year, that is, 13 times, whereas 40 people appeared only once. The group of 21 people could be called the hard core of the world economic elite because it also constitutes the wealthiest group, as will be shown below.

Table 2. Number of years that a person appears among the 80 richest people in  
2002-2014

Number of years	Freq.	% of the total list <sup>1/</sup>
13	21	11%
12	8	4%
11	6	3%
10	7	4%
9	10	5%
8	3	2%
7	9	5%
6	12	6%
5	12	6%
4	16	8%
3	24	12%
2	25	13%
1	40	21%

<sup>1/</sup>There are 193 different names among the 80 richest people between 2002 and 2014. Thus, this column is calculated by dividing Freq./193.

Source: Oxfam (2015). Own elaboration.

Table 3, column 1, shows that the hard core, which represents 26% of the people in the group of eighty (21/80), concentrated on average 38% of the total net worth of the group. This percentage varies between 33% and 44%, depending on the year. Note that the average share of 38% is maintained in 2009, the crisis year. Column 2 just indicates that the mean net worth of the core was 75% higher than that of the rest, on average over the years. Thus, the hard core of the elite is also the richest group. Finally, column 3 shows the Gini coefficient for each year, with the average value of 0.27. The range goes from 0.23 to 0.36. The first years of the period show higher value of Gini, but it is almost stable in the last nine years.

The average value of the Gini coefficient (0.27) is much smaller than what some studies have reported on the concentration of wealth at national level in the First World. For example, the Gini value was 0.83 for the United States in 1995 (Wolff 1998, table 12) and it was 0.67, on average, for a sample of 19 countries in 2000 (Davies *et al.* 2010, p.246). The study of Piketty (2014, table 7.2) presents estimates of Gini coefficients for the year



2010 in Europe and the USA, which have values of 0.67 and 0.73. Therefore, the world economic elite is a relatively much more homogenous social group. On statistical grounds, this result should not be surprising, for the elite group is a sample drawn from the upper tail of the national wealth distributions; what is surprising, however, is the magnitude of the differences in wealth concentration.

Table 3. Wealth concentration among the eighty richest people of the world, 2002-2014

	<b>Core share<sup>1/</sup></b>	<b>Core relative mean<sup>2/</sup></b>	<b>Gini coefficient<sup>3/</sup></b>
<b>Mean</b>	<b>0.38</b>	<b>1.75</b>	<b>0.272</b>
2002	0.44	2.17	0.361
2003	0.40	1.87	0.320
2004	0.40	1.90	0.299
2005	0.40	1.88	0.289
2006	0.38	1.73	0.258
2007	0.37	1.65	0.249
2008	0.33	1.40	0.259
2009	0.38	1.73	0.267
2010	0.37	1.66	0.253
2011	0.37	1.64	0.249
2012	0.37	1.68	0.233
2013	0.38	1.73	0.242
2014	0.38	1.73	0.254

<sup>1/</sup> Share of the core in total net worth of the group of 80.

<sup>2/</sup> Average net worth of the core relative to that of the rest.

<sup>3/</sup> Gini coefficient, where n=80.

Source: Oxfam (2015). Own elaboration.

Table 4 shows the origin of the elite group. Among the hard core, the vast majority, 18 from the 21 people, are nationals of the First World countries. For the rest, the table shows that 58% are from the First World countries, 26% from the Third World and 16% from non-capitalist countries (see country classification in the appendix, table A1.1). Overall people from the First World are dominant in the world economic elite.

Table 4. Elite groups by country type, 2002-2014

	Total		Core group		Rest	
<b>Total</b>	<b>193</b>	<b>100%</b>	<b>21</b>	<b>100%</b>	<b>172</b>	<b>100%</b>
First World	118	61%	18	86%	100	58%
Third World	48	25%	3	14%	45	26%
Non capitalist	27	14%	0	0%	27	16%

Note: Country classification is detailed in table A1.1

Source: Oxfam (2015). Own elaboration.

### 3. MEASURING THE CIRCULATION OF ELITES

The question known as the “circulation of elites” refers to the change in the membership of the elite. If membership changes continuously, then we could say that there is in society a high degree of circulation of elites. By contrast, if membership remains almost unchanged, the degree of circulation of elites is low.

Economic elites are important to understand society because they have power and because its degree of circulation shows the degree of economic mobility in society. Therefore, the problem of circulation of elites refers to the changes in the social composition of the elite. Different composition would imply different forms and degrees of economic power in society.

The question now is to determine how much circulation has taken place in the world economic elite in the past 13 years. The data set presented above can help us to answer this question.<sup>2</sup>

An index that is able to measure the degree of circulation of elites is proposed now, as such index is absent in the literature. Intuitively, the simplest way to construct a measure of the degree of circulation would be by comparing the extreme cases. If no name were repeated in our elite list, then the total members of the eighty-group elite would be 1040

<sup>2</sup> The complete data set is reported in Appendix A3. It also can be downloaded from Oxfam’s website:  
<http://policy-practice.oxfam.org.uk/publications/wealth-having-it-all-and-wanting-more-338125>

people, that is, 13 times 80. This would be the case of perfect circulation or degree of circulation equal to one. On the other extreme, if the same names were repeated year after year, then 80 people will constitute the list. This would be the case of nil circulation.

The data set shows 193 people listed in the 13 years. Then a first index of circulation could be  $193/1040=0.186$ . This index indicates low circulation. However, this index ignores the frequency distribution of names. The 193 names can have different distributions. The observed data was shown in Table 2. We may deduct from 193 the 21 names that are repeated every year, which we have defined as the hard core of the elite. Hence, we are left with 172 people who have really circulated (in and out). Hence, the second index would be equal to  $172/1040=0.165$ . Consider a third index in which the core is defined as the people who appear all the time or most of the time in the list (seven or more years out of 13), which amounts to 64 people; thus, we get an index of  $129/1040=0.124$ .

Using the latter definition of the core of the elite, we propose the following index of circulation of elites ( $C$ ):

$$C = \frac{N - n}{ET}$$

In this index, the symbol  $E$  represents the size of the elite that is defined under the study,  $T$  the number of years under observation,  $N$  the total people who appear in the list in period  $T$ , and  $n$  the number of people that appear in the list all the time or most of the time (the nucleus or core), such that the following inequalities hold true:  $N \geq n$ ,  $N \leq ET$  and  $n \leq E$ . According to the index  $C$ , the higher the value of  $C$ , the higher the degree of circulation; thus it is indeed an index of circulation. Moreover, the higher the number of people whose names are repeated, the lower the value of  $C$ , and thus the lower the degree of circulation. In one extreme, if the list included the same names, repeated year after year, then  $N = n = E$  and  $C = 0$ . In the other extreme, if no name were ever repeated, then  $N = ET$  and  $n = 0$ , which implies  $C = 1$ . For a given value of  $E$ , the index  $C$  will be able to measure changes in the circulation of elites over time.

The index of circulation of the world economic elite is, according to our data set, equal to 0.124 ( $E = 80$ ,  $T = 13$ ,  $N = 193$ ,  $n = 64$ ). The conclusion is that the degree of circulation of the world economic elite in the period 2002-2014 was too low, that is, far from perfect circulation and much closer to lack of circulation. In this period of extended globalization and liberalism, there is no much mobility in the elite group. In particular, 64 people constitute the core of the world economic elite.

It is clear that index  $C$  takes into account only a point of the frequency distribution of names, not the entire distribution. This may be called the *simple circulation index*. We also present the circulation index  $C^*$ , which takes into account the entire distribution; thus, it may be called the *integral circulation index*. The  $C^*$  index has three components:  $c$ , the basic circulation (empirical list in relation to the theoretical maximum);  $p_1$ , a penalty for mortality rate; and  $p_2$ , a penalty for frequency distribution, such that both penalties must satisfy:  $p_1 \in [0,1]$  and  $p_2 \in [0,1]$ .

$$C^* = c \cdot p_1 \cdot p_2$$

Where,

$$c = \frac{N}{ET} = C + \frac{n}{ET}$$

$$p_1 = 1 - \frac{m}{N}$$

$$p_2 = \ln(e^{1-J})$$

$m$  is the number of deaths in the elite during the period  $T$ .  $J$  captures the frequency distribution function through a weighted average, where the weights are the square of the number of times that each name appears.<sup>3</sup> Note that the two indexes are positively related, namely, the simple index is contained in the integral index. According to our data set,  $c = 0.186$  and  $p_2 = 0.728$ . Assuming that no member of the elite is dead between 2002 and 2014 (which is an optimistic assumption), then  $p_1 = 1$ . Therefore, the integral circulation index is  $C^* = (0.186)(1)(0.728) = 0.135$ .

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<sup>3</sup> More details about the  $C^*$  index specification are given in Appendix A2.

Compared to the simple circulation index (0.124), this estimate shows a slightly higher circulation of elites, but still a low-level circulation. Therefore, both estimates point to the same observed fact: there is a low degree of circulation of the world economic elite.

#### 4. AN EXPLANATORY THEORY AND SOME HYPOTHESES

Why do we observe a low degree of circulation of elites? In the period 2002-2014, many changes took place in the world economy, including a grand economic depression. Yet, the core of the economic elite has remained almost unchanged. The circulation of the world economic elite seems, from our empirical results, not to be endogenous in the economic process. The grand depression had a quantitative effect upon the average value of net worth of the elites, as shown in Table 1. However, it had no significant qualitative effect in the circulation of the elites.

A theory of economic elites, where its members are capitalists owning large amounts of physical and financial capital, was proposed by Figueroa (2008). This theory can be stated as follows: members of economic elites seek to maximize economic returns and at the same time to maintain their privileged position in society; between these two objectives, elites have lexicographic preferences. Social position has priority: elites are not willing to substitute social position in exchange for higher economic returns.

Certainly, it is not just a matter of desire to maintain the privileged position. For this to happen, elites must have mechanisms that lead to such objective, avoiding the risk of being dethroned. The use of the advantages of being wealthy is the mechanism. The theory predicts the following behavior of elites:

- (a) The economic elites will invest in a portfolio of projects that has high mean returns even if it has high risk because of the large capacity they have to bear high losses.
- (b) Financing is not a limitative factor for investing in projects because, in addition to their own profits, elites have easy access to capital markets.
- (c) Because the elites operate in international markets, their influence on national governments is great, as they can threaten governments with reallocating their

investment to other countries; so they are able to negotiate domestic investment with governments on very favorable terms.

- (d) They are able to invest in R&D to increase economic returns of their investments.
- (e) They are able to be members of a social network, which is constituted by the wealthy only. Inheritance is another mechanism.

The basic mechanisms that economic elites use to maintain their privileged position are summarized in these five propositions. The first indicates that investors' behavior are guided by the motivation of avoiding to play risky games (which is not the same as the risk averse assumption). This motivation implies that the wealthy will be able to invest in projects of high returns and high risks, given their higher capacity to bear large losses compared to less wealthy investors (Figuroa 2015, vol.2, chap.6). The second proposition is self-explanatory. The third is related to the theory of Michał Kalecki (1971, chap.12) and could be called "Kaleckian threat". Because investors are free to select countries in which to invest, they are offered the best incentives by national governments, or else they would invest in other countries. The fourth proposition just indicates that technological innovations are endogenous, and the last introduces the significance of social networks in the behavior of economic elites (Heemskerk and Takes, 2015).

The advantages of being wealthy are thus clear. According to this theory, elites cannot be dethroned endogenously in the economic process. In particular, they have the capacity to resist the risks of business and to be protected against situations that may imply economic disaster to them (leaving the club). They are too wealthy to fail. Their firms may fail, but not the members of the elite. The elite also has the power to impose their will upon others, such as national governments or the media (Schutz 2011, chap.9). This economic and political power are exercised to increase even more their wealth.

As the theory of elites predicts, due to the scale advantage, the mechanisms of competition to dethrone the members of the elite and thus generate a high degree of

circulation of elites is very weak. The initial conditions are very important and thus there is a kind of path dependence in the evolution of elites.

This result is also consistent with the hypothesis put forward by sociologist T.B. Bottomore. He stated: "The elite undergoes changes in its membership ordinarily by the recruitment of new individual members from the lower strata of society, sometimes by the incorporation of new social groups, and occasionally by the complete replacement of the established elite by a counter elite, as occurs in revolutions" (Bottomore 1964). Bottomore is referring here to the concept of political elites, but the hypothesis seems to be applicable to economic elites as well. The theory of elites also predicts that significant circulation of the elite is exogenous to the economic process. It will come from revolutions, political or technological.

In sum, the theory of elites proposed here predicts low circulation of elites in the economic process. Changes may occur, but they will be exogenously determined. This prediction is consistent with the facts shown in the previous section. The theory may then be accepted at this stage of our research.

## 5. MARKET COMPETITION VS META-COMPETITION

The idea that free markets are conducive to strong competition is the most fundamental belief of the current liberal thinking. However, markets are usually taken as the only places where capitalists compete.

As shown above, a prior competition takes place among capitalists, in which they compete with each other to become part of the economic elite and thus obtain the corresponding advantages. In this space, capitalists compete with their initial endowments. Those endowed with large capital have an advantage over the others, the scale advantage, as the mechanisms pointed out above suggest. The very wealthy have higher capacity to absorb losses in doing investment; they have higher access to capital markets; they have higher benefits in negotiating investment projects with national governments; and they have the advantage of having protection from a social network,

which is also constituted by the very wealthy. The elite competition is a kind of meta-competition, a first order competition, which is prior to market competition. Moreover, elite competition is an essential determinant of market competition, as we will argue now.

The fact that the circulation of elites is exogenously determined in the economic process implies that the first order competition is not the fundamental competition under modern capitalism. This explains the low degree of circulation of the world economic elite observed in the period 2002-2014, as shown above. However, elite competition seems to be the most important type of competition to attain a more efficient and more egalitarian capitalism. This is so because elites have a great influence on the allocation of investment to industries, to countries, and to types of technological innovations.

Is the physical capital concentrated in the hands of the best possible elite, the most talented people for those tasks that make a good society? Social scientist Vilfredo Pareto discussed this problem and showed great concern with this type of efficiency. As John Higley (2010) summarized, "Pareto postulated that in a society with truly unrestricted social mobility, elites would consist of the most talented and deserving individuals" (p.161). Thus Pareto advocated a society in which social mobility were very high so that the circulation of elites were also very high, which would guarantee that there is competition among the elites from which the best elite would emerge. In terms of our theoretical framework, he was advocating for a higher degree of meta-competition or first order competition. However, in the current society, the elites' competition is very low. No Darwinian evolutionary mechanism exists that selects naturally (endogenously) the best elite.

Consider the following hypotheses about the relationships between meta-competition and market competition, between first order and second order competition. On the one hand, market competition will not change the relative position of the economic elites. The circulation of elites is not endogenous; it does not depend upon the outcome of prices and quantities in the market system. It follows that the result of market competition will just reproduce the initial wealth inequality. On the other hand, lack of



competition at the meta-competition level will determine the degree of market competition. The low degree of circulation of elites will imply markets operating with less competitive, more oligopolistic, market structures. The common idea that perfect competition in the market place tends to prevail in the economic process is inconsistent with the existence and persistence of economic elites. A very competitive market system requires a high degree of circulation of elites.

The much-discussed problem of market efficiency in standard economics is therefore a second order efficiency. This is a misplaced problem, for market efficiency depends upon the efficiency in the meta-competition. Whether the concentration of wealth in the economic elite constitutes the most efficient allocation of physical and financial capital among individuals in society is therefore the relevant and prior question. The fact that the elite is reproduced in the economic process does not imply that it is the best elite; under this criterion, any elite would always be the best. According to the theory of elites, this outcome corresponds to the scale effect of the large wealth endowment; that is, the scale advantage hides the inefficiency due to the lack of strong meta-competition.

The theory put forward here predicts low competition in that sphere and thus elites do not tend to circulate endogenously. The empirical fact, also presented here, gives support to this modern theory of elites.

What is striking is that Vilfredo Pareto is mostly known in standard economics for his efficiency concept, called Pareto optimality. This concept refers to the second order competition, that of market competition, given the wealth distribution and the composition of the elite. According to the theory of elites, it is expected that another elite, the result of first order competition, would imply a more efficient society and a better quality society.

## 6. COMPARATIVE ADVANTAGE IN INTERNATIONAL TRADE

The idea that countries, under free market system, specialize in international trade according to their comparative advantage runs strong in standard economics. This refers to static comparative advantages, that is, given resource endowments and technology. In dynamic terms, however, comparative advantage depends upon the allocation of investments and new technologies to economic sectors of the countries.

Economic elites concentrate not only wealth, but also the investment flows in the world economy. Their decisions on where to allocate their investments will determine the dynamic comparative advantage of countries. The more concentrated the elites, the more important direct foreign investment will become. An indicator of the economic power of the world elites through their transnational corporations is the following fact: UNCTAD estimates that about 80% of global international trade is linked to the international production networks of transnational corporations (UNCTAD, 2013, Chapter IV). Therefore, economic elites are the world planners as regards growth, employment, and income inequality within and between countries.

In spite of the increasing globalization of the world economy, and the long-term economic growth experienced everywhere, the fact is that overall income inequality is high and persistent (Milanovic, 2005). The main reason that income inequality within and between countries do not fall in the process of economic growth is that inequality in wealth does not decline with economic growth; that is, inequality in wealth is indeed exogenous to the economic growth process (Figueroa, 2015, Volume II, Chapter 6). Theoretically and empirically, changes in the circulation of elites are not endogenous, but exogenous to the economic process. It is no paradox that overall income inequality has been persistent over time.

## 7. CONCLUSIONS

The paper has, firstly, analyzed a new and unique data set on the world economic elite for the period 2002-2014. Secondly, it has developed an index to measure the degree of the circulation of elites, which has been applied to the data set, and the empirical finding is that the world economic elite shows a low degree of circulation. In spite of so much globalization, liberalization, long-term economic growth, and a recent grand economic recession, the core of the elites remain mostly unchanged. Thirdly, the paper has offered a theoretical explanation of this fact. The theory of elites is able to explain it. The scale effect of large wealth ownership gives the elite the mechanism to persist as elite, with high economic and political power. Members of the economic elite are too wealthy to fail.

The observed fact of a low circulation of elites implies that the competition to become part of the elite, the first order competition, is also weak. Then it follows that the existence of a core of the elite leads to a market system that operates with oligopolistic market structures. This prediction of the elite theory is consistent with what we observe in the real world about market structures. To be sure, a high degree of market competition would require a high degree of circulation of elites, which is not the case in the real world.

Furthermore, elites have economic and political power, especially upon national governments. Elites also have the power to influence the dynamic comparative advantage of nations, together with its growth rate and income inequality. Income inequality, within and between countries, does not fall in the process of economic growth because the concentration of physical and financial capital does not change endogenously. The degree of circulation of elites can change only exogenously.

The high concentration of capital in the hands of the elites is important for the quality of society not only in terms of the moral values about the unfairness of inequality. It is also important, as has been shown in this paper, because the elites play a significant role in shaping our society and its future. Economic elites are the world planners.

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## Appendix

### A1. Tables

Table A1.1 Country classification

<b>First World</b>	<b>Third World</b>	<b>Non-capitalist</b>
Australia	Brazil	China
Canada	Chile	Czech Republic
Cyprus	Colombia	Romania
France	Egypt	Russia
Germany	Hong Kong	Ukraine
Greece	India	
Italy	Kuwait	
Japan	Malaysia	
Netherlands	Mexico	
Spain	Nigeria	
Sweden	Philippines	
Switzerland	Saudi Arabia	
United Kingdom	South Africa	
United States	South Korea	
	Taiwan	
	Thailand	
	United Arab Emirates	
	Venezuela	

Own elaboration.

Table A1.2 Frequency distribution and some calculations for the integral circulation index

<b>t</b>	<b>n</b>	<b>t<sup>2</sup></b>	<b>t<sup>2</sup>*n</b>
1	40	1	40
2	25	4	100
3	24	9	216
4	16	16	256
5	12	25	300
6	12	36	432
7	9	49	441
8	3	64	192
9	10	81	810
10	7	100	700
11	6	121	726
12	8	144	1152
13	21	169	3549
<b>Totales</b>	<b>193</b>	<b>819</b>	<b>8914</b>

Note: T=13, N=193.

Own elaboration.

## A2. The integral circulation index

The integral circulation index measures the degree of circulation of the elite, taking into account the entire distribution of frequencies. It has three components:

$c$  : Basic circulation (empirical list in relation to the theoretical maximum);

$p_1$  : Penalty for mortality rate;

$p_2$  : Penalty for frequency distribution (repetition).

Then,

$$C^* = c \cdot p_1 \cdot p_2$$

Where,

$$c = \frac{N}{ET}$$

$$p_1 = 1 - \frac{m}{N}$$

$$p_2 = \ln(e^{1-J})$$

In this notation, the symbol  $E$  represents the size of the elite that is defined under the study,  $T$  the number of years under observation,  $N$  the total people who appear in the list in period  $T$ ,  $m$  is the number of deaths in the elite during the period  $T$ .  $J$  captures the frequency distribution function through a weighted average, where the weights are the square of the number of times that each name appears.  $J$  has a range  $[0,1]$ . When  $J = 0$ , perfect circulation exists. That is, all names appear only once; therefore  $p_2 = 1$ , which implies that no penalty is imposed to index  $C^*$ . On the other hand, when  $J = 1$ , there is nil circulation, i.e. all names are concentrated in the maximum number of years, their frequency is equal to  $T$ . In this case  $p_2 = 0$ , reflecting nil circulation and penalizing completely the index  $C^*$ .

$J$  is defined as follows:

$$J = \frac{F - F_{\min}}{F_{\max} - F_{\min}}, J \in [0,1]$$



Where:

$$F = \frac{\sum_{i=1}^T t_i^2 n_i}{\sum_{i=1}^T t_i^2}$$

$$F_{\max} = \frac{T^2 N}{\sum_{i=1}^T t_i^2}$$

$$F_{\min} = \frac{E}{\sum_{i=1}^T t_i^2}$$

$t$  is the number of times that the names are repeated, up to  $T$ , which is the total period under study,  $t \in [1, T]$ .

$n_i$  is the number of people listed in the ranking for a number  $t_i$  of years,  $n \in [E, N]$  and  $N \in [E, ET]$ .

The long version of index  $C^*$ , which clearly shows its three components, is given by:

$$C^* = \frac{N}{ET} \left(1 - \frac{m}{N}\right) \ln \left( e^{1 - \frac{F - F_{\min}}{F_{\max} - F_{\min}}} \right)$$

After simplifying, we obtain:

$$C^* = \frac{N - m}{ET} \ln \left( e^{\frac{F_{\max} - F}{F_{\max} - F_{\min}}} \right)$$

In order to proceed with the empirical application, the frequency distribution and other necessary elements for the calculation of  $C^*$  are shown in table S2.

Step 1.- Calculation of  $c$ :

$$c = \frac{193}{80 * 13} = 0.186$$

Step 2.- Calculation of  $p_1$ :

(At the moment we have no information about elite's deaths. We assume that no member is dead, which is an optimistic assumption. Thus, no penalty for mortality is imposed).

$$p_1 = 1 - \frac{0}{193} = 1$$

Step 3.- Calculation of  $p_2$ :

$$F = \frac{8914}{819} = 10.884$$

$$F_{\max} = \frac{13^2 * 193}{819} = 39.825$$

$$F_{\min} = \frac{80}{819} = 0.098$$

$$J = \frac{10.884 - 0.098}{39.825 - 0.098} = 0.272$$

$$p_2 = \ln(e^{1-0.272}) = 0.728$$

Step 4.- Calculation of the integral circulation index:

$$C^* = c.p_1.p_2 = 0.186 * 1 * 0.728 = 0.135$$

A3. Eighty richest people of the world, 2002-2014

	Name	N <sup>1/</sup>	Ranking <sup>2/</sup>		Net worth (\$ mil) <sup>3/</sup>		Country
			Median	Mean	Median	Mean	
1	Bill Gates	13	1.0	1.5	53,000	54,123	USA
2	Warren Buffett	13	2.0	2.5	44,000	46,008	USA
3	Carlos Slim Helu & family	13	3.0	6.9	49,000	44,008	MEX
4	Larry Ellison	13	6.0	8.0	23,500	27,438	USA
5	Amancio Ortega	13	10.0	14.7	20,200	25,615	ESP
6	Bernard Arnault & family	13	13.0	15.1	25,500	23,415	FRA
7	Jim Walton	13	14.0	14.5	20,000	20,946	USA
8	Liliane Bettencourt & family	13	15.0	14.2	20,000	20,800	FRA
9	Alice Walton	13	16.0	15.9	20,000	20,738	USA
10	S. Robson Walton	13	17.0	16.5	19,800	20,677	USA
11	Li Ka-shing	13	14.0	15.5	21,000	20,169	HKG
12	Prince Alwaleed Bin Talal Alsaud	13	19.0	16.8	20,000	19,608	SAU
13	Stefan Persson	13	18.0	24.3	17,700	17,715	SWE
14	Paul Allen	13	33.0	28.6	16,000	17,338	USA
15	Michael Dell	13	30.0	31.3	15,300	14,485	USA
16	Steve Ballmer	13	31.0	31.8	14,500	14,169	USA
17	Michael Otto & family	13	41.0	39.8	13,300	12,992	DEU
18	Anne Cox Chambers	13	46.0	45.8	12,000	11,792	USA
19	Carl Icahn	13	48.0	47.5	10,500	11,723	USA
20	Leonardo Del Vecchio	13	53.0	55.9	10,000	10,223	ITA

21	Phil Knight	13	56.0	57.7	9,500	10,054	USA
22	Lee Shau Kee	12	33.0	36.1	17,500	14,350	HKG
23	Thomas & Raymond Kwok & family	12	28.5	29.0	13,300	14,200	HKG
24	Forrest Mars Jr	12	39.5	39.4	10,450	12,092	USA
25	Jacqueline Mars	12	40.5	40.4	10,450	12,092	USA
26	John Mars	12	41.5	41.4	10,450	12,092	USA
27	Abigail Johnson	12	39.0	41.9	11,750	11,825	USA
28	Mikhail Fridman	12	48.5	51.9	12,650	11,800	RUS
29	Susanne Klatten	12	53.0	51.9	10,550	11,075	DEU
30	Lakshmi Mittal	11	6.0	19.3	23,500	24,064	IND
31	Karl Albrecht	11	10.0	11.6	23,500	22,945	DEU
32	Mukesh Ambani	11	19.0	27.4	20,100	20,227	IND
33	George Soros	11	37.0	40.8	11,000	12,455	USA
34	Azim Premji	11	41.0	41.6	13,300	12,400	IND
35	Birgit Rausing & family	11	49.0	42.0	11,000	11,364	SWE*
36	Charles Koch	10	22.0	28.5	17,250	19,750	USA
37	Larry Page	10	27.0	28.6	18,050	17,850	USA
38	Sergey Brin	10	25.0	27.8	18,100	17,800	USA
39	Michele Ferrero & family	10	36.0	38.9	14,000	14,990	ITA
40	Roman Abramovich	10	37.0	36.0	12,700	13,520	RUS
41	Francois Pinault & family	10	60.0	60.3	12,250	11,560	FRA
42	Nasser Al-Kharafi & family	10	49.0	51.8	8,850	9,330	KWT*
43	Christy Walton & family	9	12.0	14.8	22,500	23,178	USA
44	Sheldon Adelson	9	14.0	19.7	24,900	22,911	USA
45	Ingvar Kamprad & family	9	7.0	8.9	23,000	22,767	SWE
46	David Koch	9	20.0	23.8	17,500	21,500	USA
47	Michael Bloomberg	9	23.0	35.7	18,000	17,200	USA
48	Vladimir Lisin	9	41.0	40.4	15,800	15,411	RUS
49	Vagit Alekperov	9	56.0	54.9	13,000	12,289	RUS
50	Donald Bren	9	69.0	62.2	12,000	11,211	USA

51	Gerald Cavendish Grosvenor & family	9	45.0	46.6	11,000	10,544	GBR
52	Ernesto Bertarelli & family	9	64.0	62.6	8,200	7,856	CHE
53	David Thomson & family	8	24.0	23.5	19,650	19,538	CAN
54	Silvio Berlusconi & family	8	42.0	46.3	9,500	9,175	ITA
55	Hans Rausing	8	45.0	48.6	8,350	8,638	SWE
56	Theo Albrecht	7	20.0	18.9	17,500	17,829	USA*
57	Mikhail Prokhorov	7	39.0	43.7	13,400	14,300	RUS
58	Iris Fontbona & family	7	55.0	51.9	15,500	13,843	CHL
59	Alexey Mordashov	7	54.0	50.4	12,800	13,786	RUS
60	Viktor Vekselberg	7	59.0	57.9	12,400	12,757	RUS
61	Mohammed Al Amoudi	7	63.0	63.3	12,300	11,357	SAU
62	John Kluge	7	30.0	42.0	10,500	9,514	DEU*
63	Serge Dassault & family	7	62.0	62.0	8,500	9,229	FRA
64	Charles Ergen	7	56.0	55.1	7,200	8,586	USA
65	Jeff Bezos	6	28.0	34.0	18,250	18,800	USA
66	Helen Walton	6	12.0	14.8	17,250	17,817	USA*
67	Vladimir Potanin	6	42.0	44.0	14,400	14,950	RUS
68	Joseph Safra	6	61.0	60.0	12,600	12,350	BRA
69	Ronald Perelman	6	68.0	64.0	12,000	11,867	USA
70	Barbara Cox Anthony	6	25.0	27.3	11,450	11,383	USA*
71	Kirk Kerkorian	6	43.0	46.5	8,800	10,067	USA
72	Stefan Quandt	6	68.0	68.2	8,700	9,050	DEU
73	Rupert Murdoch & family	6	52.5	57.7	7,800	8,217	USA
74	Gerard Wertheimer	6	67.0	64.7	7,750	8,083	FRA
75	Pierre Omidyar	6	51.5	53.7	8,650	7,817	USA
76	August von Finck	6	67.5	65.2	6,500	6,200	DEU
77	Kenneth Thomson & family	5	14.0	13.2	17,200	16,720	CAN*
78	Oleg Deripaska	5	40.0	41.0	13,300	15,320	RUS
79	Jorge Paulo Lemann	5	49.0	48.2	13,300	14,860	BRA
80	German Larrea Mota Velasco & family	5	48.0	53.2	14,700	14,260	MEX

81	John Paulson	5	63.0	61.8	12,500	12,000	USA
82	Robert Kuok	5	64.0	60.6	12,500	11,780	MYS
83	Georg Schaeffler	5	71.0	72.2	6,800	8,440	DEU
84	Sumner Redstone	5	35.0	39.8	8,100	8,300	USA
85	Donald Newhouse	5	58.0	51.8	7,500	6,980	USA
86	Samuel Newhouse Jr	5	59.0	52.8	7,500	6,980	USA
87	Edward Johnson III	5	74.0	74.0	6,000	6,280	USA
88	Curt Engelhorn	5	69.0	62.0	5,900	5,900	DEU
89	Eike Batista	4	8.0	21.0	28,500	23,625	BRA
90	Anil Ambani	4	26.0	23.5	15,950	21,000	IND
91	John Walton	4	9.5	9.5	19,100	18,850	USA*
92	Mark Zuckerberg	4	44.0	44.0	15,500	18,200	USA
93	Alisher Usmanov	4	34.5	34.5	17,900	18,000	RUS
94	Theo Albrecht Jr & family	4	34.5	37.0	18,350	17,600	DEU
95	Aliko Dangote	4	47.0	48.8	14,950	16,525	NGA
96	Len Blavatnik	4	58.0	58.8	13,950	14,175	USA
97	Luis Carlos Sarmiento	4	68.5	69.3	13,150	12,750	COL
98	Spiro Latsis & family	4	55.0	57.8	10,050	9,650	GRC
99	Adolf Merckle	4	54.5	55.8	9,200	9,125	DEU*
100	Galen Weston & family	4	44.5	46.3	8,050	8,050	CAN
101	Rudolf August Oetker & family	4	53.5	54.5	7,600	7,175	DEU*
102	Nobutada Saji	4	46.5	50.5	7,000	7,100	JPN
103	Friedrich Flick Jr	4	61.0	61.3	5,750	5,750	DEU*
104	Philip Anschutz	4	69.5	68.3	5,150	5,250	USA
105	Gina Rinehart	3	39.0	38.0	17,700	17,567	AUS
106	Kushal Pal Singh	3	66.0	49.3	10,000	16,333	IND
107	Cheng Yu-tung	3	45.0	46.3	16,000	16,067	HKG
108	Rinat Akhmetov	3	40.0	42.0	16,000	15,800	UKR
109	Alberto Bailleres Gonzalez & family	3	38.0	45.3	16,500	15,533	MEX
110	Shashi & Ravi Ruia	3	42.0	42.3	15,000	14,600	IND

111	Leonid Mikhelson	3	57.0	59.3	15,400	14,300	RUS
112	Suleiman Kerimov	3	36.0	48.0	14,400	13,000	RUS
113	Jack Taylor & family	3	42.0	44.0	13,900	12,467	USA
114	Tadashi Yanai & family	3	66.0	63.7	13,300	12,400	JPN
115	Savitri Jindal & family	3	56.0	60.0	12,200	12,100	IND
116	John Fredriksen	3	75.0	75.0	11,300	11,867	CYP
117	Antonio Ermirio de Moraes	3	74.0	73.0	12,200	11,633	BRA
118	Viktor Rashnikov	3	71.0	71.7	10,400	10,467	RUS
119	George Kaiser	3	68.0	62.0	10,000	10,000	USA
120	Sunil Mittal & family	3	64.0	64.3	9,500	9,667	IND
121	Reinhold Wuerth	3	68.0	67.3	7,500	7,900	DEU
122	Sulaiman Al Rajhi & family	3	74.0	64.0	6,200	7,600	SAU
123	Robert Pritzker	3	48.0	46.7	7,600	6,733	USA*
124	Thomas Pritzker	3	49.0	47.7	7,600	6,733	USA
125	Luciano Benetton	3	62.0	54.0	4,900	6,467	ITA
126	Samuel Johnson	3	52.0	52.7	7,300	6,400	USA*
127	Eli Broad	3	70.0	64.0	5,800	5,700	USA
128	Yasuo Takei & family	3	61.0	59.0	5,200	5,467	JPN*
129	Albrecht	2	3.0	3.0	26,200	26,200	DEU*
130	Dieter Schwarz	2	29.0	29.0	20,300	20,300	DEU
131	Gennady Timchenko	2	63.0	63.0	14,700	14,700	RUS
132	Ricardo Salinas Pliego & family	2	50.0	50.0	13,750	13,750	MEX
133	Ray Dalio	2	73.0	73.0	13,450	13,450	USA
134	Harold Hamm	2	73.5	73.5	12,800	12,800	USA
135	Johanna Quandt	2	45.5	45.5	11,850	11,850	DEU
136	Mikhail Khodorkovsky	2	21.0	21.0	11,500	11,500	RUS*
137	Naguib Sawiris	2	63.0	63.0	11,350	11,350	EGY
138	Dmitry Rybolovlev	2	69.0	69.0	10,700	10,700	RUS
139	Iskander Makhmudov	2	71.5	71.5	10,200	10,200	RUS
140	James Simons	2	65.0	65.0	9,300	9,300	USA

141	Abdul Aziz Al Ghurair & family	2	67.5	67.5	7,350	7,350	ARE*
142	Philip & Cristina Green	2	71.0	71.0	6,650	6,650	GBR
143	Micky Arison	2	67.5	67.5	6,200	6,200	USA
144	Ty Warner	2	55.5	55.5	6,000	6,000	USA
145	Gordon Moore	2	59.0	59.0	5,800	5,800	USA
146	James Goodnight	2	69.5	69.5	5,450	5,450	USA
147	Fukuzo Iwasaki	2	72.5	72.5	4,900	4,900	JPN*
148	Hasso Plattner	2	76.0	76.0	4,900	4,900	DEU
149	Pierre Landolt family	2	62.0	62.0	4,900	4,900	CHE*
150	Gustavo Cisneros & family	2	67.0	67.0	4,500	4,500	VEN
151	Marvin Davis	2	69.5	69.5	4,500	4,500	USA*
152	Lorenzo Mendoza & family	2	71.5	71.5	4,350	4,350	VEN
153	Reinhard Mohn & family	2	77.5	77.5	4,200	4,200	DEU*
154	Lui Che Woo	1	28.0	28.0	22,000	22,000	HKG
155	Masayoshi Son	1	44.0	44.0	18,400	18,400	JPN
156	Wang Jianlin	1	64.0	64.0	15,100	15,100	CHN
157	Andrey Melnichenko	1	57.0	57.0	14,400	14,400	RUS
158	Dhanin Chearavanont & family	1	59.0	59.0	14,300	14,300	THA
159	Laurene Powell Jobs & family	1	73.0	73.0	14,000	14,000	USA
160	German Khan	1	54.0	54.0	13,900	13,900	RUS
161	Ma Huateng	1	80.0	80.0	13,400	13,400	CHN
162	Henry Sy & family	1	68.0	68.0	13,200	13,200	PHL
163	Lee Kun-Hee	1	70.0	70.0	13,000	13,000	KOR
164	Miuccia Prada	1	78.0	78.0	12,400	12,400	ITA
165	Alexander Abramov	1	65.0	65.0	11,500	11,500	RUS
166	Nassef Sawiris	1	71.0	71.0	11,000	11,000	EGY
167	Alexei Kuzmichev	1	72.0	72.0	10,800	10,800	RUS
168	Horst Paulmann & family	1	75.0	75.0	10,500	10,500	CHL
169	Eliodoro Matte	1	77.0	77.0	10,400	10,400	CHL
170	Sammy Ofer & family	1	79.0	79.0	10,300	10,300	ROU*



171	Kumar Birla	1	76.0	76.0	10,200	10,200	IND
172	Vladimir Yevtushenkov	1	72.0	72.0	9,100	9,100	RUS
173	Dan Duncan	1	76.0	76.0	9,000	9,000	USA*
174	Rafael del Pino family	1	79.0	79.0	8,600	8,600	ESP*
175	Suliman Olayan & family	1	34.0	34.0	7,600	7,600	SAU*
176	Joseph &#38; Moise Safra	1	69.0	69.0	7,400	7,400	BRA*
177	Ananda Krishnan	1	65.0	65.0	7,000	7,000	MYS
178	Maan Al-Sanea	1	63.0	63.0	7,000	7,000	SAU*
179	Mohamed Bin Issa Al Jaber	1	62.0	62.0	7,000	7,000	SAU
180	Khaled, Hayat, Hutham, Lubna &#38; Olayan	1	39.0	39.0	6,900	6,900	SAU*
181	Nicky Oppenheimer & family	1	75.0	75.0	6,000	6,000	ZAF
182	Petr Kellner	1	77.0	77.0	6,000	6,000	CZE
183	John Abele	1	76.0	76.0	5,400	5,400	USA*
184	Walter Haefner	1	56.0	56.0	5,000	5,000	CHE*
185	Alfred Lerner	1	67.0	67.0	4,700	4,700	USA*
186	Tsai Wan Lin & family	1	69.0	69.0	4,600	4,600	TWN*
187	Madeleine Schickedanz	1	71.0	71.0	4,500	4,500	DEU*
188	Charlene de Carvalho-Heineken	1	76.0	76.0	4,300	4,300	NLD
189	David Sainsbury	1	80.0	80.0	4,300	4,300	GBR
190	Rolf Gerling	1	77.0	77.0	4,300	4,300	DEU
191	Akira Mori & family	1	77.0	77.0	4,100	4,100	JPN
192	Eitaro Itoyama	1	72.0	72.0	4,100	4,100	JPN*
193	Karl-Heinz Kipp	1	75.0	75.0	4,100	4,100	DEU

\* Country not specified in the Oxfam data set.

<sup>1/</sup> Number of years that he or she appears among the 80 richest people in 2002-2014.

<sup>2/</sup> Ranking placement among the 80 richest people in 2002-2014.

<sup>3/</sup> Annual mean of net worth in 2002-2014.

Source: Oxfam (2015). Own elaboration.

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