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Globalisation and growth: are we heading for convergence

1. Introduction

Globalisation, defined as “*an increase in the extent to which individuals and institutions transact or exchange with others based in nation states other than their own, or otherwise influence them through their economic and social behaviour*”¹, is one of the most pervasive phenomena currently. However, globalisation is by no means a new phenomenon, as its roots can be traced back, to the least, to the late 19th-early 20th centuries (Masson, 2001). Notwithstanding this, it is important to note that the recent wave of globalisation the world is experiencing today has been spurred mainly by two factors: technological change – bringing about noticeable reductions in transport and information costs across countries - and policy decisions – pursuing tighter regional and supra-regional integration schemes.

The impact of globalisation has been, and still is, the subject of considerable and heated debate², as it produces both winners and losers, not only within each country but also across countries, with at least two clear but opposing, differing views. For some observers (Stiglitz, 2002, and Hurrell and Woods, 2000, are among the most relevant supporters of this view), globalisation is, to a certain extent, a motive of concern as it poses new challenges mainly to poor countries and some groups of people and small businesses³, for others (Ben - David, 1993; Srinivasan and Bhagwati, 1999; Bhagwati, 2004), globalisation is not just a way to foster economic growth and spread prosperity all over the world, but also a way to reduce inequality. In our view, one of the most relevant reasons behind this absence of consensus is that there is no clear and definitive definition and, then, measure of globalisation. Probably,

¹ CEPR (2002, p. 1).

² Fischer has pointed out that “*the debate over globalisation is lively, often passionate, and has sometimes been violent*” (Fischer, 2003, p. 2).

³ These authors tend to highlight the fact that the benefits and costs brought about by globalisation are not evenly distributed across countries and groups of people.

this is so because globalisation has many different dimensions. At the very least, it covers three dimensions (Dreher, 2006): economic, social and political⁴.

Different attempts have been made to measure globalisation and by how much is spread over the world. Although the most typical indicator of globalisation only refers to its economic dimension (the “openness degree” or the “openness degree plus flows of foreign capital”), there are other more sophisticated measures, such as the one proposed by Andersen and Herbertsson (2003), which is based on the use of factor analysis. There are, however, some other measures trying to capture more than one dimension. Among these, the World Markets Research Centre G-index (Randolph, 2001) and the Kearney “Foreign Policy Globalisation Index”⁵ are some of the most prominent, but, although very appealing, they suffer from some drawbacks, mainly related to the kind and number of variables considered (G-index) or to its relatively low technical quality (Kearney index)⁶. Arguably, the most reliable measure of globalisation – actually, the one employed in this paper – is the so - called KOF Index of Globalisation⁷, which jointly considers the economic, social and political dimensions previously mentioned.

This paper contributes to the literature by examining, in a rigorous systematic way, the extent to which globalisation is really disseminated across countries. In particular, this is the first aim of the paper: to analyse whether a process of globalisation convergence has taken place all over the world and how the world globalisation distribution has evolved over time. Additionally, and given the ample debate previously mentioned, the second aim of the paper is to investigate the relationship between globalisation and economic growth and shed some light about whether globalisation has favoured, or not, a process of convergence in per capita income.

The organization of the paper is as follows. In section 2 we discuss the data. A classical analysis of convergence, by applying the concepts of σ and β convergence, is provided in Section 3. This approach only pays attention to the first moments of the distribution, however, and thus presents some drawbacks. For this reason, in the second part of Section 3 we also investigate spatial disparities more deeply by considering the entire distribution. Following the recommendations of Quah (1996a,b), the external shape of the distribution and the intra-

⁴ Giddens says that “*globalisation is political, technological and cultural, as well as economic*” (Giddens, 2002, p. 10). A detail analysis of the concept of economic globalisation and its measurement can be found in the OECD “Handbook of Economic Globalisation Indicators” (2005).

⁵ This index is available at www.atkearney.com.

⁶ Other index of globalisation with similar characteristics to the ones previously mentioned is the so-called MGI index, by Martens and Zywiec (2006).

⁷ The method of calculation of this index is shown at URL <http://globalisation.kof.ethz.ch/>.

distributional movements of individual countries are examined; this second issue is tackled by employing a novel approach (box plots based on highest density regions) which provides better insights into the dynamics of the world globalisation distribution. Afterwards, in Section 4 we present an empirical test of the relationship between globalisation and economic growth and to whether globalisation has promoted, or not, convergence in per capita income. Finally, Section 5 outlines the main conclusions.

2. Data

The data used in this paper were obtained from KOF website, which offers information not only about the Index of Globalisation but also about its components - economic, social and political - and the variables used to construct all indices⁸. The economic index of globalisation is a weighted average of two indices, one measuring actual trade flows, the other referred to restrictions on trade and capital. As for the social index, it is as well a weighted average but of three sub - indices, the first one referred to personal contacts, the second to information flows and the third to cultural proximity. The political index is made up of also three components: number of embassies in the country, number of international organizations to which the country is a member, and number of UN peace missions the country participates. Finally, the total index of globalisation is a weighted averaged of these three indices.

Although the KOF website offers information for 122 countries, this information is not available for the whole period under consideration (1970 - 2005), in some cases simply because the basic statistics needed to construct the indicators did not exist and, in others, because many countries did not exist as such in 1970⁹. For these reasons, our sample covers not all countries included in the KOF data bank but just the 101 indicated in Appendix 1.

In the introductory remarks of this paper it was stated that Globalisation is currently one of the most pervasive phenomena. Although, apparently, this statement needs little justification, the extent of globalisation differs, sometimes greatly, from country to country: a first glance to the issue (Figure 1) shows the evolution of the different indices of globalisation for the six different geographic areas considered in the study: the Total sample (T), Advanced Economies (Ad), Emerging and Developing Economies (E), Africa (Af), Developing Asia

⁸ For a thorough reference to the methodology employed to construct these indices, see Dreher (2006). We have rescaled globalisation indices, so all of them range between 0 and 10.

⁹ This is, for instance, the case of today's existing countries but which previously were part of the USSR or the former Yugoslavia.

(DA) and Western Hemisphere (WH)¹⁰. Four main conclusions can be obtained: first, total globalisation has increased over time everywhere, but most rapidly in Developing Asia than elsewhere; economic globalisation has basically followed the same steps than total globalisation in every geographical area, although at a lower pace; social and political globalisation have also experienced a huge increase over time, but following a less stable, more volatile path; finally, except for the advanced economies and the Western Hemisphere, political globalisation has progressed a lot, mainly in Africa and Developing Asia, while social globalisation is lagging behind in Africa.

3. The world globalisation distribution: Any sign of convergence?

As is well known, convergence is an interesting but rather imprecise concept, with many (and not always equivalent) interpretations. The most generally accepted measures of real convergence, however, are the so - called σ and β convergence (see the seminal papers of Barro and Sala-i-Martin, 1991; 1992)¹¹. When these concepts are applied to globalisation, the former holds when the dispersion in the globalisation indicator diminishes over time; the second takes place when the less globalised economies grow more quickly than the more globalised ones.

As a starting point, σ convergence is computed by plotting the coefficient of variation in each year for the four indices of globalisation (Figure 2). Three main conclusions can be obtained. Firstly, disparities in total and economic globalisation remained relatively stable until around mid - eighties, while afterwards a steady reduction took place. Secondly, disparities in the social globalisation index increased during the first two decades and, after a sudden fall in 1991, they slightly decreased. And, thirdly, political globalisation disparities have followed a complete different path, as they dropped very quickly during the seventies and remained stable afterwards¹².

With respect to the second type of convergence we estimate, for our four indicators of globalisation but only for the whole sample of countries¹³, a traditional absolute β

¹⁰ This grouping of countries is an adaptation of the country classification employed by the World Economic Outlook Database, IMF.

¹¹ For a thorough review of the concepts of convergence and its application to the European regions, see, respectively, Villaverde (2006) and Villaverde and Maza (2008).

¹² The same analysis has been carried out for groups of countries. By and large, disparities tend to be lower within the advanced countries than in the other groupings, whichever the indicator considered. Additionally, except for the social globalisation index, disparities across groups of countries are lower in 2005 than in 1970, the smaller differences in 2005 being computed for the political index.

¹³ From now on, and to save space, the analysis is restricted to the consideration of all countries as a single group, thus not paying attention to the other five groups considered previously.

convergence equation, for a five - years transition period to control for time - variant heterogeneity, as follows:

$$\Delta G_{i,t} = \alpha_i + \chi_t + \beta G_{i,t-k} + \varepsilon_{i,t}, (1)$$

where $\Delta G_{i,t}$ is the growth rate (approximated as logs difference) of the globalisation index of country i at five - year period t , $G_{i,t-k}$ is the log of globalisation index lag k years ago ($k=5$ years in our case), α_i is the fixed-effect of country i , χ_t is the fixed-effect corresponding to period $(t, t - k)$ and ε is the error term. As can be seen, equation (1) is estimated by using panel data. It is well known that, in order for the \square hypothesis of convergence to be satisfied, there must be an inverse relationship between the growth rate of (in our case) globalisation and its initial level. That is, β must be both negative and significant at standard confidence levels. The results obtained (Table 1) for the total indicator of globalisation for all countries demonstrate significant β convergence over the sample period. Moreover, the value of the β coefficient enables us to say that convergence took place at a five-years rate¹⁴ of 12.02%, which implies that the time required covering half the gap separating the countries from a stationary state (half - life) is 8.2 five - year periods¹⁵. As for the three *partial* indicators of globalisation, the results show the existence of convergence in all the three cases, at a higher speed in relation to the political globalisation than in the other two cases.

Although the previous analysis on globalisation convergence is, to a given extent, very informative, it must be admitted that it also has some important limitations (Quah 1996 a, b): specifically, it provides no information on the external shape of the world globalisation distribution and, additionally, it ignores the fact that some countries may shift their relative positions during the study period. Therefore, in order to deal with these two issues, we complement the previous analysis by considering the shape and changes over time in the whole distribution.

To begin with, we scale all national values such that the average globalisation index is equal to 100. Next, we characterise the external shape of the distribution by estimating

¹⁴ The speed of convergence is calculated as $b = -\ln(1 + T\beta) / T$.

¹⁵ The half-life h can easily be calculated using the expression $h = -\ln(2) / \ln(1 + \beta)$.

univariate density functions with a Gaussian kernel and optimal bandwidth, following Silverman's rule of thumb (Silverman, 1986). This analysis is reported only for some selected years of our sample period¹⁶. Two main conclusions can be drawn from the consideration of the graphs displayed in Figure 3.

Firstly, that the existence of \square convergence is confirmed as the amplitude of the distribution in the four cases under consideration is in 2005 much smaller than in 1970: in fact, the probability of finding values at the lower and higher ends of the distributions has significantly decreased over time. Besides this, it is important to note that the main mode is closer to the value 100 in 2005 than in either 1970 or 1990.

And, secondly, in the cases of total and social globalisation a second mode (at around levels of globalisation 50% higher than the average) emerges; on the contrary, this situation is not apparent in the cases of economic and political globalisation, in which the distributions present a relatively good bell - shaped form.

Having examined the external shape of the distribution over time, we turn our attention to the analysis of intra - distribution dynamics. In order to do this, the literature has conventionally considered two approaches: the transition matrix approach and the traditional stochastic kernel approach. Both of these approaches suffer, however, from significant drawbacks: in the first case because the results are crucially dependent of the number and extent of the *states* considered in the analysis; in the second case, because it commonly uses a fixed bandwidth in the x and y directions and treats the conditional probability as a bivariate density function. To solve these problems, we employ the "stacked conditional density" (SCD) and "highest conditional density region" (HCDR) plots proposed by Hyndman et al. (1996): The SCD plot "*displays a number of conditional densities plotted side by side in a perspective plot*" (Arbia et al., 2006, p. 10) whereas the HCDR displays the highest density regions, each one being defined as "*the smallest region of the sample space containing a given probability*" (Hyndman et al., 1996, p. 327).

This novel method, which has been recently employed by Fisher and Stumpner (2008) and Maza et al. (2009), has two main advantages. Firstly, it not only solves the problems of the transition matrix and traditional kernel approaches but also presents better statistical properties. Secondly, it offers a more informative visual interpretation of the results than the kernel approach, highlighting the conditioning.

¹⁶ We computed these density functions for every year; however, to save space not all data are presented, although they are available upon request.

The SCD and HCDR plots are estimated for the whole period with optimum bandwidths in the x and y directions computed according to rules laid out by Bashtannyk and Hyndman (2001). Although the SCD plot (see the left-hand side of Figure 4) is somewhat illustrative, we focus our comments on the HCDR plot (right - hand side of Figure 4) because is a more informative way to represent (and detect) intra - distributional changes. In this graph each vertical strip represents the highest - density portion of the probability distribution for a given globalisation level in 1970. Specifically, in each strip of the HCDR plot we have four shadings representing, from darker to lighter shades, total probabilities of 25%, 50%, 75% and 90%, while the bullet (\bullet) indicates the mode of the distribution.

According to these graphs, one main conclusion can be drawn: mobility within the distribution has been relatively high, especially in the lower and upper tails of each globalisation dimension¹⁷. As can be seen, the modes (as well as the shaded areas) indicate that those countries with the greatest initial degree of globalisation have approached the average, this contributing to convergence; similarly, the graphs also show that most of the countries in the globalisation range below the average have increased their relative position, this also promoting convergence. Additionally, it is shown that mobility has been particularly low in the case of social globalisation (Figure 4c) and high in the case of political globalisation (Figure 4d).

To conclude this analysis, we plot the ergodic or hypothetical long-run equilibrium distribution (Figure 5). As can be noted, the ergodic distribution has only one mode; this suggests that it will be very unlikely to find poles or clusters among countries in any of the four globalisation indices in a hypothetical long-run equilibrium. Additionally, the shape of the ergodic distributions suggests that disparities in globalisation will remain relatively high in the foreseeable future, especially in the social and political dimensions.

4. Globalisation and growth

In essence, the previous analysis demonstrates that cross-country differences in globalisation have been greatly reduced, mainly due to the fact that developing countries have globalised themselves more quickly than developed countries. When asking about the reasons for this performance it seems that a plausible one might be that globalisation is considered to be a key factor promoting economic growth.

¹⁷ As it should be obvious, this high mobility is partially due to the long time-span used in our analysis. Naturally, the mobility degree is much smaller when five-years transition periods are considered (See Appendix 2).

In fact, one of the most widely held beliefs of the economics profession is that openness to international trade accelerates growth (Dollar and Kraay, 2004). The way of reasoning varies according to the growth theory under consideration. In particular, neoclassical growth theory considers that, by allowing a more efficient allocation of resources, openness contributes to growth; on the other hand, the endogenous growth theory put forward that openness can promote growth in a number of ways, such as through the diffusion of technology, learning by doing, exploitation of scale economies, and so on.

From an empirical point of view, a large number of studies – most of them employing a cross-section approach - tend to support the positive association between openness and growth (Barro, 1991; Frankel and Romer, 1999; Dollar and Kraay, 2002). However, this approach has been criticized on the grounds of the robustness of its results (Srinivasan and Bhagwati, 1999; Rodriguez and Rodrick, 2000), this prompting new econometric approaches, mainly those using pooled time-series cross - section regressions.

The conventional empirical literature on the issue takes as the endogenous variable of the estimated equation the degree of openness or some other trade - related indicator. This section, in tune with Dreher's paper (2006), considers that globalisation has several dimensions and that, as such, it would not be correct to pay attention just to one of them, namely that related to the economic dimension. For this reason, in this section we estimate the relationship between globalisation and economic growth, a relationship that, as indicated by Stiglitz, may be either positive or negative. Positive, because *"the faster communication of ideas should (lead) to a faster rate of closing the knowledge gap; and the greater integration of capital markets should (lead) to a faster rate of closing the resource gap"* (Stiglitz, 2003, p. 507); and negative, because *"there are eight broad (...) channels through globalisation can exercise adverse effects on growth"* (Stiglitz, 2003, p. 512).

Bearing these considerations in mind, and to ascertain whether globalisation has fostered income convergence all over the world during the period under study, we estimate a growth equation as the following:

$$\Delta Y_{i,t} = \alpha_i + \chi_t + \beta Y_{i,t-k} + \delta X_{i,t} + \varepsilon_{i,t} \quad (2)$$

where $\Delta Y_{i,t}$ is the per capita income growth rate of country i at five-years period t , $Y_{i,t-k}$ is the log of per capita income lag k years ago ($k=5$ years in our case), $X_{i,t}$ denotes the

conditional / control variables, α_i is the fixed-effect of country i , χ_t is the fixed - effect corresponding to period $(t, t-k)$ and ε is the error term.

As previously mentioned, to estimate this equation we have considered five - years transition periods. Thus, the data (see Appendix 3) are averages over five years¹⁸ and, once again, cover the time period 1970 - 2005. Considering that some data are not available, our panel data is unbalanced, depending on the number of observations on the type of explanatory variables employed.

Firstly, only globalisation indices (total as well as economic, social and political) are considered as conditional variables in the growth equation. The results are reported in Table 2. As can be seen, in all cases (equations 1 to 4) the coefficient \square is negative and statistically significant, implying that a convergence process did take place in our sample of countries over the study period. In addition, this table also reports that the speed of convergence for total globalisation was of about 4% per period of five years, implying a half - life of approximately 20 periods of five years.

With respect to the globalisation coefficients, they are positive and statistically different from zero in all cases but the political one. In consequence, we can conclude that globalisation has promoted growth; specifically, our results indicate that a one point increase in total globalisation would expand income growth by 1.1 percentage points¹⁹. Going one step further, and according to the results obtained in previous sections showing the existence of a remarkable convergence process in globalisation, we can state that globalisation has promoted income convergence; in other words, this paper seems to reveal that globalisation has played a positive role in the reduction of cross - country disparities all over the world.

The remaining four columns of Table 2 show the results obtained when, apart from globalisation indices, other control variables are included in the growth equation. Specifically, we have added variables usually employed in growth regressions as “Secondary school enrolment”, “Fertility rate”, “Investment (% GDP)”, “Inflation rate”, “Rule of law” and “Government consumption (% GDP)”. An important difference between these and the previous results is the increase in the speed of convergence, which is in the range of a five - years rate of 7.5 - 8%; consequently, the half - life decreases until roughly 11 five - years periods. The results regarding globalisation indices are quite similar to those obtained before,

¹⁸ Except for the initial per capita income and rule of law.

¹⁹ This result is quite similar to that obtained by Dreher (2006).

confirming the role of globalisation as a factor promoting income growth and, in an indirect way, income convergence²⁰.

Finally, given the necessity of controlling for the potential endogeneity of some regressors and for the dynamic panel nature of the model, we estimate the same growth equations shown in Table 2 by the Generalized Method of Moments (GMM)²¹. This technique is especially suitable when considering models with predetermined or endogenous regressors based on “small time, large cross - section” panels (Arellano and Bond 1991, Arellano and Bover 1995, Blundell and Bond 1998). To be precise, we estimate a one - step first difference GMM with robust errors²² when the lagged per capita income and globalisation variables are instrumented with suitable lags of their own first differences, which implies a noticeable loss of observations. The results are reported in Table 3. Regarding the specification tests of this kind of models, the failure to reject the null hypothesis of the validity of the instruments (Hansen - Sargan test) indicates that the specification employed is correct. In addition, the Arellano - Bond test of second order autocorrelation does not reject in either of the eight cases the null hypothesis of absence of second order autocorrelation in the residuals, also accepting the specification of the model.

The results obtained firstly corroborate that an income convergence process has indeed happened and, secondly, they indicate this has been much faster than previously mentioned; specifically, for the first four equations the speed of convergence in total globalisation is between 23.35 (without control variables) and 23.88 (with control variables).

As for the role of globalisation, it is confirmed that not only total, economic and social globalisation have positively affected the income rate of growth, but also political globalisation. Additionally, it is important to highlight that the influence of globalisation on economic growth and, indirectly, on income convergence, is much larger than previously mentioned: to be precise, income growth increases by 2.1 percentage points per percentage point increase of total globalisation²³.

²⁰ In this case, a one per cent increase in total globalisation would expand income growth by 0.8 percentage points.

²¹ Some papers using GMM models to estimate growth equations have also employed a transformation of the traditional growth equation estimated in Table 2 in which the current level of output is included as dependent variable (see, for example, Badinger et al. 2004). Anyway, and in order to facilitate the comparison of the results, we have followed the most common practice in economic growth modelling, maintaining growth income rate as dependent variable.

²² We have not used a two-step GMM estimator because, as indicated by Arellano and Bond (1991), the standard errors tend to be underestimated by this estimator in small samples.

²³ When control variables are included in the analysis –equation (5) of Table 3- the increase goes to 2.7 percentage points per one point increase in globalisation.

5. Conclusions

This paper has analysed total globalisation and its main dimensions (economic, social and political) from two different but closely related perspectives. Firstly, it has examined whether a process of globalisation convergence has taken place on a worldwide bases. Secondly, it addresses the issue of the effects of globalisation on economic growth and convergence.

After showing that globalisation has greatly increased all over the world, the paper initially reveals, as could be expected due to the rapid changes experienced by some developing countries, that a process of both σ and β convergence has happened in all four cases under consideration and, specially, in that of political globalisation.

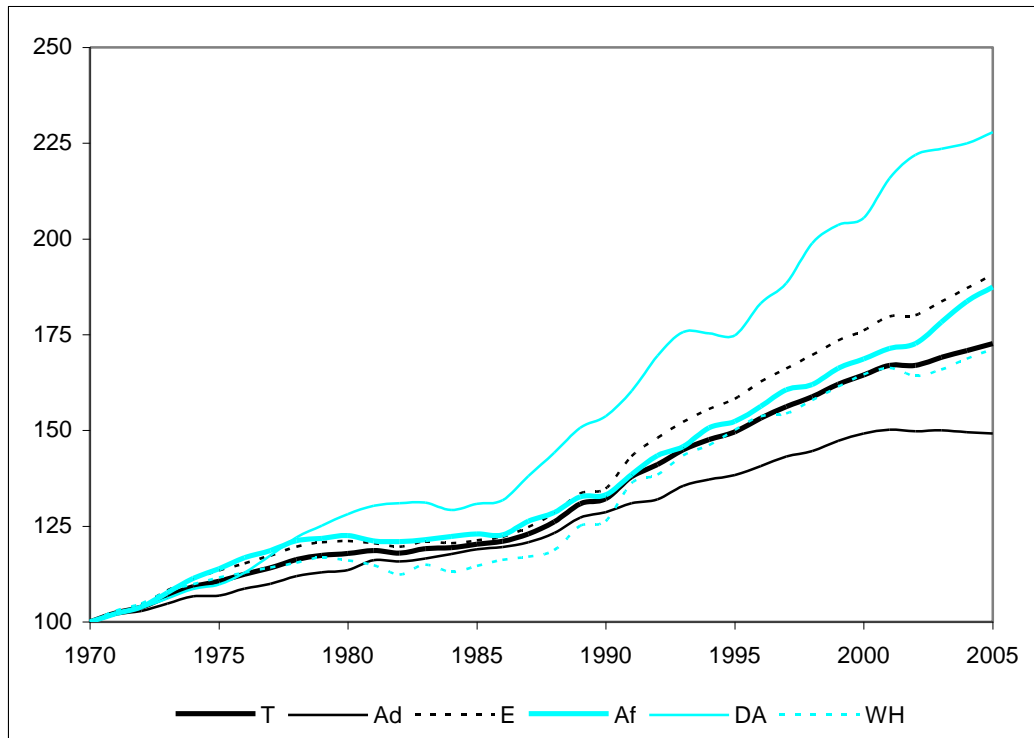
Secondly, the paper also shows that the shape of the world globalisation distribution has changed significantly over time, and that more countries are positioned around the mean in 2005 than in 1970, this confirming (\square) convergence.

Next, our analysis of intra - distributional dynamics indicates that mobility within the distribution has been rather high and, given its direction, has fostered convergence. This mobility has been particularly noticeable in the lower and upper ends of each globalisation dimension, specifically in the case of political globalisation.

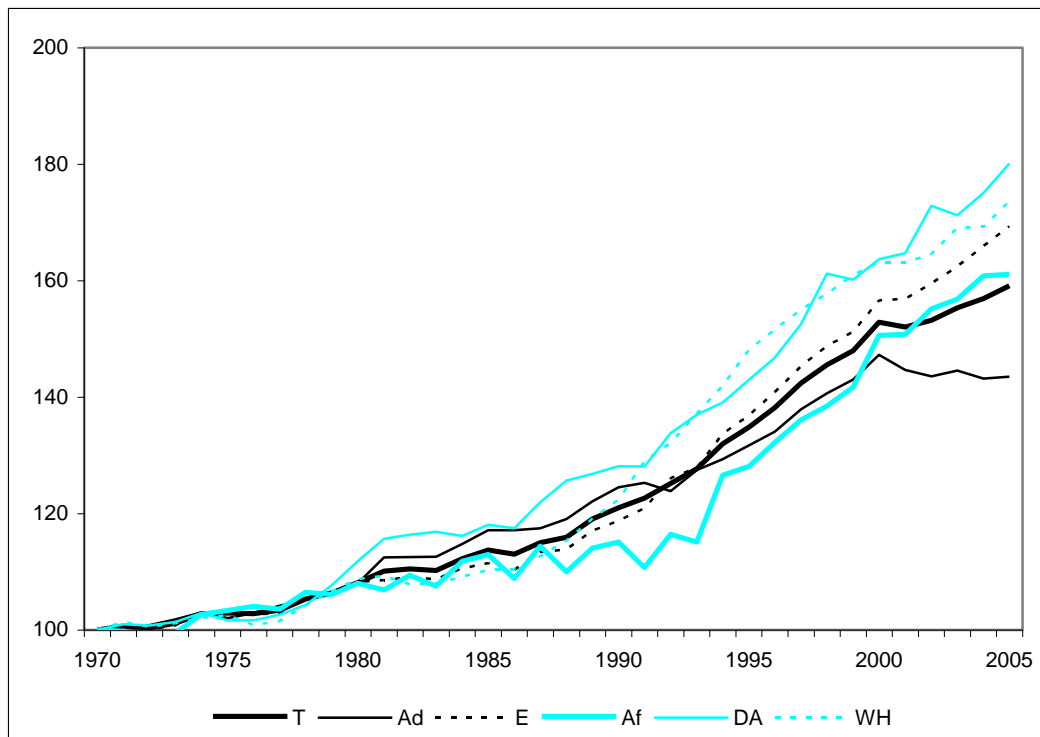
Subsequently, the computing of the ergodic distribution suggests that, in a hypothetical long run equilibrium, the probability of finding clusters of countries will be very low. Furthermore, it also implies that cross - country disparities in globalisation will remain relatively high, in particular with relation to the social and political globalisation dimensions.

Finally, the analysis of the relationship between globalisation and growth clearly demonstrates that, as a general rule, globalisation has promoted growth. Considering the aforementioned convergence in globalisation, this result implies that globalisation has also fostered income convergence across countries.

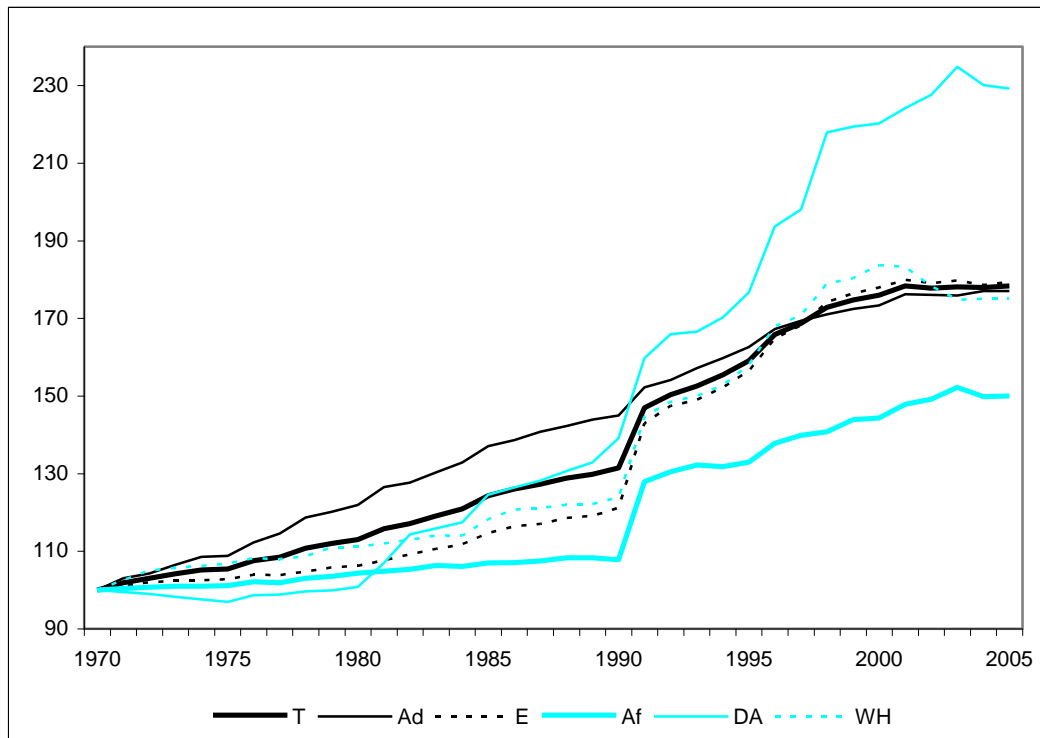
Figure 1. Index of globalisation: Evolution



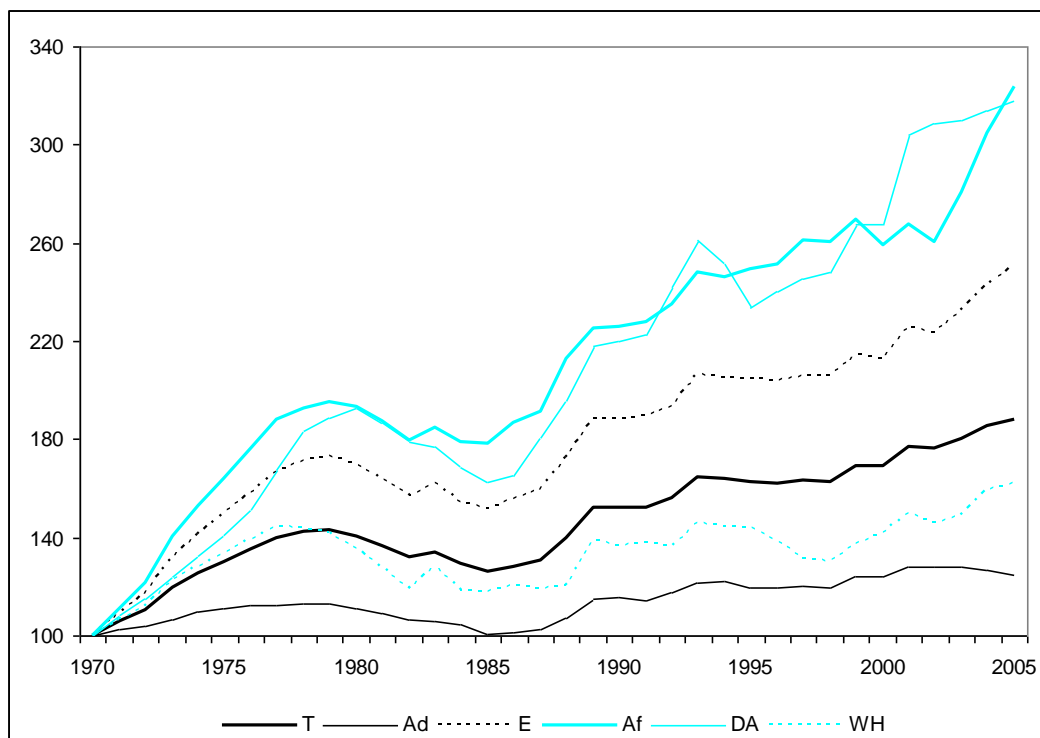
a) Total globalisation



b) Economic Globalisation



c) Social Globalisation



d) Political Globalisation

Figure 2. □ convergence

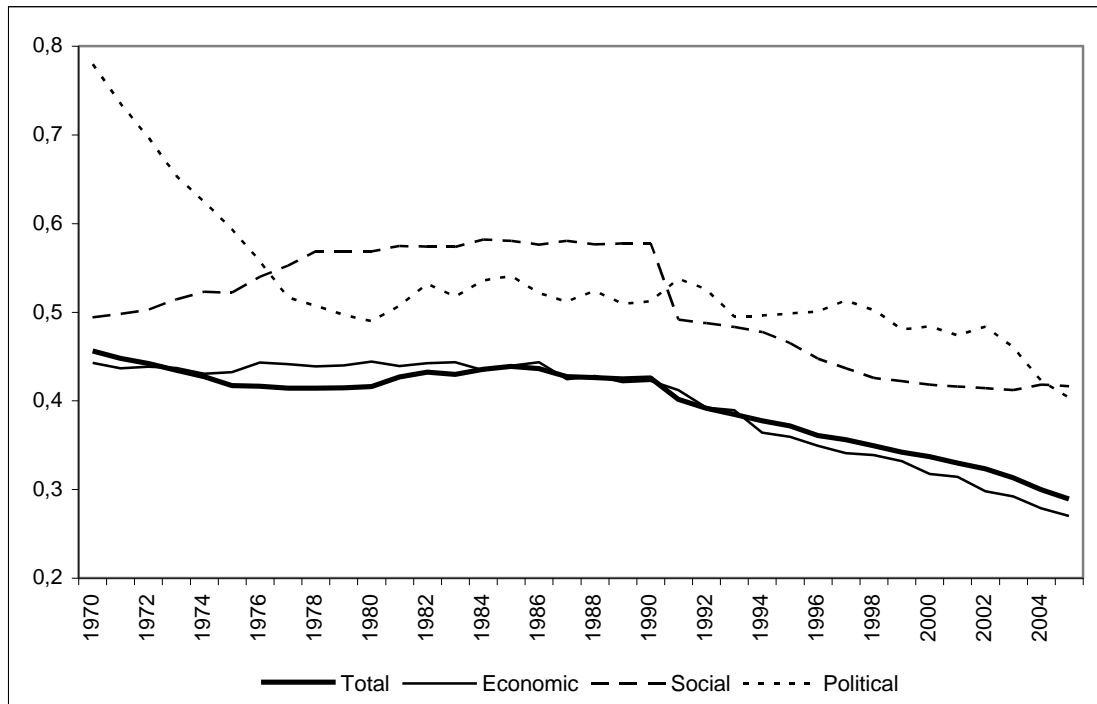


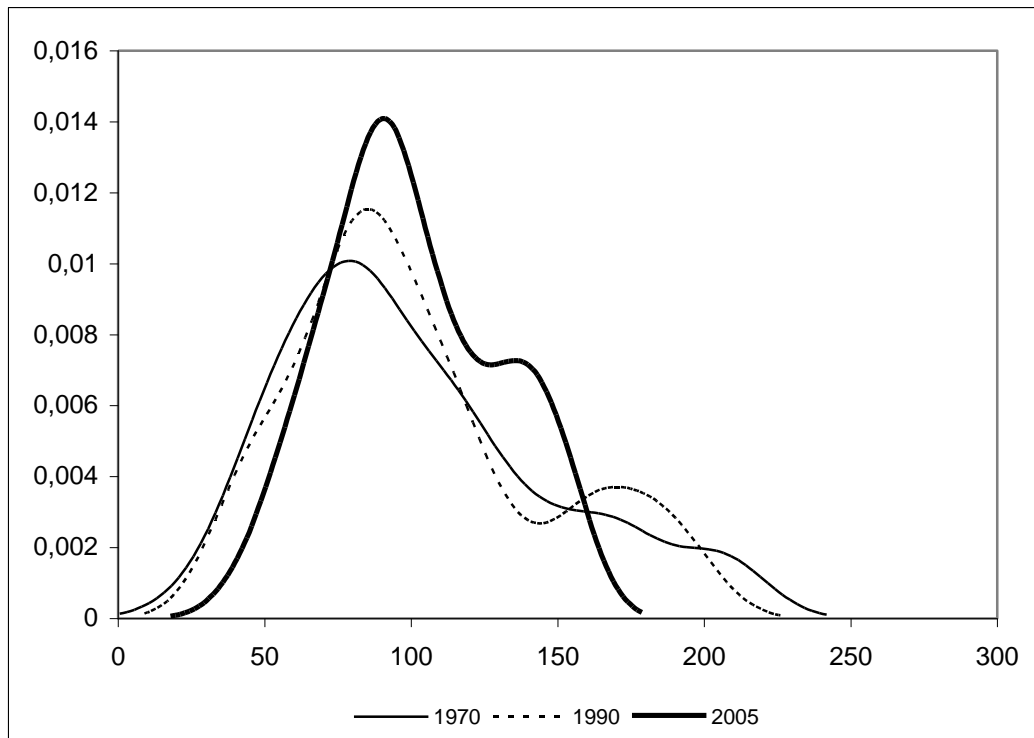
Table 1. □ convergence

	Total		Economic		Social		Political	
	Value	<i>t</i> -statistic	Value	<i>t</i> -statistic	Value	<i>t</i> -statistic	Value	<i>t</i> -statistic
β	-0.081*	-11.90	-0.068*	-9.91	-0.064*	-10.71	-0.113*	-23.03
Adjusted R ²	0.37		0.30		0.42		0.55	
Number of countries	101		101		101		101	
Number of observations	707		707		707		707	
Speed of convergence (five - years %)	12.02		9.16		8.55		22.25	
Half-life (five-years periods)	8.2		9.9		10.4		5.8	

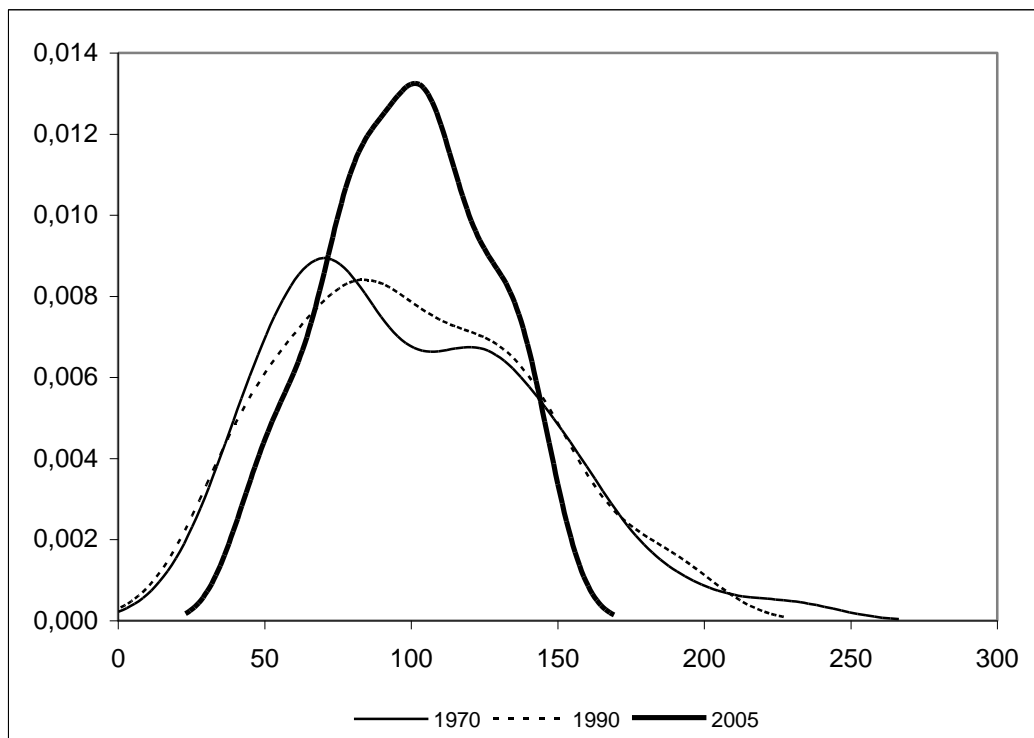
Notes: (*) = significant at the 1% level.

Sources: KOF index of globalisation.

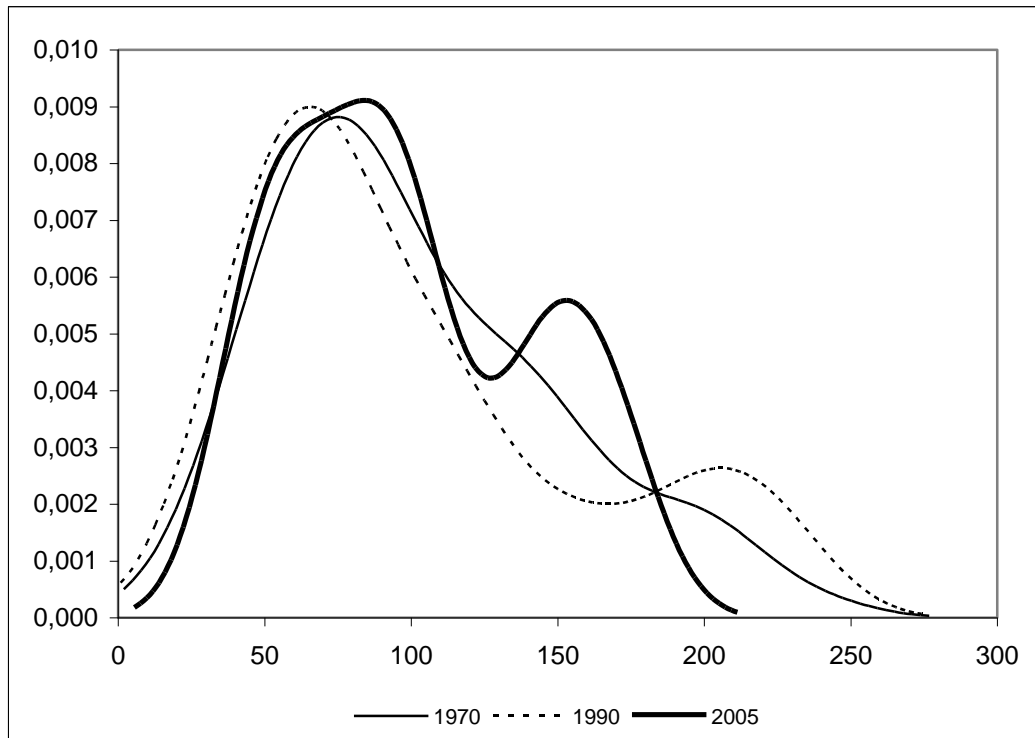
Figure 3. Globalisation: density functions (average =100)



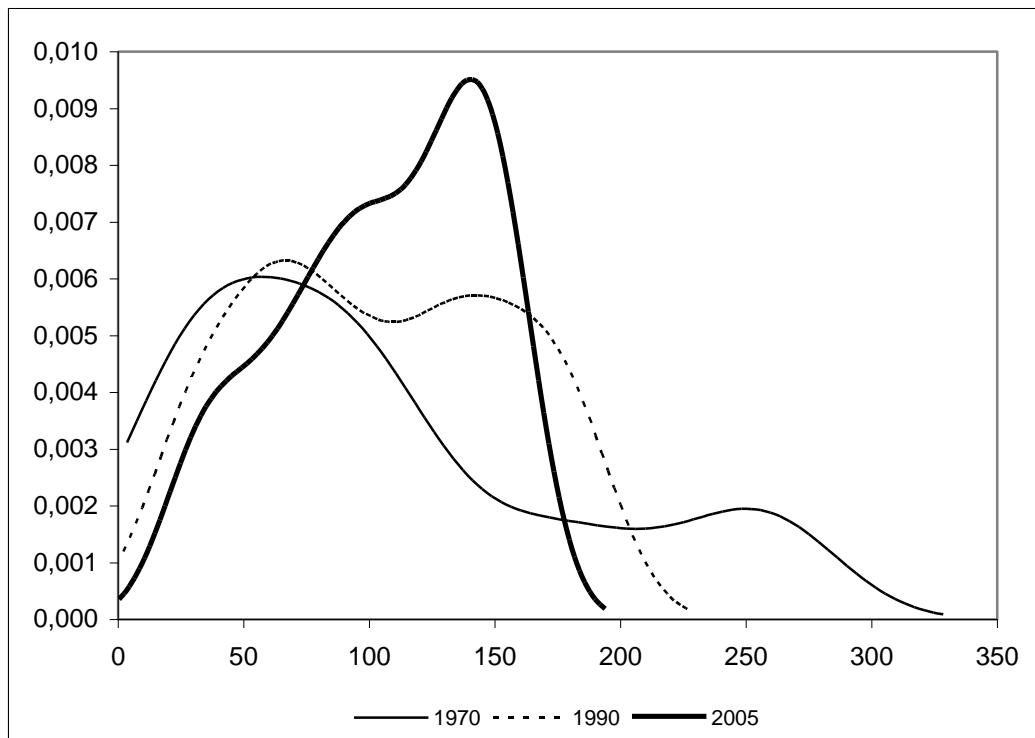
a) Total globalisation



b) Economic globalisation

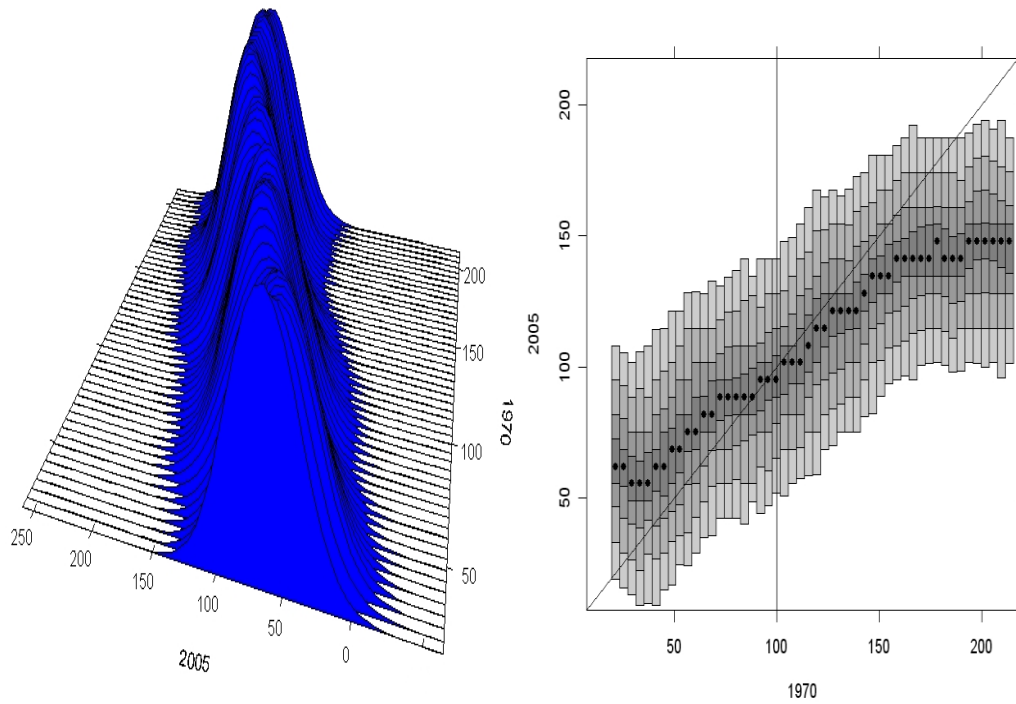


c) Social globalisation

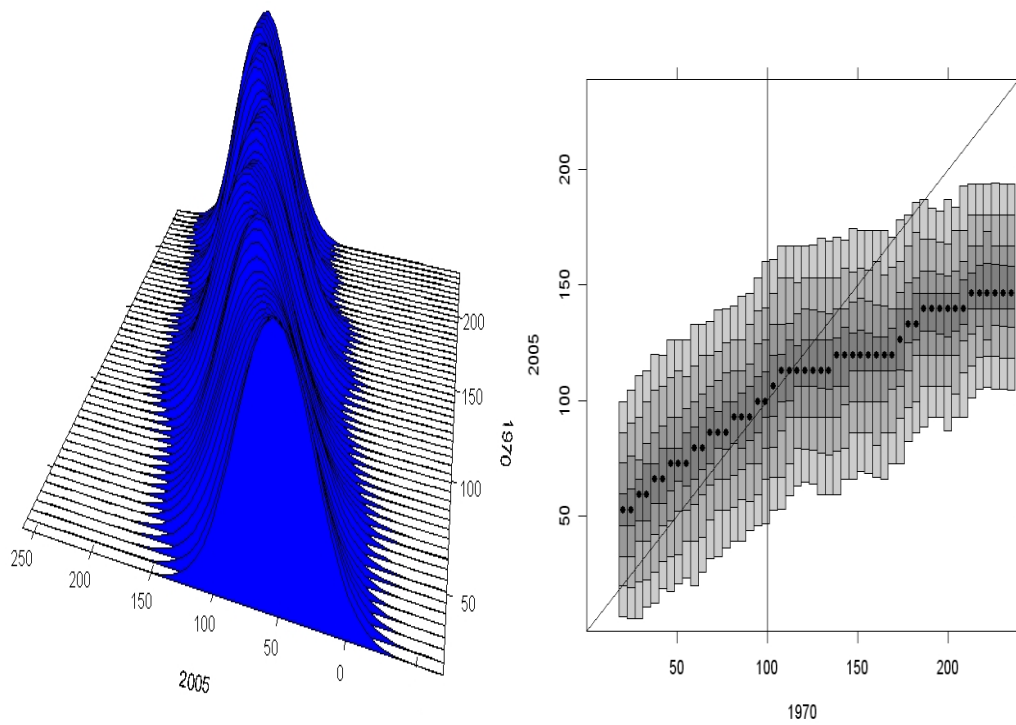


d) Political globalisation

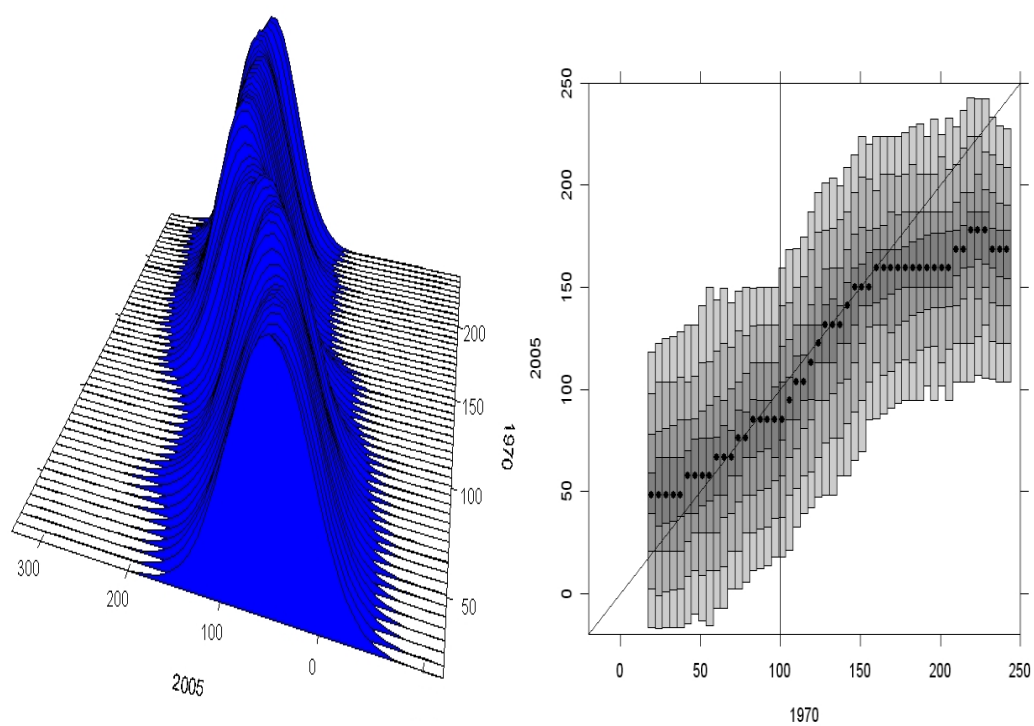
Figure 4. Intra-distribution dynamics: SCD and HCDR plots (Average =100). From dark to light, the shadings represent 25%, 50%, 75% and 90% of the total probability; bullets indicate the mode.



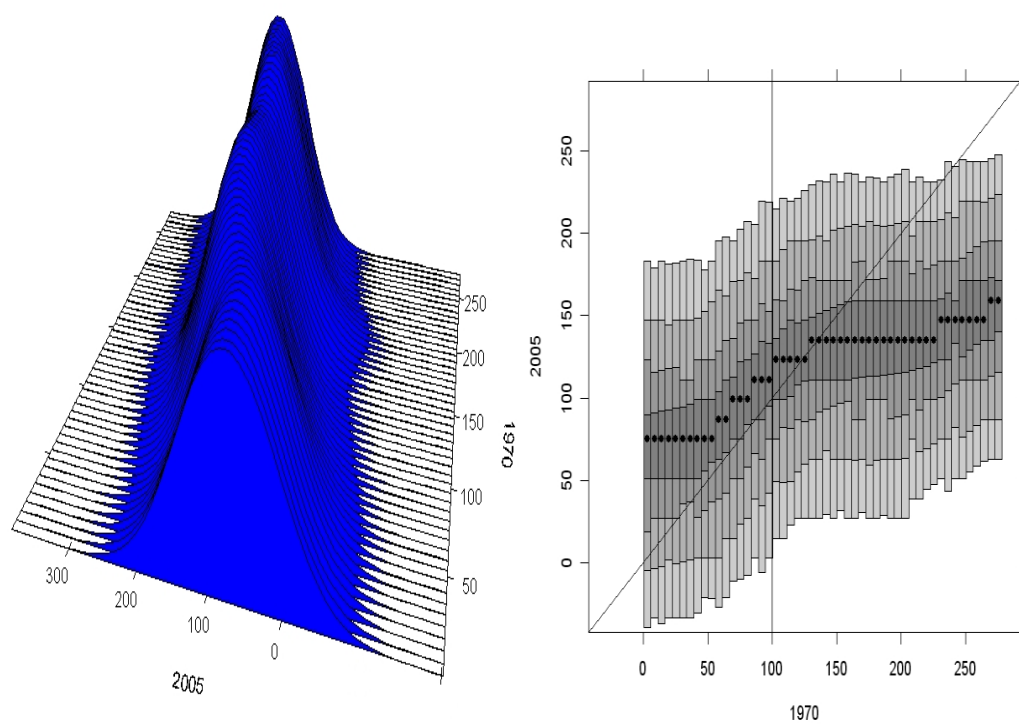
a) Total globalization



b) Economic globalization



c) Social globalization



d) Political globalization

Figure 5. Ergodic distribution (Average = 100)

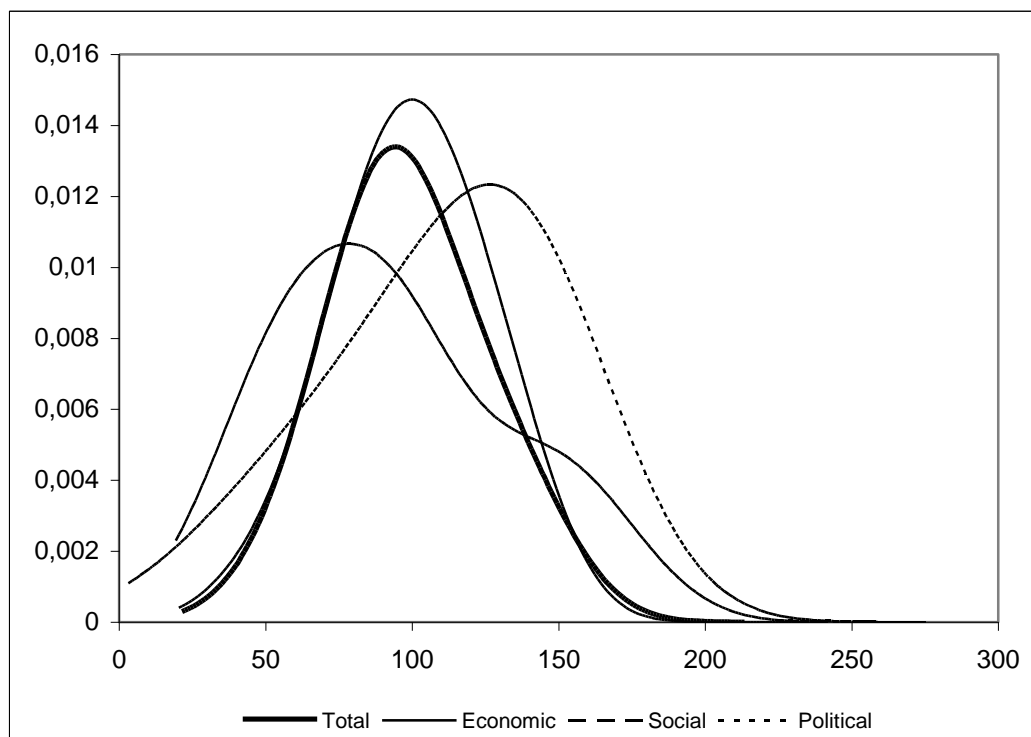


Table 2. Globalization and growth (OLS estimation)

	1	2	3	4	5	6	7	8
Log (INCOME _{pc}), beginning of the period	-0.039* (-10.1)	-0.036* (-9.61)	-0.039* (-9.77)	-0.034* (-8.87)	-0.060* (-9.39)	-0.058* (-9.11)	-0.060* (-9.20)	-0.058* (-9.03)
Secondary School Enrollment					0.000 (1.34)	0.000 (1.41)	0.000 (1.42)	0.000 (1.37)
Log (Fertility rate)					-0.011 (-1.18)	-0.013 (-1.38)	-0.014 (-1.45)	-0.013 (-1.38)
Investment (% INCOME)					0.002* (6.63)	0.002* (6.29)	0.002* (6.73)	0.002* (6.80)
Inflation rate					-0.000 (-1.37)	-0.000 (-1.21)	-0.000 (-1.42)	-0.000 (-1.64)
Rule of law index					0.001 (0.74)	0.001 (0.75)	0.001 (0.71)	0.001 (0.71)
Government consumption (% INCOME)					-0.002 (1.33)	-0.001* (-3.67)	-0.002* (-3.80)	-0.001* (-3.57)
Total globalization index	0.011* (4.81)				0.008** (2.57)			
Economic Globalization index		0.008* (4.82)				0.005* (2.65)		
Social Globalization index			0.007* (3.91)				0.004° (1.70)	
Political Globalization index				0.001 (0.40)				0.001 (0.61)
Number of countries	101	101	101	101	100	100	100	100
Number of observations	683	683	683	683	414	414	414	414
Adjusted R ²	0.24	0.24	0.23	0.21	0.44	0.44	0.43	0.43
Speed of convergence (five- years %)	4.55	4.15	4.55	3.88	7.78	7.44	7.78	7.44
Half-life (five-years periods)	17.42	18.91	17.42	20.04	11.20	11.60	11.20	11.60

Notes: (*) = significant at the 1% level; (**) = significant at the 5% level; (°) = significant at the 10% level.

Sources: KOF globalisation index, World Bank, Euromonitor International and Economic Freedom of the World (EFW) index.

Table 3. Globalization and growth (GMM estimation)

	1	2	3	4	5	6	7	8
Log (GDP pc), beginning of the period	-0.115* (-6.82)	-0.093* (-5.39)	-0.160* (-8.01)	-0.093* (-6.34)	-0.101* (-3.66)	-0.089* (-3.74)	-0.012* (-4.57)	-0.015* (-6.85)
Secondary School Enrollment					0.000** (1.98)	0.000** (2.62)	0.000** (2.25)	0.000° (1.92)
Log (Fertility rate)					0.002 (0.14)	-0.010 (-0.69)	0.006 (0.41)	-0.026 (-1.43)
Investment (% GDP)					0.002* (6.08)	0.002* (5.65)	0.002* (5.28)	0.002* (5.05)
Inflation rate					-0.000 (-1.01)	-0.000 (-0.27)	-0.000 (-0.58)	-0.000 (-0.92)
Rule of law index					0.002° (1.75)	0.001 (1.22)	0.002 (1.21)	0.004** (2.62)
Government consumption (% GDP)					-0.001° (-1.82)	-0.002** (-2.24)	-0.002** (-2.09)	0.000 (0.33)
Total globalization index	0.021* (5.93)				0.027* (3.17)			
Economic Globalization index		0.015* (5.03)				0.011** (2.42)		
Social Globalization index			0.026* (6.92)				0.019* (4.60)	
Political Globalization index				0.016* (5.35)				0.019* (4.68)
Number of countries	99	99	99	99	88	88	88	88
Number of observations	578	578	578	578	296	296	296	296
Sargan test (p value)	0.99	0.99	1.0	0.99	0.99	0.99	0.99	0.99
First order Arellano- Bond test (p value)	0.32	0.05	0.07	0.15	0.06	0.03	0.19	0.08
Second order Arellano- Bond test (p value)	0.25	0.14	0.43	0.10	0.21	0.26	0.27	0.10
Speed of convergence (five-years %)	23.35	15.04	n.c.	15.04	17.54	13.94	1.25	1.58
Half-life (five-years periods)	5.67	7.10	3.98	7.10	6.51	7.44	57.41	45.86

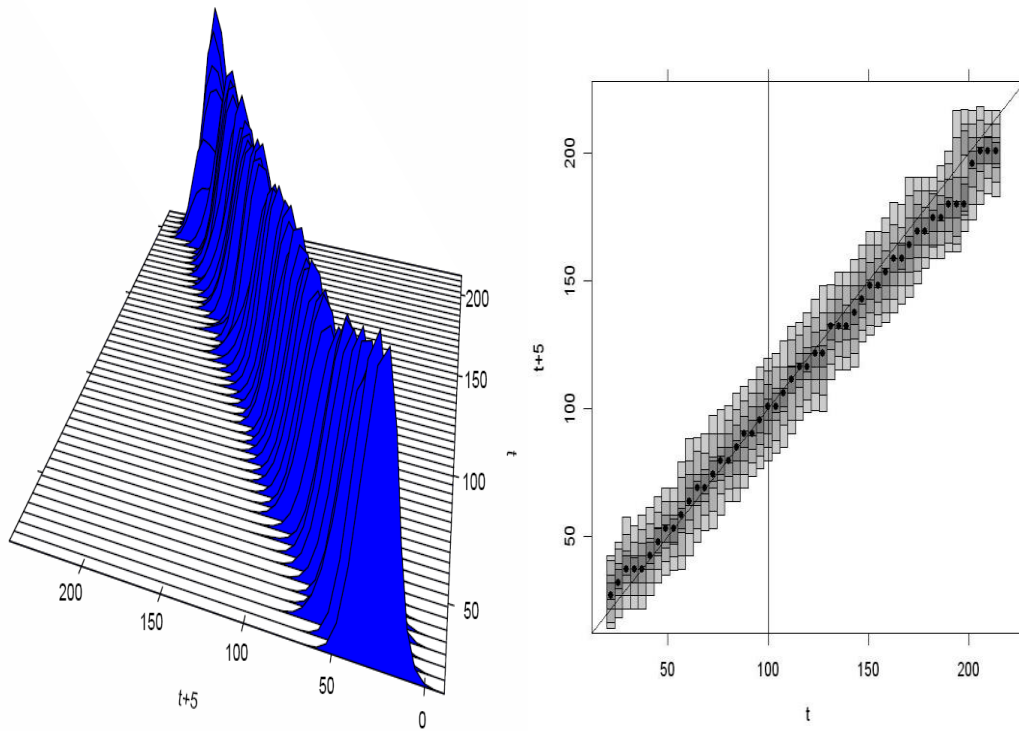
Notes: (*) = significant at the 1% level; (**) = significant at the 5% level; (°) = significant at the 10% level; n.c. = not computable.

Sources: KOF globalisation index, World Bank, Euromonitor International and Economic Freedom of the World (EFW) index

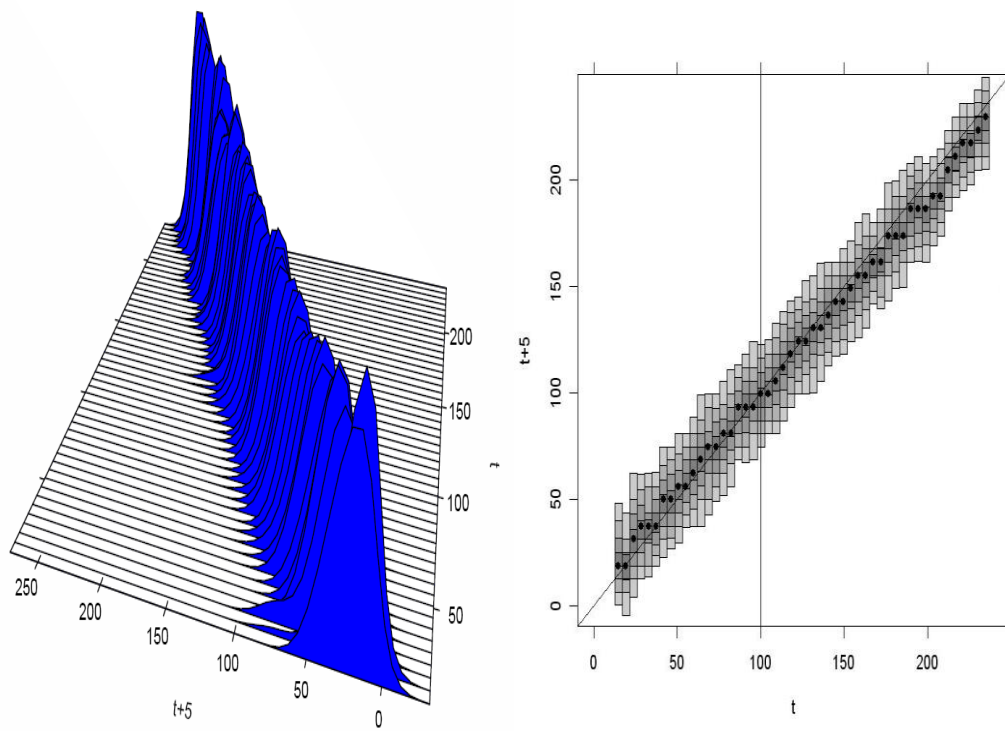
Appendix 1: List of countries considered in the analysis

Albania	Greece	Norway
Algeria	Guatemala	Oman
Argentina	Guyana	Pakistan
Australia	Haiti	Panama
Austria	Hungary	Papua New Guinea
Bangladesh	Iceland	Paraguay
Barbados	India	Peru
Belgium	Indonesia	Philippines
Benin	Iran, Islamic Rep.	Poland
Bolivia	Ireland	Portugal
Botswana	Israel	Romania
Brazil	Italy	Rwanda
Bulgaria	Jamaica	Senegal
Burundi	Japan	Sierra Leone
Cameroon	Jordan	Singapore
Canada	Kenya	South Africa
Central African Rep.	Korea, Rep.	Spain
Chad	Kuwait	Sri Lanka
Chile	Luxembourg	Sweden
China	Madagascar	Switzerland
Colombia	Malawi	Tanzania
Costa Rica	Malaysia	Thailand
Cote d'Ivoire	Mali	Togo
Cyprus	Malta	Trinidad and Tobago
Denmark	Mauritius	Tunisia
Dominican Republic	Mexico	Turkey
Ecuador	Morocco	Uganda
Egypt, Arab Rep.	Namibia	United Kingdom
El Salvador	Nepal	United States
Fiji	Netherlands	Uruguay
Finland	New Zealand	Venezuela, RB
France	Nicaragua	Zambia
Germany	Niger	Zimbabwe
Ghana	Nigeria	

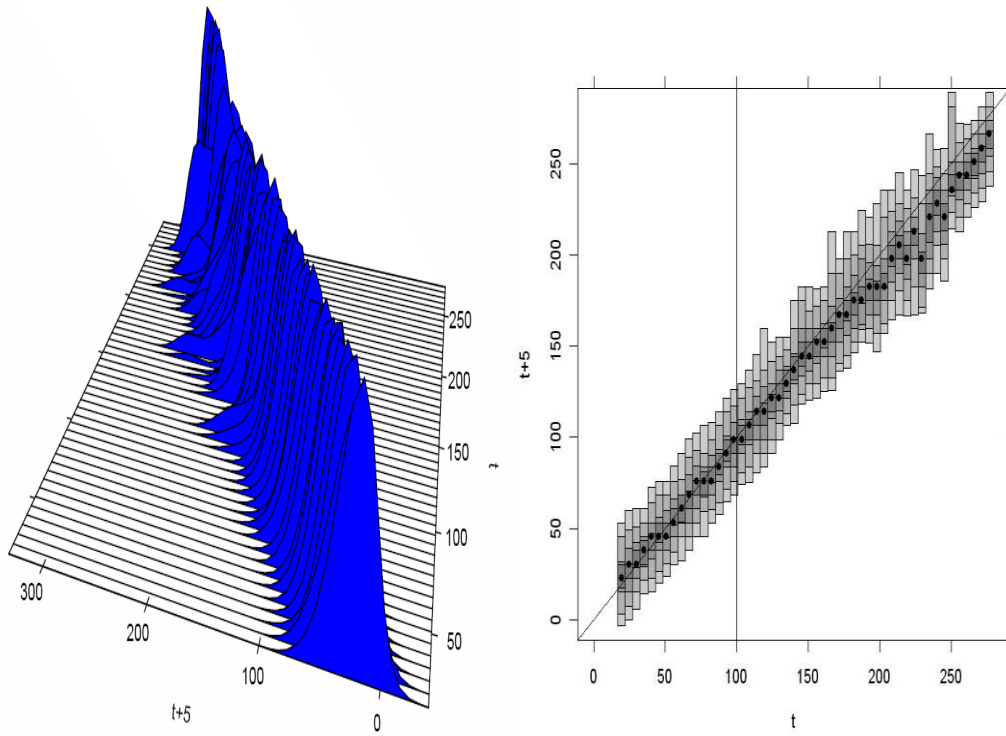
Appendix 2: Intra-distribution dynamics. Five-years transition periods



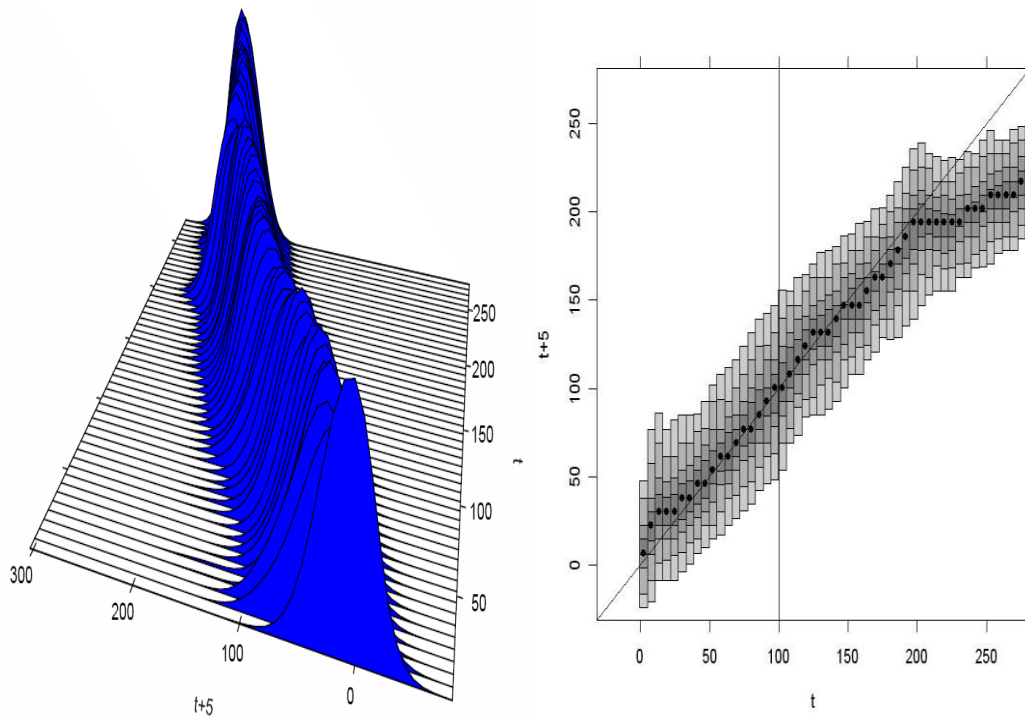
a) Total globalisation



b) Economic globalisation



c) Social globalisation



d) Political globalisation

Appendix 3: Variables. Definitions and sources

Per capita income growth rate: Percentage growth rate of GDP on constant local currency (average of each five-years period)

Source: World Development Indicators (World Bank)

Log (GDPpc), beginning of the period: GDP divided by midyear population (first year of each period)

Source: World Development Indicators (World Bank)

Secondary School Enrollment: Ratio between secondary school pupils to the population of the age group that officially correspond to this level of education (average of each five-years period)

Source: Global Market Information Database (Euromonitor International)

Log (Fertility rate): Children per woman (average of each five-years period)

Source: World Development Indicators (World Bank)

Investment (% GDP): Gross fixed capital formation (% of GDP) (average of each five-years period)

Source: World Development Indicators (World Bank)

Inflation rate: GDP deflator (annual %) (average of each five-years period)

Source: World Development Indicators (World Bank)

Rule of law index: Legal structure and security of property rights index (between 0 and 10) (first year of each period)

Source: Economic Freedom of the World (EFW) index

Government consumption (% GDP): General government final consumption expenditure (% of GDP) (average of each five-years period)

Source: World Development Indicators (World Bank)

Globalisation and growth: are we heading for convergence

Abstract

This paper, devoted to the study of globalisation, analyses two distinct but closely related issues. Firstly, it aims at evaluating disparities in the degree of globalisation observed in a sample of 101 countries over the period 1970-2005. Secondly, it tries to shed some light to the much debated issue of whether globalisation affects economic growth and, in so doing, whether convergence in globalisation brings about convergence in per capita income. The results obtained are both encouraging: on the one side, it is shown that there has been a clear process of globalisation convergence; on the other, the paper concludes that globalisation has been one of the main drivers of economic growth, thus fostering convergence in per capita income.

Keywords: globalisation; growth; convergence; intra-distribution dynamics.

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