Has social security policy converged?
Cross-country evolution of old age benefits, 1890-2000

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Abstract

The extension of social insurance during the twentieth century has not translated into the uniformization of welfare states. On the contrary, the diversity of national approaches towards welfare has resulted in significant and persistent differences in social protection levels and, specifically, pensions. Using the results drawn from a pension database, the paper aims at analyzing the evolution of old age benefits in the long-run for a representative sample of welfare states and answer whether there has been, at least, a trend towards convergence or not. We find a clear international convergence in pension policy only between 1950 and 1990, but we also show that conclusions on this issue change depending on the levels of earnings examined. Since national policies matter for the final form of pensions, we provide a measure of the policy effect by calculating deviations of actual pensions from those expected from a pension norm. This will allow us to identify the systems which over- or under-provided pensions and when they did so.

I. Introduction

The development of social insurance has had an essential role in improving the well-being and working conditions of insured populations after uncertainty on several contingencies has disappeared, and social protection has gradually captured greater shares of public spending.

Since its emergence at the end of the nineteenth century, the rising popularity of public social insurance has caused it to spread progressively throughout the world. However, its rise has been very uneven. As table 1 illustrates, in the most recent past there have been non-trivial differences in social spending shares among some of the more developed countries in the world.

Table 1 Public social expenditure as a % of GDP in several countries

	1980	1990	2000	2005
France	20.8	25.1	27.9	29.2
Germany	22.7	22.3	26.2	26.7
Italy	18.0	19.9	23.3	25.0
Portugal	10.2	12.9	19.6	23.1*
Spain	15.5	19.9	20.3	21.2
Sweden	27.1	30.2	28.5	29.4
United Kingdom	16.7	17.0	19.2	21.3
United States	13.1	13.4	14.5	15.9
EU-15 avg	19.5	21.4	22.6	24.3
OECD avg	16.0	18.1	19.3	20.7

Source: OECD
*refers to 2004

In the light of these differentials, a vast amount of research has aimed at disentangling why national approaches with regard to welfare provision are different. A privileged strategy to explain this has used social spending shares as the relevant dependent variable. This has not only been the case for studies with a historical perspective on the rise of welfare states (Flora *et al.,* 1983-7; Lindert, 2004) but also for works with a more contemporary focus (Alsasua *et al.,* 2007; Brady *et al.,* 2004). However, useful as they are, social spending measures may prove problematic if more refined assessments of the quality and form of welfare efforts are pursued. For instance, an immediate problem with social spending data relates to its heterogeneity, resulting from non-uniform criteria among countries. A second criticism of this approach has argued that the full dimension of welfare is missed if only publicly-sourced spending is considered. Regarding this, in contexts where private spending (e.g. employer pension plans) and non-monetary provision within the family (e.g. long-term care) are important for the protection of social risks, the reality of social protection will differ considerably from the picture provided by public data only (Esping-Andersen and Myles, 2005). Third, a critical look at social expenditure measures should also take into account their particular sensitiveness to the economic cycle. Importantly, this relationship may in fact lead to erroneous interpretations when welfare developments -understood as social expenditure growth- are related to factors of need. For instance, a surge in unemployment spending due to economic crisis could end up being wrongly interpreted as an expansion in welfare (Johnson, 1999: 598). Finally, social spending need not be equivalent to social insurance protection. When, for instance, social protection takes the form of a contributory insurance where non-public agents are financing the

bulk of benefits, then the measure of public spending is not expressive of the actual well-being resulting from the insurance.

In consequence, greater precision is required if one wants to isolate from spending data what one could call the pure effect of social security policy. Some literature has certainly tried to tackle with the limitations of the social spending approach. Hence, new definitions and classifications of welfare systems have appeared in the last decades with the aim to produce more realistic welfare typologies. In general, this type of works has stressed the importance of policy choice and structural elements to explain cross-country heterogeneities in social provision. The most influential contribution in this field is still Esping-Andersen's classification of welfare systems into three 'worlds' –liberal, conservative-corporatist and social democratic– according to the balance of government-market-family in the provision of welfare (Esping-Andersen, 1990). There have been numerous extensions within the same line of research, but the common message is that traditions and policy choices play an essential role in shaping each welfare state.

Rather than dwelling on the defining features of each typology and/or the causes for persistent specificities, I have chosen to focus on actual, quantitative outcomes as the focus of my analysis. First, I will try to see whether or not welfare systems have converged in the long-run. This is a relevant issue which has captured a growing attention of scholars, especially after the last globalization process and the interest on its possible consequences on welfare structures. Despite the fact that consensus on the latter issue is still non-existent,[1] this line of argument has been used fruitfully for some specific historical periods (Huberman and Lewchuk, 2003). This paper aims at following this thread. Looking at a wider time span, I will try to see whether systems have in overall converged and if the trend can be correlated with the evolution of economic integration during the twentieth century.

[1] For a number of scholars, openness has acted as an incentive for welfare state expansion due to the latter's ability to stabilize economic downturns resulting from greater market exposure. Following this, a process of convergence in social provision should be observed as economic integration has increased (Huberman and Lewchuk, 2003, for the pre-WWI period; Rieger and Leibfried, 2003; Seelib-Kaiser, 2001). By contrast, another stream points at the negative relationship between globalization and welfare expansion as a consequence of increased competitive pressures. The empirical ground for this argument has been contemporary welfare-state retrenchment being interpreted as a by-product of current globalization (Rhodes, 1996; Schwartz, 2001). Other literature has instead identified an intermediate effect by which globalization has different results on welfare depending on each country's initial level of development. In other words, welfare state development has a curvilinear relationship with respect to globalization; countries with minimal welfare nets experience an expansion in order to cope with higher economic volatility, while countries with well-developed welfare structures are bound to retrench (Hicks, 1999; Rodrik, 1997; Huber and Stephens, 2001). According to this hypothesis, greater openness should lead to absolute convergence towards a mean level of welfare provision. Finally, the relationship between globalization and less welfare has also been denied, arguing instead that domestic, and not external, policies are ultimately responsible for welfare outcomes (Myles and Pierson, 2001; Steinmo, 2002).

The second concern is to assess the performance of welfare systems. The performance of public systems can be judged in a number of ways. One can examine whether countries were fast enough in introducing welfare measures, whether these measures were effective in providing the relief that they granted, etc. I have instead chosen to concentrate in measuring the 'generosity of systems'. In a context of growing economic integration, persistent welfare differences may be explained, for instance, by intrinsic factors of policy choice. Therefore, I will be interested in measuring by how much policy matters. In the framework of this paper, I will identify generous countries and periods as those providing benefits above the expected levels determined by a number of relevant socioeconomic variables.

From the whole menu of benefits offered by modern welfare states, I concentrate on the analysis of pensions, the largest expenditure item of the progress of social protection. First and foremost, because pensions constitute a key welfare product in terms of impact, both referred to the amount of people protected and their importance, provided that pensions constitute the main source of income during a large period of people's life course. Second, the choice of pensions also maximizes the long-term historical perspective that this paper pursues. Provided that old age was usually the first insurance passed in most national systems of welfare, their study maximizes the time span of our analysis. Therefore, complete national histories of pensions will be examined for a set of eight developed countries representative of the different welfare families that the literature has identified.

Our analysis is essentially quantitative and, notably, opts for a pure pension outcome perspective (Johnson, 1999; Palme, 1990). As discussed above, this approach is superior for our purpose of assessing the effect of state policy on pensions, net of other welfare items contained in more aggregated data. With this method, we will simulate pension results for representative individuals with certain work characteristics in each country and each point in time. The results will provide the quantitative output that will be used to analyze cross and within country pension evolution in the long-run and measure the policy variable.

The paper proceeds as follows. Section II describes with more detail the methodology and data used. Section III presents the results of our pension simulations and provides some insight on the long-term evolution of pension benefits in our sample. Section IV deals with the quality of pensions, attempting to identify which countries in the database over- or under-provided pensions and when. Section V concludes.

II. The data

The creation of a pension database has required gathering social insurance legislation for a significant sample of countries and a time span as wide as possible. As for country cases, we have tried to cover categorizations of welfare traditions which may translate, a priori, into significant differences in pension outcomes. Hence, selected countries include France, Germany, Italy, Portugal, Spain, Sweden, the United Kingdom and the United States. The first two could be labelled as Bismarckian/corporatist, the next three fall in the Southern (sub)category,[2] Sweden is the most important example of a Scandinavian-type welfare state while the UK and the US may be grouped in the liberal type, at least for the more recent decades. Pension calculation rules have been examined in these countries from the time when state pensions were first introduced until the present. Therefore, our database spans from 1889, when Bismarckian Germany introduced its pioneering system of old age pensions, until 2000. For the sake of feasibility, pension legislation has been examined every ten years. In each of these periods, and for each of our countries, information has been collected on the coverage of the system, top and bottom income thresholds, qualifying periods of contribution, pension calculation rules, maximum and minimum pension, etc. Importantly, we have concentrated exclusively on public and general-regime pensions. Special regimes, private plans and mandatory employer or sector plans have therefore been excluded. I opted for this for two reasons. First, because it is hard to choose which is the representative sector in each country and year. Second, because the look at particular regimes would move us further away from the idea of general provision that we want to capture in order to best assess the widest possible impact of pensions.[3]

The rules for pension calculation need to be applied to certain types of workers with a given level of earnings and a given work history. In our calculations, we have chosen to use representative individuals differing in terms of earnings. With the aim of providing a measure of the differential treatment of earnings by pension systems, but also with an interest in observing the evolution of pension inequalities within countries, we have made estimates throughout a band of earnings levels. The exercise in each country and year has thus been made for nine types of workers earning, respectively, 25, 50, 75, 100, 150, 200, 250, 300 and 400% of the average wage earnings before taxes.

[2] Ferrera (1996)

[3] This measure can indeed become more restrictive in some periods and countries where second and third-tier pension provision are important for overall old-age income. However, this would only be problematic if we intended to assess the pension wealth of individuals. Instead, we are focused on the public attention to old age provision, so the relevant variable to look at is general programs of retirement.

Four assumptions have been made in order to make these quantitative histories more tractable. First, we have assumed that earnings are flat during all working years, in a way that, for instance, a worker retiring in 1950 with earnings equalling the average level in the economy in that year is assumed to have had that nominal salary during his past work history.[4] Second, the estimates assume that workers provided labour without interruptions from the age of twenty to the normal retirement age scheduled in each pension act. After the normal retirement age, we have assumed, individuals suffered no reduction in their pensions regardless of whether they continued to work, as the reductions sometimes mandated in the UK and the US. Third, in order to stick to the analysis of benefits strictly resulting form the provision of work and not increased due to any personal circumstance, pensions were calculated for the case of single men without dependents. Fourth, and most importantly, we assumed that a worker retiring in year *i* had been subject, during his entire working life, to the pension calculation rules applicable in year *i*. This assumption is analogous to demographers' use of "period rates", as opposed to cohort rates, e.g. in calculating life expectancy or divorce rates. Therefore, our analysis will capture only a short-run snapshot of each year's pension policy impact.

III. Long-term trends in pension outcomes

Figures 1-5 illustrate our pension estimates, here displaying the results for just three of the nine earnings levels. Each graph in Figures 1-3 corresponds to a type of worker defined by earnings level. The vertical axis shows the replacement rates of pensions with respect to the individual's terminal (and, equivalently, lifetime) earnings. Figures 4 and 5 focus more sharply on the intra-national differences the replacement rates of high earners and low earners.

[4] The bias produced by this assumption is greatly softened by the fact that, in most retirement systems, earnings only enter the calculation of pensions in the last years before retirement. In other words, the number of years within the system usually gives a right to a certain percentage of earnings, but the latter are normally taken from the years closest to retirement. Therefore, the effect of flat earnings histories will only produce a small bias in pension calculation, concentrated in the very last years of employment. On the other hand, in systems where earnings (and contributions) corresponding to earlier moments of the work history do play a role in calculation formuli, these are usually indexed to the level corresponding to the year of retirement. Hence, the fact of using a nominal dimension in our calculations again becomes negligible for our results.

Figure 1 Replacement rate of pension benefits (as % of own earnings) - individuals with 50% of AE

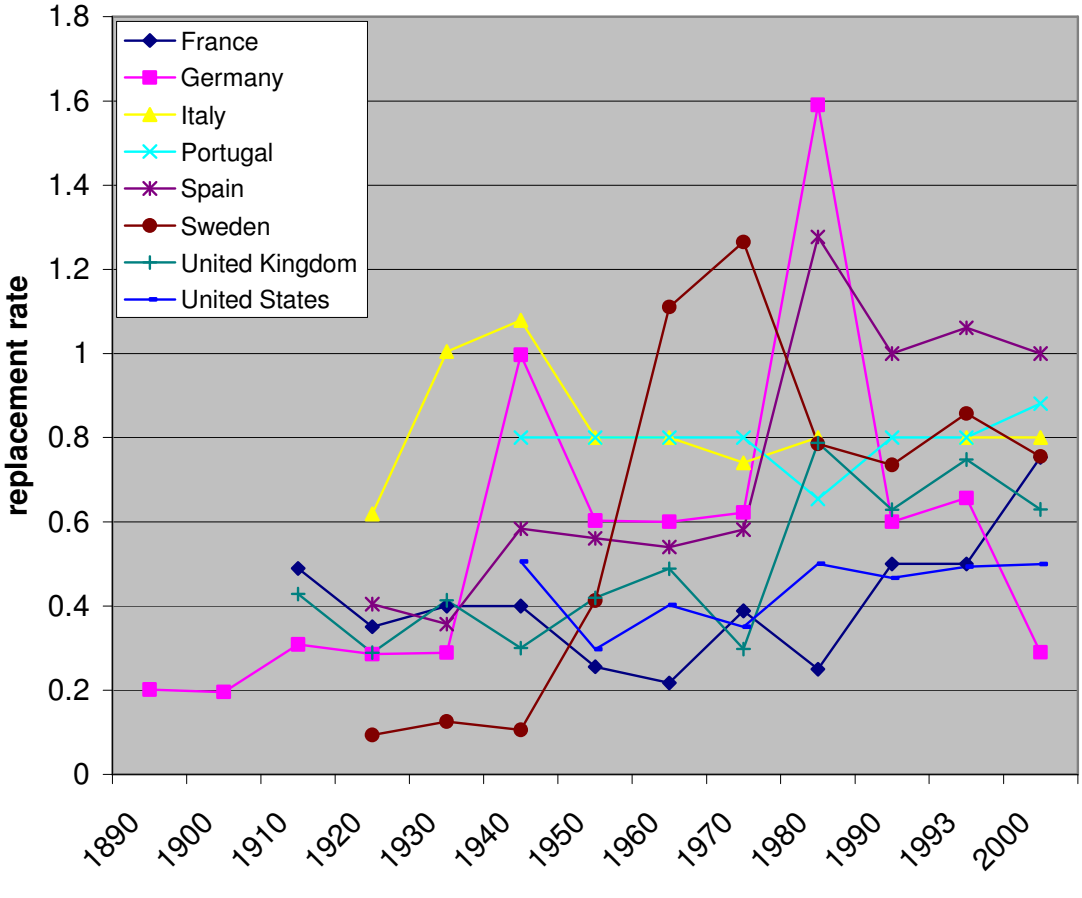


Figure 2 Replacement rate of pension benefits (as % of own earnings) - individuals with 100% of AE

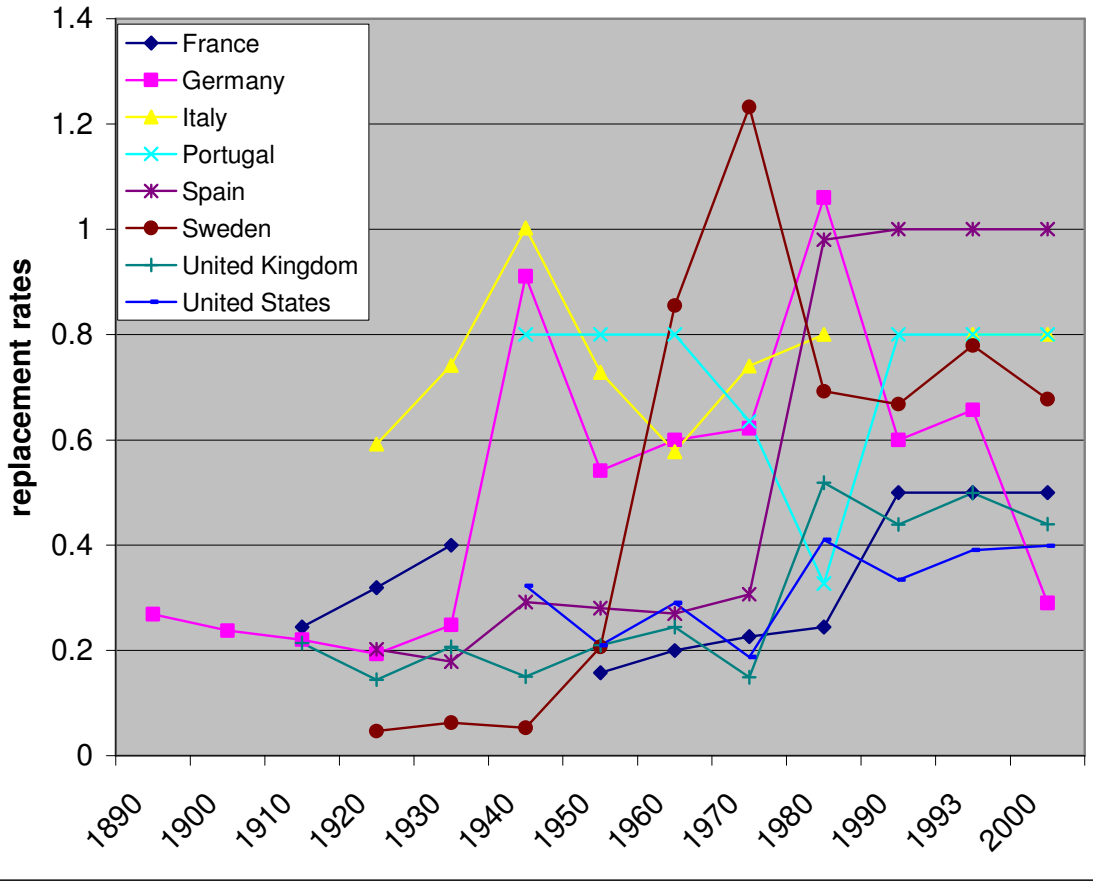


Figure 3 Replacement rate of pension benefits (as % of own earnings) individuals with 300% of AE

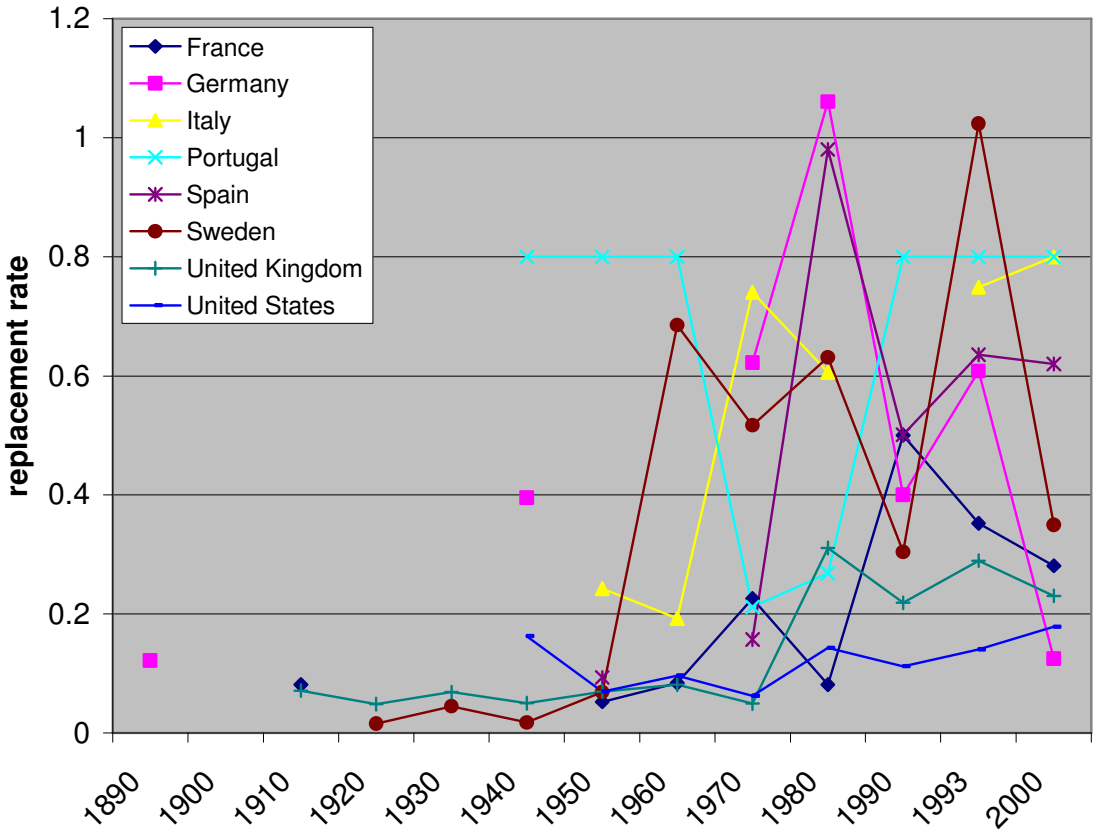


Figure 4 Replacement rate ratio, 50% AE over 100% AE

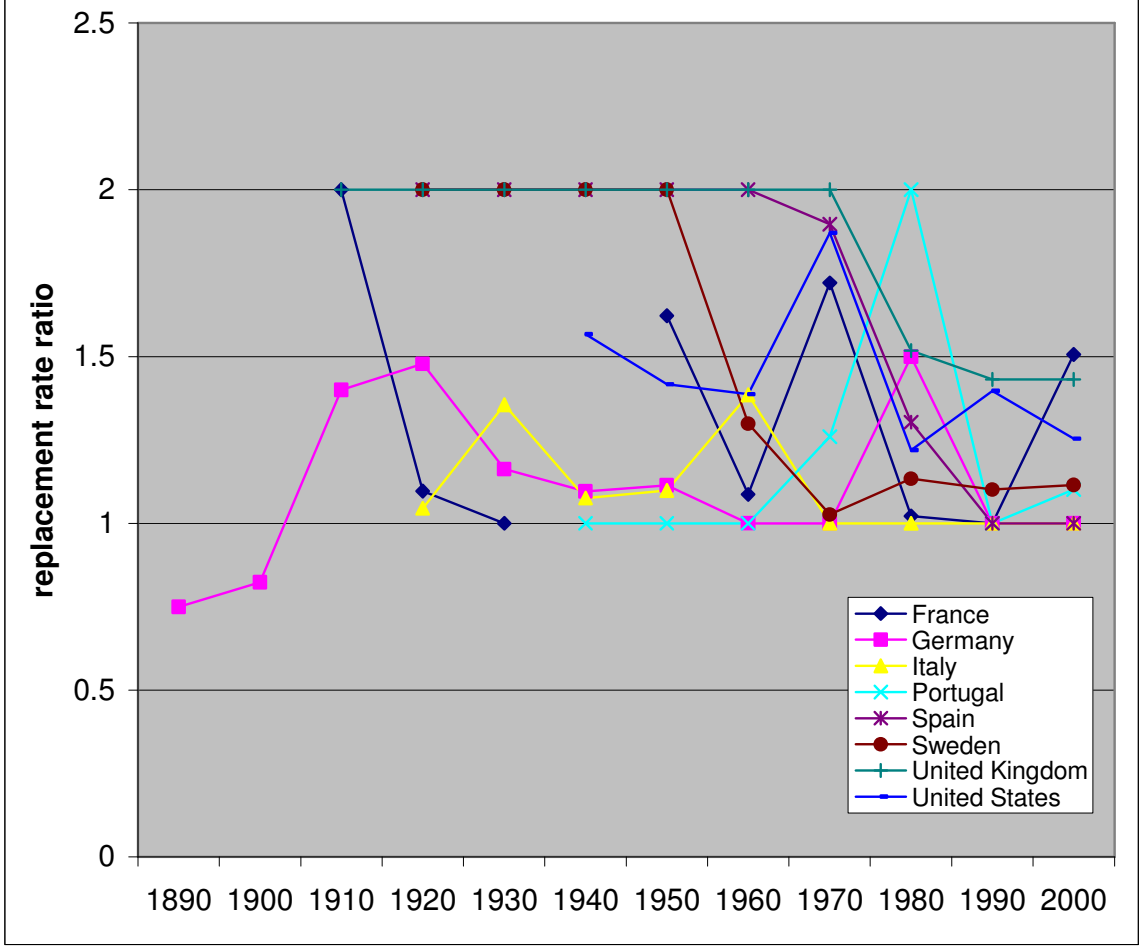
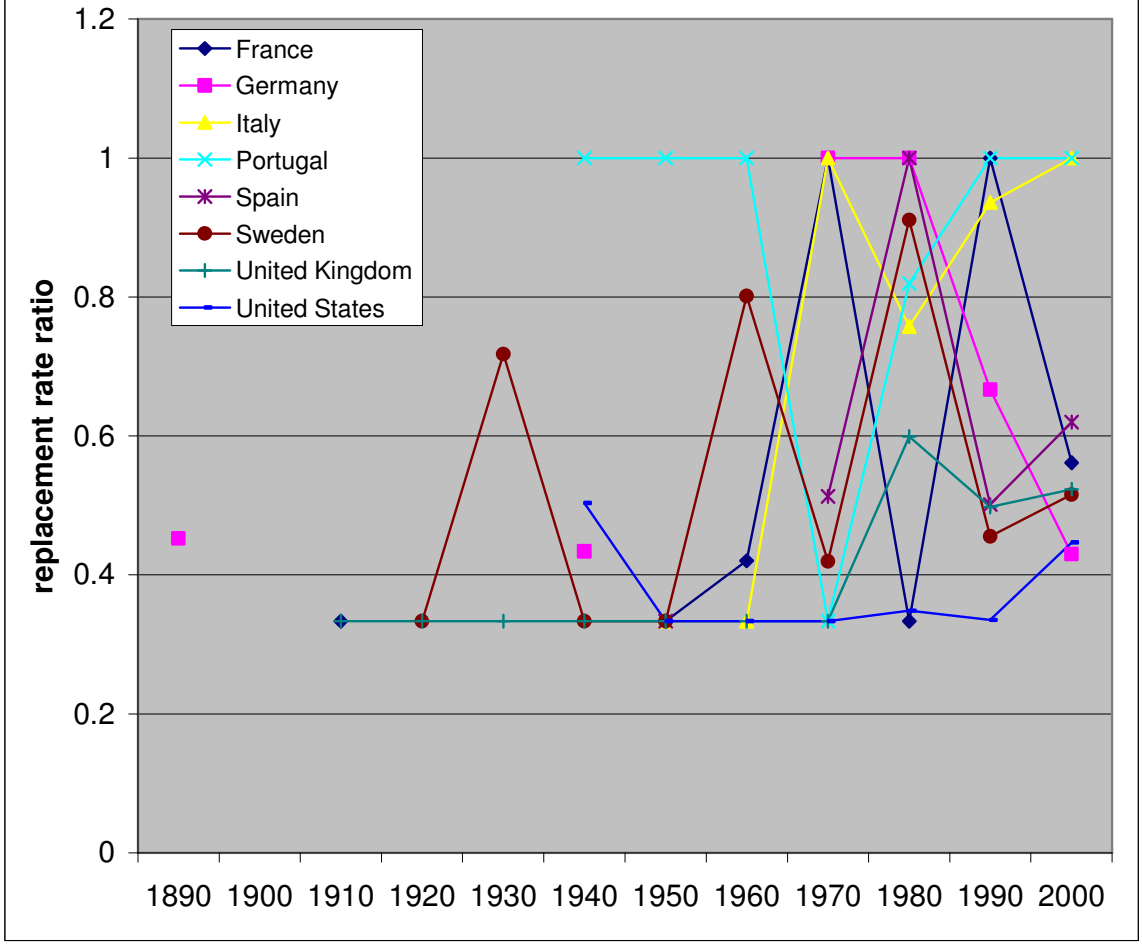


Figure 5 Replacement rate ratio, 300% AE over 100% AE



Source for figures 1-5: own elaboration from calculations described and documented in Appendix A.

The graphs confirm that pension systems have evolved significantly with time and, more importantly, are not neutral to earnings levels. At the lowest levels (50, and also in the not shown 75% of AE), replacement rates were maximized as a result of the existence of flat pensions and salary ranges in most pension systems before WWII. After the war, it was mostly the minimum pensions that produced the observed redistribution. Aside from this raising of the minimum rates, earnings around the average moved within a similar band of replacement rates. However, by 1920-1940, a different pattern emerged in Italy, Germany and Portugal, where replacement rates were far above the rest. Even if this had to do with the social policy of totalitarian regimes, it can be seen that, in any case, Italian and German differentials persist after WWII, with Sweden joining the group in 1960.

In general, the postwar era gave rise to the creation of 'modern' pension systems and, as a consequence, a different treatment of earnings that was more sensitive to income maintenance in old age. In fact, it is from 1950 that all earnings levels were covered by retirement schemes whereas, prior to that, income limits caused higher earnings categories to be excluded from pension benefits. As for the latest period, 1990-2000, it is worth looking at the different effects of retrenchment then experienced by most welfare systems. Low and mid categories experienced quite stable evolutions that resulted in negligible changes in replacement rates. The exceptions were France, where replacement in the two lowest categories increased quite notably and the US and Spain, where mid categories also experienced mild rises. On the other hand, the retrenchment phase in the highest earnings categories (250-400) had more ambiguous effects, with replacement rates in fact increasing in countries like Spain, Sweden, the US and Italy. Germany constitutes a striking case, being a case of earlier and radical retrenchment that affected all earnings levels without exception.

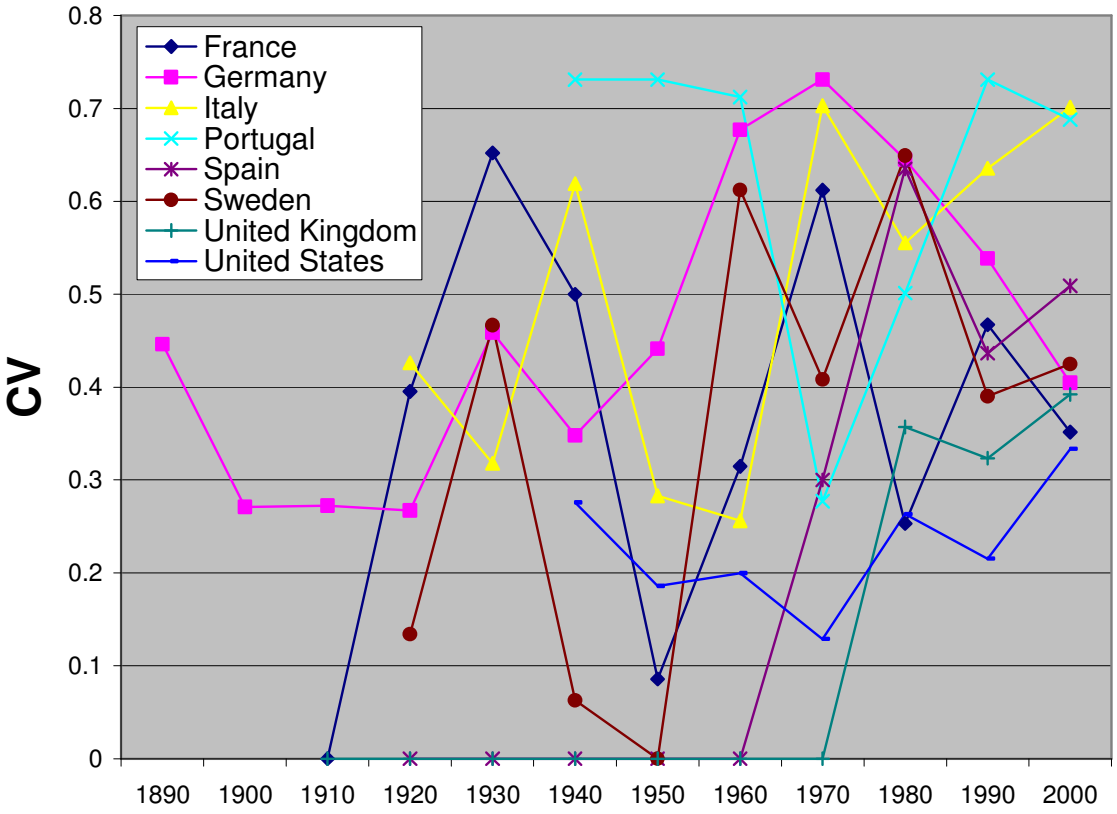
III.a. Pension convergence throughout the twentieth century

The information drawn from our database constitutes a starting point to judge whether pension benefits have evolved towards a common direction or not. Our data allow us to test for convergence both within and across country levels. In the cross-country analysis, we will still look at replacement rates as the relevant variable. Another possibility would be to examine pensions in absolute values and a common currency. However, this option raises a couple of concerns. First, it would prevent us from looking more neatly into the focus of this paper, which is the treatment of pensions at the policy level. This is an idea which is best captured by looking at the percentage of lifetime income guaranteed by the state after retirement. Second, and more importantly, the analysis of pension outcomes would not discriminate between pension and wage effects. Under such circumstance, pension convergence may not be (only) due to welfare policy convergence but rather to convergence in earnings. In the light of this, we have thus only calculated dispersion across countries through an analysis of the dispersion of replacement rates. Instead, within country results are presented both with respect to replacement rates and absolute values. Provided that we here stick to an intracountry level, scale (salary) effects – which would contaminate intercountry results by mixing pension with earnings convergence– do not have any influence on conclusions.

Figure 10a and 10b present the pension dispersion within each country. The dispersion is measured as the Pearson CV among the nine types of individuals for which benefits were

simulated in each country and year. Figure 10a captures dispersion of absolute pension outcomes, while Figure 10b reflects dispersion on replacement rates[5].

Figure 10a Dispersion of pension outcomes (in absolute value) within countries



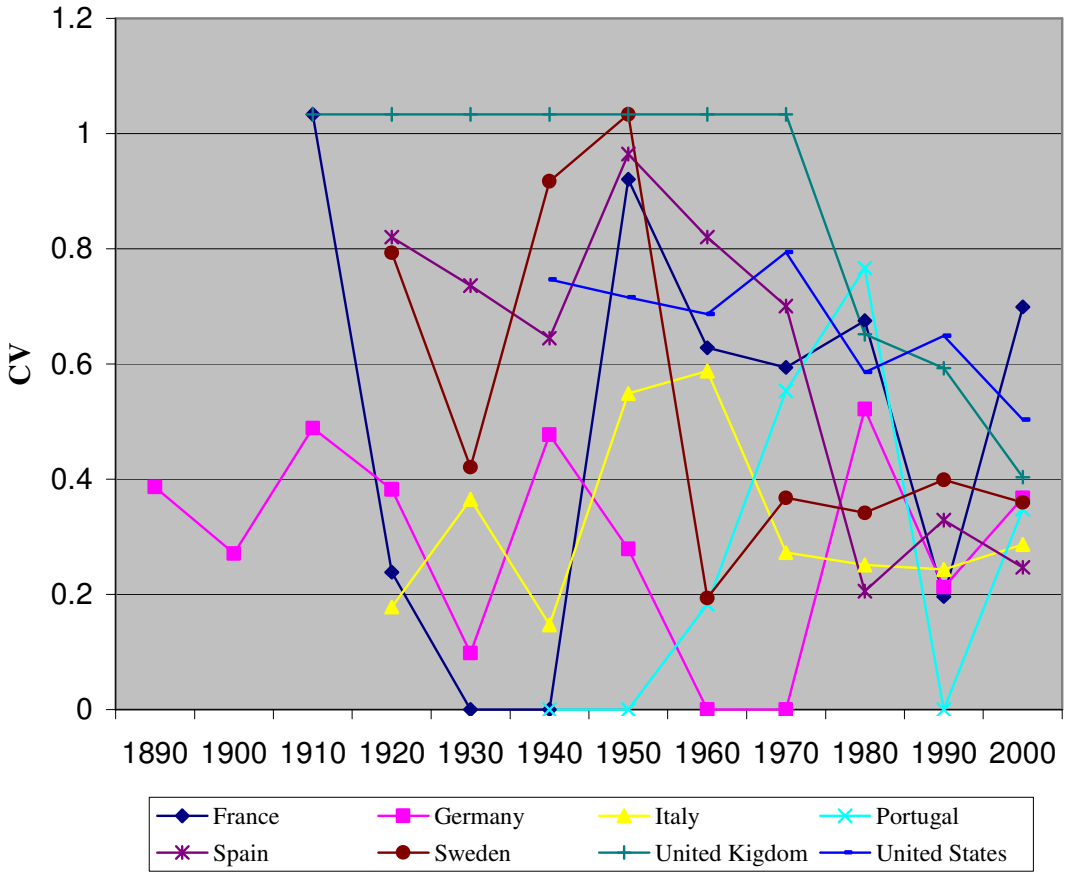
Source: own elaboration

Figure 10a yields no common trend in the evolution of dispersion in absolute pensions. In any case, a first peak can be identified around 1930 for France, Germany and Sweden, and for Italy in 1940. After that, dispersion fell until 1950, when a new rise took place peaking around 1960-1970. The exceptions to this cycle are Spain and the UK, where flat pension systems translated into zero dispersion until 1960 and 1970, respectively. The second half of our time span does not offer any clear pattern of evolution. Yet, it is worth concentrating on the last years of the graph. In this subperiod, all countries except France and Germany present an

[5] Not all earnings levels were always covered by pension legislation. Therefore, dispersion analysis includes different number of observations in each period. This will also affect the cross-country analysis. Tables A1 & A2 in the appendix specify the number of observations included in each period.

increase in dispersion, thus reinforcing the message that differences in public pension wealth have tended to rise in the last years. We now have to see whether these differences are just a reflection of income differences or whether, instead, the treatment of earnings by pension systems, expressed by replacement rates, also plays a role in such inequalities. Figure 10b is showing this.

Figure 10b Dispersion of pension outcomes (replacement rates as a % of own earnings) within countries



Source: own elaboration

As for the replacement rate analysis, there is again no clear pattern. However, a downward movement can be identified until 1930 for all countries with old age insurance in force, with the exception of Italy and the UK, where flat rate pensions produced high dispersion among replacement rates corresponding to each earnings level until 1970. After a short surge in dispersion around 1940, by 1950-60 most countries saw a drop in dispersion. The most notable

exceptions were Portugal –but only as a result of the better treatment of the lowest earning level since 1960– and the US, which maintained a stable trend since the passing of the Social Security Act until 1970.

Regarding the more recent period, since 1970 onwards, a move towards greater concentration in dispersion rates can be perceived. However, the trends did not move in the same direction in all countries, increasing in countries like France, Germany, Portugal or Sweden and decreasing in the UK and the US. It is important to note that this type of analysis is, in principle, blind to the earnings levels which are responsible of the moves in dispersion. For instance, the explanation for the UK drop is due to the fact that, from 1990 to 2000 all earnings levels experienced drops in replacement rates. However, it was the lowest one that experienced the sharpest drop and, since this began from a very high replacement rate, dispersion as a whole decreased. Regarding the US, it was middle and high earnings that improved replacement rates. This brought replacement closer to the one of the lowest earnings levels (which, again, were also those with highest replacement rates). This brought the altogether drop in dispersion observed in the graph. Therefore, it is necessary to examine carefully what happened in each earnings level before drawing any welfare improvement from the analysis of dispersion in replacement rates.

Our second goal is to move to the convergence discussion and to do so we must examine dispersion at the cross-country level. In order to argue that σ-convergence has taken place, we will have to prove that all countries have come closer together or that dispersion among replacement rates has decreased with time[6]. Table 2 shows the dispersion of replacement rates for each earnings level and point in time and Figure 11 presents the same results graphically.

[6] It will not be possible, however, to conduct a β-convergence analysis of our data in order to see if countries with lower initial replacement rates grew faster than those which started from higher levels. The fact of working with replacement rates prevents us from working with the β-convergence specification and its use of logs:

$$(1/T) * \log (P_{i,t}/P_{i,\,t-1}) = \alpha - b*\log(P_{i,\,t-1}) + u_{i,t}$$

where $P_{i,t}$ represents the pension outcome of country *i* at time *t*, T represents the number of years contained in the time interval and *b* is defined by the following expression

$$b = (1/T) * (1 - e^{-\beta T})$$

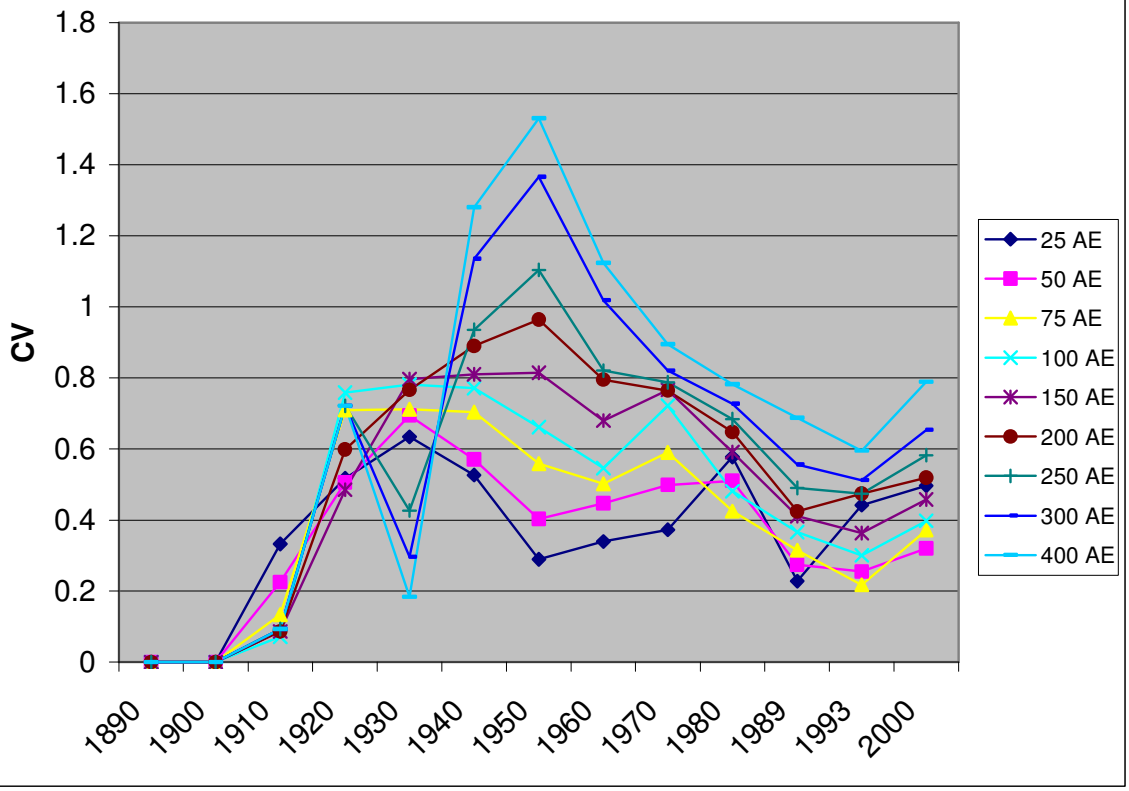
As we discussed above, if we used absolute pensions as a way to escape the problems of this specification, it would not be possible to get rid from the salary effect. This effect is alien to the 'pension policy factor' in which we want to concentrate, and hence this type of analysis is not performed.

Table 2 Dispersion (CV) of replacement rates between countries, each earnings level
(cols. 11-16 denote absolute changes in the CV)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
% of AE	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2000-1910	1940-1910	1950-1910	2000-1950	2000-1970	2000-1990
25	0.33	0.52	0.63	0.53	0.29	0.34	0.37	0.58	0.29	0.50	0.49	0.58	-0.13	0.72	0.33	0.74
50	0.23	0.51	0.69	0.57	0.40	0.45	0.50	0.51	0.26	0.32	0.42	1.53	0.79	-0.21	-0.36	0.25
75	0.13	0.71	0.71	0.70	0.56	0.50	0.59	0.43	0.29	0.37	1.79	4.28	3.19	-0.33	-0.37	0.26
100	0.07	0.76	0.78	0.77	0.66	0.55	0.72	0.48	0.34	0.40	4.61	9.87	8.33	-0.40	-0.45	0.17
150	0.09	0.49	0.80	0.81	0.81	0.68	0.77	0.59	0.39	0.46	4.31	8.41	8.45	-0.44	-0.40	0.19
200	0.09	0.60	0.77	0.89	0.96	0.79	0.76	0.65	0.46	0.52	5.03	9.33	10.19	-0.46	-0.32	0.14
250	0.09	0.72	0.43	0.94	1.10	0.82	0.79	0.68	0.48	0.58	5.24	9.02	10.83	-0.47	-0.26	0.22
300	0.09	0.72	0.30	1.14	1.37	1.02	0.82	0.73	0.54	0.65	6.00	11.16	13.63	-0.52	-0.20	0.21
400	0.09	0.72	0.18	1.28	1.53	1.12	0.89	0.78	0.64	0.79	7.45	12.71	15.40	-0.48	-0.12	0.24

Source: own elaboration
Note that Germany is the only observation for the years 1890 and 1900. Therefore no dispersion with respect to other countries applies.

Figure 11 Dispersion of replacement rates between countries, for each level of earnings



Source: table 2

Dispersion increased in the very long-run, from 1910 to 2000. However, the change in the CV is not huge and, in fact, the levels of 1920 are almost the same as in 2000. In this wide time span, an inverted U curve pattern can be identified, with a peak in 1950. However, this evolution is only true for the highest earnings levels, whereas middle and low earnings levels had flatter profiles. The look at shorter subperiods (cols. 11-16 in table 2) illustrates better the changes and earnings levels affected. According to it, the greatest increase in dispersion took place until 1940 (col. 12). In this period, dispersion rose in all earnings levels and the increase depended positively with the level of average earnings (except for 150% of AE). By 1950, where the effect of Beveridgian-type reforms should have manifested, this dynamic started to change. Dispersion by 1950 was less than in 1940 for earnings up to 150% of the average (see graph). Importantly, the lowest earning level had seen an absolute fall in dispersion from the 1910 figure. In contrast, dispersion in the highest earnings levels increased even more with respect to 1940. However, from 1950 to 1990, the message of a reduction in dispersion becomes clearer and common to all earnings levels. That is, in our sample, the period of clear convergence in pension policy. Despite that, the data is equally clear on the rise in dispersion for the 1990 to 2000 sub-period and, again, for all earnings levels. Therefore, it does not seem straightforward that economic integration, strongest since 1950 but especially in the last decade, has made pension policies more uniform. Thus, there is no evidence on a monotonic drop in dispersion which could argue in favour of an overall trend of σ-convergence. Instead, cycles can be identified and, more interestingly, there are different evolutions depending on whether high or low earnings levels are being examined. In consequence, it seems that pension policy matters, irrespective of globalizing waves.

IV. An evaluation of pension performance

So far, we have examined the evolution of pensions throughout the twentieth century by means of our representative database. Now, it is of interest to explore each of the countries in an individual way. In particular, we will now assess one specific, yet pivotal aspect such as the quality of the performance of countries with respect to pension provision. Making use of our simulations, it will be possible to judge whether countries provided benefits, in absolute value, above or below the expected pension or 'pension norm'.

The creation of a 'pension norm variable' is based on an a priori set of relevant variables which predict the expected value of pension provision for a certain country in a certain point in

time. In order to get a proper specification, we have put to the test a group of variables which are in fact the usual suspects used in the literature to explain welfare state and, more specifically, pension development (Lindert, 2004). Therefore, we have regressed our panel of data against the following variables.

First, we have included GDP per capita, from which we expect a positive relationship with respect to pensions. The share of the population older than 65 –for both sexes together and for men only–, has also been tested under the expectation that it may act as a positive pressure towards pension provision ('grey power' effect). However, this may also act in the opposite way, once the burden of dependent population starts to strain pension systems. Therefore, we also include life expectancy, and life expectancy minus legal retirement age, as variables which may capture more unambiguously the demographic burden on pension systems –the longer old people live, the less generous the system will be. Democracy is also tested in our specification of pension development. In this sense, a positive sign is a priori expected, even if the relationship may not be completely straightforward.[7] The degree of commercial openness is also included, in an attempt to deal with the discussion on the effects of globalization on welfare mentioned in section I. Lastly, the share of (male) agricultural workers is also included to see whether it acted as a burden for the progress of pensions or not. Table A3 in the appendix reports the results of the regressions. The use of shifted dummies allows for the obtention of coefficients for each of the earnings categories in our simulations.

According to our results, there are two variables which are not significant to explain pension provision. These are life expectancy –and life expectancy minus the legal age of retirement– and the share of male workers employed in agriculture. The signs of openness are both positive and negative and thus do not suggest any consistent relationship between social protection and the exposure to international markets. In any case, the coefficients are never significant. The remaining variables perform better and, most of them, in the expected way. Economic development has, as expected, a positive sign for all earnings levels. The same applies for the share of men aged 65 or more, which shows that 'gray power' is stronger than the burden effect in deciding the amount of pensions provided. However, the sign of democracy constitutes a surprise, as it shows a negative relationship to pension provision, and this is true

[7] Lindert (2004) estimated that democracy has been a powerful driver of social spending. However, the causality is not straightforward. For instance, some authors (Mulligan *et al.,* 2002; Wilensky, 2002) have argued the irrelevance of democracy for the provision of welfare. By means of a 'copycat' effect, non-democracies can also provide welfare in the same way as democracies with the aim of masking the lack of freedom to their populations. A related issue which may also be relevant to our results is the evidence on the positive effect of inequality on welfare (Persson and Tabellini, 1994; Alesina and Rodrik, 1994). In this case, welfare systems would be enhanced in high-inequality countries, with the aim of preventing the worst effects of it.

for all earnings levels. This may hint at the possibility that the hypothetical positive correlation between democracy and pensions may not mean increases in pension benefits but rather the extension of benefit entitlement or the better treatment of less favoured earnings levels. This hypothesis could be supported by the fact that the coefficients in our regression decrease with the level of earnings examined[8].

On the grounds of its overall significance and high explanatory power, we choose specification 1 in table A3 in the appendix as the most suitable to provide a measure of pension norm. Therefore, we calculate this 'expected pension' series using the explanatory variables specified in equation (1) for each of the observations in our panel.

$$P_{ij,t}=c+\beta*\ln GDPpc_{ij,t}+\gamma*65male_{ij,t}+\alpha*democracy_{ij,t}+V_i+\varepsilon_{ij,t}, \qquad (1),$$

where V_i represents a fixed effect for each country in the sample,
i represents the country, *j* the earnings level and *t* the year that correspond to each observation

Having a measure of expected pension allows us to calculate the differences between actual pensions resulting from our simulations and those predicted by the model specified in (1). That is, we have a measure of the historical deviation of pensions with respect to what the economic and political development of a country, together with its demographic structure and economic openness, would have foreseen. There are results for each earnings category. Table 5 shows only the ones corresponding to workers earning the average in the economy but the results of other categories are presented in the appendix, tables A4-A6.

[8] However, the coefficients for the lowest earnings categories are not significant. Hence, there is only a weak support for the hypothesis stated above.

Table 5 Actual versus predicted pension outcomes for individuals with 100% of AE, relative differences

	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	SD
France			12,80	36,33	8,85		-4,41	-4,52	-14,17	7,24	-0,45	1,07	14,38
Germany	4,83	-2,62	-5,04	-65,37	1,26	5,79	15,30	-1,48	-1,15	4,01	7,00	-0,97	20,33
Italy				0,37	1,43	7,10	15,53	2,95	-12,08	7,00	0,09	-11,01	8,69
Portugal						29,38	18,92	8,64	-11,14	-8,95	-5,87	-12,50	16,54
Spain				6,85	-15,07	11,86	-8,74	-18,35	-15,95	16,24	8,76	-3,33	13,22
Sweden				-0,76	-12,74	-28,55	-5,60	11,49	10,15	5,53	4,38	0,42	12,58
UK			5,23	10,09	3,31	-16,61	-6,50	-4,59	-4,63	8,07	5,31	2,41	8,16
US						-3,04	-0,87	2,51	-8,77	9,99	5,00	1,42	5,98
SD			8,95	33,81	9,53	19,07	11,55	9,26	8,55	7,12	4,77	5,80	

Source: Appendix A

According to our results, France has had a mixed trajectory throughout the century. Before World War II, the country was a consistent case of overprovision[9]. After the war and the reform of pensions, a period of growing underprovision began until 1970. From 1990 onwards, pension provision came closer to the norm. Germany, on the other hand, presents a more cyclical pattern. While inaugural pensions were above the expected by the socioeconomic conditions of the country, a period of underprovision followed, reaching a minimum by 1920 when pensions were 65% below the norm. This result is, however, affected by the lack of indexation of pension benefits to postwar inflation. After 1920, pension policy produced pension output above the expected and this peaked immediately after World War II. From that moment, German pensions performed well in line with or above expected levels before a slight retrenchment below the norm by 2000. Italy constitutes a case of overprovision throughout most of the period, reaching a peak in 1950. However, drops below the norm in 1970 and 2000 were also quite abrupt, pointing at the fact that legal reforms, when undertaken, had a radical character after decades of generous pension policy.

Portugal constitutes a puzzling, yet interesting, case in pension provision. According to the table, the first pensions enacted in the country were extremely generous with respect to the expected level. This situation continued in 1950 and 1960. The phenomenon repeats somewhat in Spain, where the 1940 figure shows remarkable overprovision as well. These numbers need not be meaning that dictatorships are good for pension provision. Quite on the contrary, they

[9] The 1940 value is missing because the 100% AE category was excluded from the pension system then in force. The lack of indexation of earnings limits made workers in this category jump from the limits of qualification into the system.

are pointing at the fact that pensions enacted are not the same as pensions actually paid. Our methodology is capturing the first element, that is the pension paid to a worker who is assumed to have lived all his work life under the conditions in force at the time of retirement. From this definition, there is a conflict between the pension that we capture and the credibility of the commitment that they express. We may expect the latter to be lower in totalitarian regimes. In Portugal, for instance, pensions in 1940-60 granted a replacement of 80% of earnings (see fig. 2). This extreme generosity was easier to enact than to pay in real life. The existence of a waiting period before benefits were first paid, and in which adaptations on the system may take place in the light of the impossibility of satisfying such commitments, is an element that we cannot capture with our methodology but that may be playing a role in such positive deviations. The comparison between Portugal and Spain is also interesting as referred to the different effect of democratization in the two countries, which resulted in significant overprovision in Spain as of 1980 but produced no change in Portugal, as the country remained below the norm.

As for Sweden, our results show that the making of the very generous Scandinavian welfare state was actually a post WWII phenomenon, at least as pensions are concerned. Before that, flat pensions and their slow indexation meant underprovision. It was only after 1960 that pensions in the country stood well above the expected standard and remained so until nowadays. The UK, on the other hand, presents three different cycles. Before 1940, British pensions were above the norm. After that, and until 1970, its system went into a phase of systematic underprovision that only reversed after the addition of an earnings-related tier that increased public pensions payable. The other liberal country in the set, the US, followed a somewhat similar path, but, in any case, closer to the norm. It started with low levels of provision below the expected socioeconomic features of the country, 1960 being the exception. However, by 1980, the country provided pensions above the norm until 2000, when there was a return to norm path.

Beyond the more individual analysis, the evolution of the standard deviation of relative differences in pension performance (table 5, bottom row) provides some insight on the issue of convergence. While before 1950, one cannot find a clear trend, after that year there is a path of convergence towards the norm since countries tended to reduce differences in performance with respect to the norm. The exception is the year 2000, where there is a slight reversal towards higher dispersion. The message of this drop in dispersion can be interpreted as a sign of moving towards a common pension policy path, where divergences from normative pension levels given each country's socioeconomic features become more marginal. Even if policy does still matter, it has done so less over time.

V. Conclusion

The extension and popularity of social security throughout the world constitutes one of the most important social and economic phenomena of the twentieth century. In the light of this, there has been a lot of concern on whether social insurance has had a common pattern of evolution or no or, in other words, whether there has been convergence among protection systems. This paper is part of this wide debate, especially strong after the last wave of globalization. However, it has offered an original approach. First, because it has been focused on the long-run and has thus covered the whole history of public insurance systems. Second, it has used a quantitative methodology that better captures the net evolution of social security policy and pensions in particular.

The analysis of replacement rates of lifetime earnings has shown that country differences matter, and that different welfare traditions shaped pension outcomes, especially before World War II. Pension systems are not neutral to earnings levels. Even if non-trivial differences have persisted until nowadays, there has been an evolution towards narrower gaps among countries. The within-country side of our analysis has proved that the dispersion of pension incomes (absolute values) has trended upward over the long run. For the period up to 1930 intranational dispersion in France, Germany and Sweden increased. After that, dispersion fell until 1950, when a new rise took place peaking around 1960 or 1970. The final years in our sample constitute another different cycle where, interestingly, countries can be grouped into two dispersion patterns. Whereas in Germany and France dispersion dropped, all other countries experienced increases between 1990 and 2000. Still in the within-country analysis, the look at replacement rates is more expressive of the different legal treatment of earnings levels. In this case, we saw that in the earlier points of our sample (1910 to 1960), countries had quite different patterns of replacement rates across earnings categories. But with regard to the more recent period, we can perceive that even if all countries' dispersion was more concentrated, the trends were not always the same. While in countries like the US, the UK and Spain there was a drop in dispersion within earnings levels, in the rest of countries, most notably France, dispersion increased.

The cross-country level analysis ahs provided insight on the issue of convergence. Looking at the evolution of replacement rates, we did not find convergence in the very long-run, since dispersion increased from 1910 to 2000. A more detailed look by subperiods shows that the greatest increase in dispersion took place until 1940. By 1950 this dynamic started to

change until 1990; this is thus the period of clear convergence in replacement rates. However, the most remarkable finding is that patterns of evolution in dispersion were different according to earnings levels. Whereas for higher earnings categories, there is an inverted U-curve pattern in which dispersion peaks in 1950, mid and low earnings categories experienced flatter profiles of dispersion. Another finding is that dispersion again increased from 1990 to 2000 and for all earnings categories.

The last part of the paper was devoted to measuring the performance of each country studied. To do this, we derived a measure of expected pension provision given a set of socio-economic and political features and then put this in comparison with actual pension outcomes. Our results suggested that while there is a common trend towards a closer performance with respect to a certain 'pension efficiency curve', political preferences still build pension systems. This proves that political structures have been and still are relevant in deciding pension outputs and, hence, welfare structures are far from being a deterministic product of given social and economic structures.

VI. References

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Appendix A. Sources for the pension database

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Germany:

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Italy:

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Spain:

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Sweden:

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Portugal: ILO: 1940 (1935): escudos per hour in bricklayers.
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2000 (1999): escudos per month in all economic activities.

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1990 (1993)-2000: both sexes per hour in all activities.

UK: 1910-1980 (1979): average weekly earnings, all manual workers (males and females), in Scholliers, Peter and Zamagni, Vera (eds.) (1995): *Labour's reward: real wages and economic*

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GDP pc in 1990 International Geary-Khamis dollars, from Maddison (2006).
Earnings and pensions outcomes have been transformed into US dollars with the yearly average of exchange rates in *Global Financial Data*: http://www.globalfindata.com/index.php3?action=user_homepage&message=true

Agricultural share, males:
France:
1940: interpolation of 1936 and 1946; 1950, of 1946 and 1954; 1970 of 1968 and 1975: 1910: 1911, 1920: 1921, 1930:1931, 1960: 1962, 1980: 1982, 1990: 1991.
Germany:
1890: interpolation of 1882 and 1895; 1900: of 1895 and 1907; 1910 and 1920, of 1907 and 1925; 1930: 1925 and 1933; 1940 is 1939; 1990 is 1992 and 2000 is 2001. 1960-1980: data correspond to West Germany.
Italy: All years correspond to actual year plus 1, e.g. 1900 (1901), 1910 (1911). 1940 is an interpolation of 1936 and 1951.
Portugal: 1980 is 1981, 1990 is 1991 and 2000 is 2001.
Spain: 1920 is an interpolation of 1910 and 1930; 1960, of 1950 and 1964.
Sweden: 1940 is an interpolation of 1930 i 1945.
UK: All years correspond to actual year plus, e.g. 1900 (1901), 1910 (1911). 1940 is an interpolation of 1931 and 1951.
US: 1930 is an interpolation of 1920 and 1940.

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Appendix B. Extra tables

Table A1 Number of observations included in within-country dispersion analysis

	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
France			9	4	6	3	9	9	9	9	9	9
Germany	8	7	6	5	4	9	7	7	9	9	9	9
Italy				4	6	7	9	9	9	9	9	9
Portugal						9	9	9	9	9	9	9
Spain				6	5	4	8	6	9	9	9	9
Sweden				9	9	9	9	9	9	9	9	9
United Kigdom			9	9	9	9	9	9	9	9	9	9
United States						9	9	9	9	9	9	9

Table A2 Number of observations included in cross-country dispersion analysis

	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000
25 AE	1	1	3	6	6	8	8	8	8	8	8	8
50 AE	1	1	3	6	6	8	8	8	8	8	8	8
75 AE	1	1	3	6	6	8	8	8	8	8	8	8
100 AE	1	1	3	6	6	7	8	8	8	8	8	8
150 AE	1	1	3	4	5	6	8	8	8	8	8	8
200 AE	1	1	3	3	4	6	8	8	8	8	8	8
250 AE	1	1	2	2	2	6	8	7	8	8	8	8
300 AE	1	0	2	2	2	5	7	6	8	8	8	8
400 AE	0	0	2	2	2	5	6	6	8	8	8	8

Table A3. Determinants of estimated pension outcomes

Dependent variable: log of pension (in absolute value)[10]

	(1)	(2)	(3)	(4)	(5)	(6)
c	-14.04***	-13.82***	-20.35***	-16.09***	-19.87***	-16.31***
	(-16.40)	(-15.13)	(-29.14)	(-10.03)	(-21.11)	(-10.42)
logGDPpc25	2.07***	2.04***	3.19***	2.28***	2.91***	2.31***
	(15.73)	(14.31)	(18.68)	(11.41)	(26.92)	(12.07)
logGDPpc50	2.10***	2.06***	3.17***	2.29***	2.95***	2.32***
	(15.90)	(14.46)	(18.54)	(11.45)	(27.30)	(12.12)
logGDPpc75	2.10***	2.07***	3.18***	2.30***	2.98***	2.33***
	(15.95)	(14.51)	(18.60)	(11.49)	(27.59)	(12.15)
logGDPpc100	2.10***	2.06***	3.19***	2.29***	3.00***	2.32***
	(15.89)	(14.45)	(18.04)	(11.46)	(27.69)	(12.13)
logGDPpc150	2.07***	2.04***	3.07***	2.29***	3.02***	2.32***
	(15.73)	(14.29)	(16.80)	(11.37)	(27.84)	(12.07)
logGDPpc200	2.10***	2.07***	3.12***	2.30***	3.04***	2.34***
	(15.95)	(14.49)	(16.80)	(11.45)	(28.02)	(12.19)
logGDPpc250	2.11***	2.08***	3.04***	2.31***	3.06***	2.35***
	(15.94)	(14.54)	(14.28)	(11.49)	(28.18)	(12.21)
logGDPpc300	2.10***	2.07***	3.06***	2.29***	3.06***	2.33***
	(15.83)	(14.45)	(13.33)	(11.40)	(28.11)	(12.11)
logGDPpc400	2.11***	2.07***	2.98***	2.28***	3.08***	2.31***
	(15.89)	(14.54)	(11.33)	(11.33)	(28.24)	(12.02)
65+male25	16.85***	17.77***		16.88***		16.02***
	(3.46)	(3.47)		(3.12)		(3.07)
65+male50	18.65***	19.38***		19.09***		18.42***
	(3.83)	(3.79)		(3.53)		(3.53)
65+male75	21.04***	21.80***		21.42***		20.75***
	(4.32)	(4.26)		(3.93)		(3.96)
65+male100	23.94***	24.65***		24.20***		23.57***
	(4.86)	(4.77)		(4.44)		(4.49)
65+male150	28.57***	29.04***		27.76***		27.21***
	(5.77)	(5.58)		(5.03)		(5.11)
65+male200	27.21***	27.02***		26.57***		26.64***
	(5.39)	(5.09)		(4.74)		(4.95)
65+male250	28.57***	28.35***		27.76***		27.86***
	(5.49)	(5.14)		(4.80)		(5.05)
65+male300	29.73***	28.82***		28.43***		29.21***
	(5.60)	(5.08)		(4.78)		(5.19)
65+male400	31.19***	30.52***		30.98***		31.62***
	(5.81)	(5.28)		(5.13)		(5.57)
male lexp25			-0.03			
			(-1.64)			
male lexp50			-0.02			
			(-1.14)			
male lexp75			-0.02			
			(-1.01)			
male lexp100			-0.02			
			(-0.96)			
male lexp150			0.001			

[10] The details of the sources can be found in Appendix A. As for the share of old people, some variations were as well tested but not reported. Among these, the share of people aged 60 and more, and the share for each sex separately and for both together. Democracy is measured by the democracy index (POLITY2) elaborated by the *Center for International development and Conflict Management* (CIDCM). Alternative measures of democracy were also used (Democracy in CIDCM database and the democracy variable in Lindert's database) but without significant changes in the coefficients.

			(0.08)			
male lexp200			-0.003 (-0.16)			
male lexp250			0.01 (0.40)			
male lexp300			0.01 (0.26)			
male lexp400			0.02 (0.61)			
male lexp-ret age25					-0.01 (-1.27)	
male lexp-ret age50					-0.01 (-1.01)	
male lexp-ret age75					-0.01 (-0.64)	
male lexp-ret age100					-0.003 (-0.34)	
male lexp-ret age150					0.01 (0.66)	
male lexp-ret age200					0.004 (0.40)	
male lexp-ret age250					0.01 (0.64)	
male lexp-ret age300					0.01 (0.72)	
male lexp-ret age400					0.01 (0.88)	
democracy25	-0.004 (-0.27)	-0.004 (-0.29)	-0.0002 (-0.02)	-0.003 (-0.18)	-0.001 (-0.09)	-0.002 (-0.13)
democracy50	-0.01 (-0.87)	-0.01 (-0.90)	-0.01 (-0.63)	-0.01 (-0.53)	-0.01 (-0.63)	-0.01 (-0.47)
democracy75	-0.02 (-1.49)	-0.02 (-1.50)	-0.02 (-1.08)	-0.02 (-1.03)	-0.02 (-1.18)	-0.02 (-0.99)
democracy100	-0.03* (-1.87)	-0.03* (-1.88)	-0.02 (-1.24)	-0.02 (-1.36)	-0.02 (-1.36)	-0.02 (-1.31)
democracy150	-0.03** (-2.23)	-0.04** (-2.27)	-0.02 (-1.47)	-0.04** (-1.97)	-0.03* (-1.70)	-0.03* (-1.93)
democracy200	-0.04** (-2.28)	-0.04** (-2.36)	-0.03* (-1.69)	-0.03* (-1.82)	-0.03* (-1.78)	-0.03* (-1.76)
democracy250	-0.05*** (-3.13)	-0.06*** (-3.19)	-0.04** (-2.46)	-0.05** (-2.49)	-0.05** (-2.55)	-0.05** (-2.44)
democracy300	-0.06*** (-3.06)	-0.06*** (-3.14)	-0.05** (-2.46)	-0.05** (-2.50)	-0.05** (-2.52)	-0.05** (-2.44)
democracy400	-0.07*** (-3.78)	-0.07*** (-3.82)	-0.06*** (-2.96)	-0.06*** (-2.94)	-0.06** (-3.09)	-0.06*** (-2.91)
openness25		-0.02 (-0.03)	-1.01 (-1.29)	-0.03 (-0.04)		
openness50		0.06 (0.08)	-0.84 (-1.07)	0.07 (0.10)		
openness75		0.05 (0.07)	-0.71 (-0.91)	0.08 (0.10)		
openness100		0.08 (0.11)	-0.53 (-0.67)	0.10 (0.13)		
openness150		0.19 (0.25)	-0.22 (-0.27)	0.18 (0.22)		
openness200		0.48 (0.61)	-0.04 (-0.05)	0.49 (0.62)		
openness250		0.47 (0.59)	0.05 (0.07)	0.47 (0.59)		
openness300		0.72 (0.89)	0.41 (0.50)	0.74 (0.90)		
openness400		0.60 (0.72)	0.41 (0.50)	0.64 (0.77)		
agric% male25				1.00 (1.11)		1.03 (1.15)

agric% male50				1.21 (1.34)		1.23 (1.38)
agric% male75				1.22 (1.35)		1.24 (1.39)
agric% male100				1.19 (1.31)		1.21 (1.35)
agric% male150				0.87 (0.93)		0.87 (0.94)
agric% male200				1.19 (1.23)		1.15 (1.21)
agric% male250				1.19 (1.15)		1.15 (1.12)
agric% male300				1.29 (1.24)		1.23 (1.19)
agric% male400				1.76* (1.66)		1.71 (1.63)
FE specification						
Fra	-0.80	-0.79	-0.74	-0.85	-0.71	-0.86
Ger	0.08	0.08	-0.03	0.15	-0.04	0.16
Ita	0.30	0.31	0.48	0.25	0.49	0.24
Por	0.82	0.78	1.15	0.73	1.08	0.78
Sp	0.63	0.64	0.77	0.59	0.77	0.58
Swe	-0.59	-0.61	-0.20	-0.65	-0.23	-0.63
UK	-0.59	-0.60	-0.80	-0.48	-0.80	-0.47
US	0.61	0.69	-0.16	0.72	-0.08	0.64
N	598	598	598	597	598	597
R-sq	0.90	0.90	0.89	0.90	0.89	0.90
Adj R-sq	0.89	0.89	0.88	0.89	0.88	0.89
F-statistic	146.04***	114.00***	100.85***	92.84***	128.70***	113.73***
AIC	2.21	2.24	2.35	2.26	2.32	2.24
DW	1.60	1.59	1.43	1.59	1.40	1.61

Note: t-statistics in parenthesis
* significant at 10% level, ** 5%, *** 1%

Table A4 Actual vs predicted pension outcomes for individuals with 50% of AE, relative differences

	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	SD
France			22,50	30,93	0,11	-12,54	-1,89	-8,72	-10,78	4,82	-1,88	4,42	14,10
Germany	-17,90	-2,03	-9,16	-72,24	-5,77	5,06	10,67	-7,02	-5,03	6,41	3,76	-2,88	21,68
Italy				-5,75	4,56	6,03	8,92	1,64	-15,31	3,68	-2,02	-12,18	8,37
Portugal						25,35	16,11	5,04	-10,43	-4,31	-9,07	-13,41	14,75
Spain				12,57	-9,26	24,53	1,25	-10,32	-9,71	16,12	6,38	-4,34	12,67
Sweden				6,83	-6,62	-23,88	0,54	12,17	8,49	6,59	5,39	0,88	10,86
UK			8,62	14,66	7,88	-12,37	-0,73	0,91	1,14	11,45	7,46	5,06	7,64
US						19,76	20,56	22,99	13,35	27,72	22,64	16,39	4,68
SD			15,87	36,33	6,81	18,71	8,43	11,35	10,22	9,58	9,32	9,75	

Table A5 Actual vs predicted pension outcomes for individuals with 200% of AE, relative differences

	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	SD
France			5,17		16,96		-9,87	-5,91	-9,13	2,16	0,77	1,79	8,77
Germany	7,02	-0,09	-6,26			3,66	15,06	4,00	3,03	7,20	10,54	-2,74	6,26
Italy					-5,55	12,26	10,00	-1,38	-8,26	10,64	4,82	-8,78	8,79
Portugal						36,42	24,66	14,34	-15,99	-6,49	-2,20	-9,73	19,57
Spain				1,55			-14,86	-23,33	-18,20	20,22	7,61	-1,90	15,54
Sweden				-7,24	-5,62	-32,40	-10,46	13,27	7,46	6,72	2,11	-0,16	13,45
UK			0,97	5,21	-1,29	-20,40	-11,17	-9,09	-9,14	7,55	5,08	2,37	9,04
US						-0,55	-4,33	-1,10	-11,79	6,83	1,47	0,76	5,74
SD			5,78	6,40	10,75	24,32	14,67	12,26	8,82	7,50	4,07	4,63	

Table A6 Actual vs predicted pension outcomes for individuals with 300% of AE, relative differences

	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	SD
France			4,18				-10,49	-7,78	-5,06	0,69	-1,12	0,17	5,19
Germany	4,20					-1,86			7,09	10,55	9,75	-3,96	6,04
Italy							10,14	-1,50	-4,82	11,28	5,15	-6,61	7,68
Portugal						35,87	24,24	14,62	-20,13	-2,20	1,12	-7,17	19,34
Spain							-19,85		-18,45	24,37	7,44	-3,45	18,54
Sweden				-7,03	-1,65	-32,65	-11,11	16,87	6,04	8,87	0,21	-1,85	14,10
UK			2,03	5,77	-0,64	-20,41	-11,70	-9,60	-9,93	8,51	3,88	0,96	9,27
US						0,94	-4,06	-1,06	-11,73	6,68	1,10	0,12	5,67
SD			1,52	9,05	0,72	26,02	15,26	11,24	10,08	7,95	3,80	3,11	