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Labor force participation by the elderly and employment of the young:

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Abstract:

One of the justifications provided for early retirement policies in developed countries is the idea that such policies can facilitate access to the labor market for younger people and help lower global unemployment. But many questions remain on the true effect on young workers of these policies. The objective of the present paper is to study the long term relationship between labor force participation of the old and unemployment of the young in France since the beginning of the 1970s. Establishing causal relationship of the reduction of labor force participation of the old on employment prospect of the young is a challenging work. Evidence of the correlation between youth labor market outcomes and older worker's labor force participation plead more in favor of a positive association between younger and older workers' employment. An increase in the older workers' participation is indeed correlated with an increase in the employment rate of young workers and a decrease in their unemployment rate. Even controlling for the economic cycle, this positive association remains – albeit less robustly. These correlations, based on times series, are not however evidence of causal relationship between younger and older workers' employment. We then use an index summarizing the intensity of policies aiming at removing older workers from the labor market, based on Social Security wealth. The effect of the wealth index on youth labor market outcomes is always significant, whatever the set of the control variables we use and with a similar size and the same sign. The coefficient is negative for both the unemployment and employment of youth, with or without controlling for school attendance. In France policies aiming at removing older workers from the labor market have been prompted by increase in unemployment. Granger causality tests between youth unemployment and the Wealth index show therefore a significant link in both directions, whereas nothing is significant between youth employment and the Wealth index. Hence if we do not find evidence that reducing labor force participation of the old provide jobs for the young, we cannot exclude altogether that some general and unaccounted cause is hiding its true impact.

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Introduction

One of the justifications that are or have been provided for early retirement policies in developed countries is the idea that such policies can facilitate access to the labor market for younger people and help lower global unemployment. Such a belief has undoubtedly played a role in France, where early retirement policies started to expand, during the 1970s, in response to rising unemployment.

Three decades later, France ends up with one of the lowest employment rates for the elderly among OECD countries but also with one of the highest youth unemployment rates. Given such an outcome, beliefs about the efficiency of early retirement policies have considerably lost ground. Even if the idea of making room for new generations remains a frequent self-justification for individuals who choose to retire early, few economists or policy makers would now argue that early retirement policies are a miracle tool for fighting unemployment. The political agenda has rather shifted toward increasing activity and employment rates for older workers, especially since the 2003 pension reform.

But some questions remain. One is retrospective. It is to know how far we must push this idea that these policies have been ineffective or counterproductive. Can we definitely be confident that such policies have been of no help, even for the short run? To put it in another way, would our labor market situation have been better or worse without these early retirement policies?

The other question is symmetrical and prospective: are we sure that returning to higher retirement ages will have no adverse effects on unemployment rates? This remains a key political issue in France (Blanchet and Legros, 2002). There are some advocates of the supply-side view that a strong positive shock on incentives to remain in the labor force for older workers could be sufficient to increase employment rate for older workers while causing no harm to younger ones (d'Autume, Betbeze and Hairault, 2005). But detractors of such a policy argue that, at least in the short run, it will only make unemployment worse for all age groups with no net financial gains for social insurance. They consider that measures aiming at increasing the retirement age should not be pursued before any significant decline of the unemployment rate or even before the downturn of the labor force leads us to situations of labor shortage. In short, even if there is an increasing consensus upon the fact that increasing retirement age is more or less unavoidable in

front of expected demographic trends, views continue to diverge concerning the optimal timing, intensity and modalities of such an increase.

In this context, any empirical element on the articulation between retirement policies and general equilibrium on the labor market is welcome. The present paper will try to contribute to this debate by concentrating on the retrospective issue. Its objective is to study the long term relationship between labor force participation (LFP) of the old and unemployment of the young. The paper will be organized as follows. Section 1 will be devoted to a presentation of the main reforms of Social Security and early retirement schemes since the beginning of the 1970s. We will pay a particular attention to the role played by labor market considerations in justifying these reforms. Section 2 will then present one first assessment of the incidence of these changes on labor market outcomes for younger workers. This first approach will consist in correlating LFP for older workers with employment or unemployment rates for young or middle age workers. One limit of this approach is that changes in LFP rates for senior workers do not only reflect the impact of retirement policies. Employment rates for all age groups are influenced by general labor market conditions and this might lead to spurious correlation due to simultaneity issue. Controlling for the economic cycle is one way to minimize this bias, but this comes at a cost, namely that of abandoning the search for an unconditional relationship between youth and old employment. The main criticism of economists to early retirement policies is that they don't take into account the knock-on effect on output. Testing substitution conditioning on output would therefore not be sufficient to establish the long term efficiency or inefficiency of these policies. Even controlling for the economic cycle, one could want to look for more direct effects of pension reforms on employment of the youth.

The rest of the paper therefore tries to adopt another strategy, which consists in assessing directly the impact of incentives to early retirement on youth unemployment. This strategy involves two steps. The first one is to build indicators that measure the intensity of these incentives. This first step is presented in section 3.1. Once this has been done, these indicators incentives are used as explanatory variables for labor market outcomes of the different age groups in section 3.2. This second strategy is not without flaws either. In the case of France, we show that the incentives are themselves endogenous, i.e. they have been put in place at times of rising unemployment. This means that a causal interpretation of our results remains problematic. The conclusion will come back on the general interpretation of our results.

1.   Background: debates and policies

The aim of this section is to present a brief history of the development of early retirement in France, with a specific attention to the role played by labor market considerations in debates that have accompanied this trend.

Several factors have converged in favor of these policies. The aspiration of workers or labor unions to early retirement has naturally played a strong role. It was the continuation of the fight against "work alienation". In the 1970s, a campaign slogan of the CGT, communist inspired union, was thus "better retired than unemployed" (Guillemard 1983). In 1997, four years after the first reform that tried to increase the normal retirement age, the CGT union still officially favored the 55 years old retirement age for everyone in particular with the goal to lower unemployment. According to a poll released at the time in the daily newspaper *Le Monde*, 61% of French people were in favor of "the 55 retirement age in order to lower unemployment".[1] Surveys on the perception of early retirement by employees also showed that, if the first reason for accepting to retire early was the wish to stop working, many employees stated the need to leave jobs for the young as a clear motivation for their choice (Caussat et Roth, 1997). The attraction for early retirement still remains relatively high in France compared to other countries, according to some results from the SHARE survey (Blanchet and Debrand, 2008).

But employers and governments have also played a large role in the development of this "culture of early exit", to use an expression coined by Guillemard (2003). Employers saw these early exits as a way to facilitate the restructuration of old industries or to solve their problems of excess labor capacity. As far as governments are concerned, these early retirement policies have been one dimension of a global malthusian answer to labor market problems, based on the idea that the total amount of work is constrained, so that unemployment is just the result of an unequal distribution of work. In this context, work-sharing appeared to be a good way to lower unemployment, either within cohorts (working time reduction) or between cohorts (early retirement or longer studies). The idea that work-sharing was a solution to unemployment problems was also supported by books like "The End of Work" (Rifkin, 1996) which topped the bestseller's list in France in the 1990s. This general orientation has been common to right-wing and left-leaning governments, the only differentiation concerning the choice of instruments:
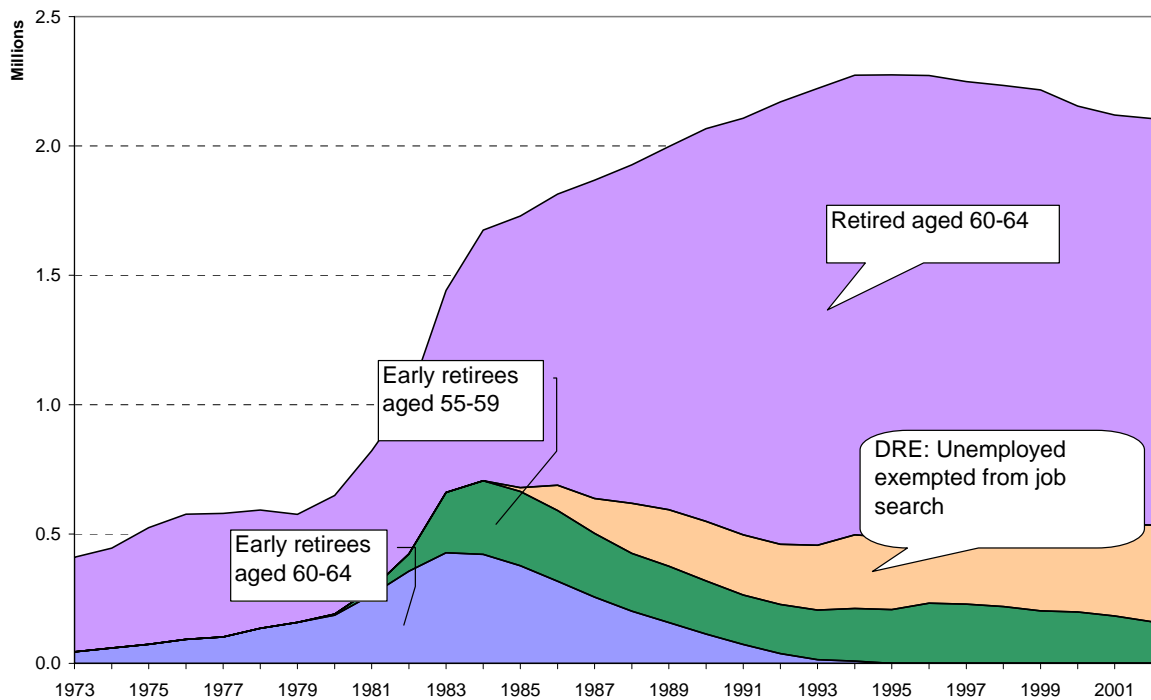
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[1] *Le Monde*, 9 January 1997.

conservative ones favored policies excluding women or immigrants from the labor force and subsidizing employers for early retirement. Left leaning governments favored lowering hours of work or lowering the age at normal retirement.

We shall examine how all these policies have been implemented with a specific focus on policies that have applied to wage earners in the private sector, who represent the majority of the population. These workers traditionally benefit from a basic pension delivered by the "*general regime*" and from one or two complementary benefits delivered by two complementary schemes, ARRCO and AGIRC, the second one being specific to highly skilled white collar workers. Besides these two or three forms of "normal" benefits, many of these workers have benefited during the same period from the emergence and consolidation of various forms of early or pre-retirement schemes.

To make the presentation easier to follow, we shall distinguish three main phases, that can be indentified on figure 1 that gives the evolution of global stocks of retired or preretired people for the 55-64 age group by broad categories:

- The first phase is a phase of increased generosity of normal pension benefits, with a normal age of retirement that remained equal to 65, but accompanied by the progressive development of preretirement schemes for the 60-64 age group. This period lasted until the end of the 1970s.
- The second period has been a period of acceleration of these early exits, first through the expansion of preretirement between 60 and 64, then through the lowering of the normal retirement age to 60 (1983 reform) and at last by the development of new preretirement routes that have extended the phenomenon to the 55-59 age bracket.
- The third phase is one of relative stabilization, with a combination of closure or resorption of some schemes, partly compensated by the development of other ones, accompanied with two pension reforms that have started paving the way for future increases in the normal retirement age, the 1993 and 2003 reforms.

Figure 1. Social Security and early retirement programs (1973-2002)

Figure 1. Social Security and early retirement programs (1973-2002)

The chart includes the following labels:
- Millions (y-axis, 0.0 to 2.5)
- Retired aged 60-64
- Early retirees aged 55-59
- Early retirees aged 60-64
- DRE: Unemployed exempted from job search
- x-axis years: 1973, 1975, 1977, 1979, 1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001

1.1. The seventies: more generous pensions at 65 and development of preretirement for the 60-64 age group.

Before 1971, the "general regime" used to offer a pension that was at best 40% of a reference wage which was the average of past wages computed on the 10 last years of one's career. This level was proposed at age 65. A reduction/bonus of 10% per missing/additional year of age was applied to this pension level. For mortality conditions of the period, such an adjustment was not very far from actuarial neutrality.

The Boulin Law in 1971 has been the main change that has occurred over this period for this general regime. It increased the global generosity of the system. The normal replacement rate was raised from 40 to 50% and the reference wage started being computed over the 10 best years of one's career rather than the 10 last ones. At this stage, the motivation was not at all to encourage earlier exits. It was essentially to reduce the income gap between workers and retirees. No strong change occurred concerning retirement age. The normal age remained 65, with the same bonuses/penalties for postponement/anticipation.

In this context, retirement before 65 took two routes. The first one was the possibility to leave and get a normal retirement as soon as 60 in the general regime for specific categories of people such as veterans, or blue collar working mothers…

The second one has been the progressive development of preretirement schemes. It is in 1963 that such early retirement policies had first appeared in France with the creation of the National Job Fund (FNE, *Fond National pour l'Emploi*) and with the associated benefit (ASFNE). This scheme provided a replacement rate of 80% to 90% of the previous net wage. This scheme had started as a very specific program but became more massive in the seventies when the steel industry underwent massive restructuring affecting entire areas in the North of France. The fund was completely financed by the government. It must be mentioned that, at the outset, this scheme did not really respond to workers' will to retire early. Early dismissal of workers belonging to declining industries was often seen by these workers as a form of denial of their social utility, and therefore not so much welcome by these workers. And the idea of using this policy to fight global unemployment was not dominant either. The question was more sector-specific and this policy was considered as transitory. The idea was just to lower the social cost of restructuring older industries. The scheme remained targeted to these regions and limited to collective lay-offs.

The early retirement policy for this steel industry was further strengthened in 1972 with the creation of the CGPS extending preretirement to wage earners as young as 50. In the meantime, other sectors had started making a large use of early exits, such as the automobile or textile industries, as a way to reduce their workforce and/or automate their production chains. A consensus was reached between unions and employers that led UNEDIC (the Unemployment Insurance[2]) to provide an early retirement scheme ("*garantie de ressources*", GR) on a large scale. The program was first limited to lay-offs ("*Garantie de Ressources Licenciement*", GRL). It was targeted to the 60-65 age group. The replacement rate was 70% of the previous gross wage, thus higher than a full rate pension.

It is over this period that the idea of using early exits to facilitate access to employment for younger workers took importance. As unemployment rose in the 1970s, due to macroeconomic shocks, collective lay-offs appeared more and more socially difficult to accept and early

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[2] The Unemployment Insurance is financed and managed by unions and employers.

retirement policies developed at a considerable rate. A consensus favored these policies as a good way to reduce unemployment. The evolution of the *garantie de ressources* is the best testimony of this change. Initially limited to lay-offs in 1972, it was extended in 1977 to people having voluntarily left their job ("*Garantie de Ressources Démission*", GRD), with the explicit ambition of reducing unemployment for the young. The preamble of the 1977 agreement clearly states that "*All the parties signing this agreement expect the release of jobs allowing many unemployed to find jobs*".

1.2. The early 1980s: lowering of the normal retirement age, and a new phase of expansion for preretirement

The development of these policies was also influenced by desire to win votes in forthcoming elections.[3] For example in 1980, just before the 1981 presidential election, the right-wing government in office reactivated the old ASFNE scheme extending it to wage earners 56 years and 2 months old, and even 55 by derogation. This tendency was continued by the socialist government that took over in 1981. Between June 1982 and December 1983 the CSPRD ("*Contrat de Solidarité préretraite démission*") scheme offered a replacement rate of 70% of the gross wage to wage earners older than 55 with more than 10 years of contribution who had resigned. The objective of a one for one substitution of senior workers by younger ones was explicitly stated, the condition for the firm being to maintain its staff constant, hiring in priority young workers under 26, lonely women or unemployed people.[4] Announcing the scheme in Lille – the North of France that had been particularly hit by massive restructuration in manufacturing - the French Prime Minister of the time, Pierre Mauroy asked the older workers to accept this scheme: "*And I would like to speak to the elders, to those who have spent their lifetime working in this region, and well, I would like them to show the way, that life must change; when it is time to retire, leave the labor force in order to provide jobs for your sons and daughters. That is what I ask you. The Government makes it possible for you to retire at age 55. Then retire, with one's head held high, proud of your worker's life. This is what we are going to ask you… This is the "contrat de solidarité". That those who are the oldest, those who have worked, leave the labor force, release jobs so that everyone can have a job.*"[5]

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[3] Even if governments might have been convinced that early retirement was not effective on the long run, they might have used these schemes as way to secure short-term reduction in the unemployment rate.

[4] This scheme is very similar to the Job release scheme implemented in the UK since 1977 (see UK chapter) except that the level benefit – earnings related - was much more generous, in particular for high wage earners

This CSPRD scheme has been the victim of its large success. In less than a year more than 200 000 people retired through this scheme and this led to its closing (for cost reasons) one year later, in December 1983, in a context of return to a more rigorous policy. But, in the meantime, the government had decided to fulfill one of its electoral promises, retirement at age 60. This measure was taken in a context that was temporarily favorable for the general regime. The age group depleted by low birth rates during the First World War, i.e. born between 1915 and 1919, had started retiring in 1980. During a few years the number of pensioners decreased, lowering the demographic ratio and generating surpluses in the pension system. The idea was therefore to seize this opportunity for a switch of the burden of early retirement from Unemployment Insurance (UNEDIC), which suffered from large deficit, to the pension system.

Formally, this 1983 reform did not consist in changing the minimum retirement age that was already equal to 60 before the reform.[6] The point was that leaving at this age initially implied a very high penalty, with a replacement rate of only 25%. The reform consisted in removing this penalty, allowing a 50% replacement rate at 60, conditioning 37.5 years of contribution (with an unchanged penalty for those not fulfilling this condition). Contrary to early retirement schemes that were targeted, albeit imperfectly, towards the less qualified workers, the 1983 reform was a general incentive to early retirement, given the fact that a large majority of people fulfilled this condition at 60, at least among men.

The debate in 1983 around this lowering of the retirement age (from 65 to 60) made clear once again that the goal of the reform was to release jobs for the young as well as to provide more leisure for the elderly. The best illustration is the fact that the reform did not simply consist in increasing the replacement rate but also consisted in discouraging the pursuit of work at older age. In particular, increases in the pension rate were not any more possible once you had reached the "full rate".[7] The law stated that "*the goal is to allow the grant of a full pension but not to encourage the pursuit of work after age 65*".[8] The possibility to work while having a pension was also restricted in the hope that new pensioners would actually leave jobs for the young.[9] The Employment

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[5] Quoted in Gaullier (1982, page 230).
[6] Technically this reform was only for men as women had already the possibility to retire at age 60 with full rate provided 37.5 years of contribution. Women, however, were much less likely to fulfill this condition.

[7] The only way to increase its pension level that remained was through an increase in the reference wage, i.e. for employees with increasing wages after age 60.
[8] Preamble of the Ordonnance from 26 march 1982.
[9] The Ordonnance from March 1982 restricted work of pensioners. They had to quit the firm where they were previously working and pay an additional tax to the Unemployment Insurance. This tax was removed by the law of the 27 January 1987.

ministry of the time presented the reform as a success: "*The lowering of the retirement age strengthens the positive effects on employment that early retirement policies made possible. It even widens these positive effects as a large share of the population is concerned*".[10]

These changes have been accompanied by changes in rules governing complementary pensions. These complementary pensions are computed according to a system that has some resemblance with the principle of notional accounts: contributions are used to buy "points", and the total number of points accumulated during one's career is converted into a pension level at retirement, with, until 1965, a quasi-actuarial adjustments according to retirement age. In 1965, the bonus for postponement had been suppressed for people retiring beyond 65 but the penalty maintained for retirement before 65. In 1983, this penalty was itself fully removed for people retiring from the general regime with the full rate, reinforcing the incentive to retire at 60 for these people.

1.3 Since the mid 1980s: changes and continuity.

The 1983 reform was expected to lead to the extinction of early retirement schemes for the 60-64 age bracket.[11] It was also expected that no further development of preretirement would take place. The government now wanted to avoid the development of similar amounts of early exists upstream the new retirement age of 60, i.e. in the 55-59 age bracket. Now that the normal retirement age had been lowered, preretirement was expected to play no more that a marginal role.

But this objective has not been fulfilled, given the continued pressure in favor of early retirement. The following story has been a story of permanent tension between the will to restrict early exits and the necessity to cope with employers' and employees' common interest in favor of early retirement. Evolutions that took place over all this period can be classified according to whether they went on favoring early exits or tried to limit them.

The main new evolution favoring early exits over this period has been the expansion of the unemployment insurance route. This essentially took place by the creation of the DRE ("*Dispense*

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[10] *La retraite à 60 ans*, Droit social n°4 – April 1983.
[11] The switch was pprogressively done because GR schemes were more generous than SS provisions so that most early retirees remained in the scheme until age 65.

de recherche d'emploi") that was introduced in 1985.[12] The system consists in exempting unemployed people from job seeking past a certain age (55 at its creation), and offering them non degressive benefits until they become entitled to a full rate pension. One impact of this system is to arithmetically lower the unemployment rate in the ILO sense of the term, since the ILO definition considers job seeking as a necessary condition for being counted as unemployed, and this system is quasi-equivalent to preretirement, even if it offers replacement rates that are in general less generous than those provided by preretirement schemes *stricto sensu*. Unemployed exempted from job seeking can currently receive three different forms of benefits: the ASS provides an unemployment benefit 50% higher for 55 and older having at least 10 years of contribution, ACA is targeted to unemployed with 40 years of contribution and AER is a means-tested additional benefit. In the 1990s, DRE became numerically more important than early retirees. A regulation of this system through financial penalties on lay-offs of older workers was attempted (the Delalande contributions), but with limited success (Behaghel, Crépon and Sedillot, 2005).

On the other side, we have assisted to the progressive closing of schemes that existed at the beginning of the period, and their replacement by new schemes that have been increasingly short-lived and/or more targeted. We have already mentioned the complete closing of the CSPRD in 1983 and the progressive extinction of the *Garantie de Ressources*. A reduction of ASFNE benefits also took place. The initial replacement rate of the ASFNE that was originally of 70% was reduced in 1982 to 65% under the Social Security (SS) ceiling[13] and to 50% between 1 and 2 ceilings. In 1994 this scheme was restricted to the wage earners older than 57. It is now becoming progressively extinct.

The alternative preretirement schemes that have been created over the period to replace these schemes have had much narrower targets. One example is the ARPE scheme created in 1995, targeted to wage earners older than 58 with at least 40 years of contribution. The ARPE benefit provided a replacement rate of 65% of gross wage of the last 12 months.[14] The idea of encouraging youth employment was still present in this scheme, employers using the ARPE being compelled to replace early retirees by younger workers, especially under age 26. In case of no new hiring, firms had to reimburse the Unemployment Insurance. ARPE was itself suppressed after 5

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[12] Again, this scheme was implemented just before the 1986 Parliamentary elections.

[13] This threshold represents approximately the average wage in France.

years of existence and replaced in 2000 by the CATS and the CAATA, still more focused. The CATS scheme is targeted to workers who had especially difficult working conditions (at least 15 years on assembly line or with night work). The minimum age is 57 although the condition can be lowered to 55 for certain sectors. The benefit is 65% of gross wage under SS ceiling and 50% between 1 and 2 ceilings. The CAATA scheme targets workers exposed to asbestos. The benefit is computed as in the CATS scheme.

The other major change in the direction of later exits took place at the level of the pension scheme itself, with the two reforms enacted in 1993 and 2003.

The 1993 reform affected incentives to retire in two ways. One is the reduction of pension levels at the full rate: instead of being computed on the 10 best years of one's career, the reference wage is progressively computed on a longer period, up to 25 years for people born 1948 or after. Coupled with less generous revalorization rules for these past wages, this is expected to have a strong long run impact on pension levels. The second instrument is a strengthening of the conditions required to get the full pension: it has progressively increased from 37.5 to 40 years by one quarter each year.

As far as the retirement age is concerned, this 1993 reform remained however symbolic, given that a large share of cohorts currently retiring go on fulfilling the new condition of 40 years of past contributions. This led at the end of the 1990s to the proposal of strengthening further this condition (Charpin, 1999) and this has been the main axis of the 2003 reform. For cohorts born between 1944 and 1948, the condition will temporarily remain fixed to 40 years: this period has been used for organizing a convergence by public sector employees, not concerned by the 1993 reform and for whom the condition has remained equal to 37.5. But starting 2008, the progression of this condition starts again in the private sector : it is planned to be 41 for cohort 1952, and then to increase in parallel with life expectancy, the progression now going at the same speed in the private and public sector. Simultaneously, and still according to proposals from the Charpin report, the 2003 reform also changed the structure of incentives around the full rate: the penalty for early retirement has been reduced, and the bonus for postponement that had been suppressed in 1983 is reintroduced, albeit with a lower level. After stabilization, the penalty

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[14] A similar has also existed in the public sector, the CFA ("*Congé de fin d'activité*"), providing a replacement rate of 75% to civil servants older than 58 with also 40 years of contribution.

should be 5% per year missing and the bonus equal to 3% per year of postponement. All this brings the rule closer, but not strictly equivalent, to actuarial neutrality.

1.4. Where do we stand? The current state of ideas concerning the of early retirement

Which preliminary conclusions can we draw from this rapid examination?

Concerning trends, the main message is that the "golden age" of early retirement expansion essentially lasted until the mid 1980s. We will essentially use this period to test the impact of this policy on labor market outcomes. After this period, France has been able at best to stabilize the employment rate for its senior workers. Some steps in the direction of reincreasing retirement age have been made by the 1993 (Bozio 2008) and more significantly by the 2003 reform, but whose effects will be at best progressive and cannot be observed at this stage.

Concerning the evolution of opinions on the retirement/labor market nexus, the idea that malthusian policies are an efficient answer to labor market disequilibrium has significantly lost ground. This applies both to early retirement policies and to other malthusian policies such as working time reduction. As far as retirement policy is concerned, the idea that raising the retirement age is the proper long run solution to increased longevity has become widespread.

The point where dissensus remains more important concerns the facility of implementing such a policy in a context of high unemployment with especially low labor demand for senior workers.

At one extreme of the spectrum, we have the idea that it is nonsense to try to increase age at retirement when unemployment is high remains pregnant. Just to quote one example, A. Lipietz, both a politician and economist, expressed in *Le Monde* in 1993 its opposition to proposals from a report (Livre Blanc sur les Retraites, 1991) which advised to increase the required length of contribution: "*The reduction of active life, which was an effective tool to reduce unemployment will be blocked. With a constant macroeconomic situation, each "non out going" from the labor market will be immediately matched with a "non in coming", either an unemployed remaining unemployed or a young student becoming unemployed.*" This statement is now a bit dated, but would probably go on being shared by many observers or actors.

At the other extreme of the spectrum, some authors argue that this high unemployment rate is precisely the consequence of early retirement policies. A recent report from the Conseil d'Analyse Economique (d'Autume, Betbeze and Hairault, 2005) defends that view and argues that a stronger revision of incentives to early retirement could very well improve rather than deteriorate the employment situation of older workers : it would simply lengthen the horizon on which people plan the end of their active lives; restore their incitation to seek employment when they are unemployed, and contribute to restore their employability from the point of view of employers. All this could take place without negative effects on other segments of the labor force, since there are little substitution effects between age groups on this labor market.

Somewhere in between, we can have the view that changes in the retirement age are indeed neutral for unemployment rates in the long run but not necessarily so in the short run. The long run neutrality is warranted by the fact that changes in the retirement age only change the scale of the labor market without impinging upon its properties. But this does not necessarily warrant "superneutrality", i.e. a complete absence of impact of changes in the growth rate of labor supply. If we do not have such superneutrality, there is indeed a problem of appropriate timing for increasing the retirement age. Can we start this policy before having returned to full employment, or should we wait until full employment has been restored?

Current evolutions of the unemployment rate are not contradictory with this concern: the unemployment rate has started to decline again in France since 2005 and many observers argue that this is partly the result of the fact that large cohorts of baby-boomers have started to retire. Increasing too rapidly the retirement age or being too restrictive on early retirement could slow down or even revert this process at least for some time. This view is also consistent with quite a wide range of models of the labor market. This differentiation between short-run and long run effects was already present in macroeconometric analysis of the impact of preretirement that had been performed during the 1990s (DARES, 1996). It is confirmed by more recent explorations of alternative modellings of consequences of demographic changes on unemployment (Ouvrard and Rathelot, 2006).

At this stage, the question turns out to be an empirical one. We need an evaluation of what have been exactly the consequences of these past policies, and this is what we shall try to do in the rest of this paper.

2. Labor Force Participation for older workers and Labor Market outcomes

We shall start our empirical examination by a simple visual examination of links between these major policy changes and employment of older workers, and simple regression analysis of how these changes in older workers rates of employment did or did not affect labor market outcomes for other workers. One limit of this approach will be the fact that changes in LFP rates for senior workers do not only reflect the impact of retirement policies: they are also influenced by general labor market conditions. Controlling for the economic cycle will be one way to minimize this bias.

2.1. A visual examination

Time series of employment or unemployment rates are provided by labor force surveys (LFS) conducted by the French National Statistical Institute (INSEE) since 1950. We use the 1968-2005 waves of this LFS. From 1968 to 2002, the households included in the Labor Force Survey sample are interviewed in March of three consecutive years with one-third of the households replaced each year. The French Labor Force survey presents thus a break in series in 2003 resulting from the transition from an annual to a continuous survey.[15] Since 2003, the households included in the French LFS are interviewed six consecutive quarters with one-sixth of the households replaced each quarter. The survey samples are representative of the French population aged 15 and up. Education and labor market status are completed for each interview.

Trends in labor force participation, employment, unemployment and schooling attendance by age are given in Figures 2 and 3. The rates are defined as the number of active, employed, unemployed or in school individuals in an age group divided by the total number of individuals in this age group. Age groups are the following: youth from 20 to 24 years old, prime age from 25 to 54 and seniors from 55 to 65.

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[15] The dummy variable introduced in the regressions to fix the problem was never significant.

Figure 2: Labor Force Participation of old workers and unemployment
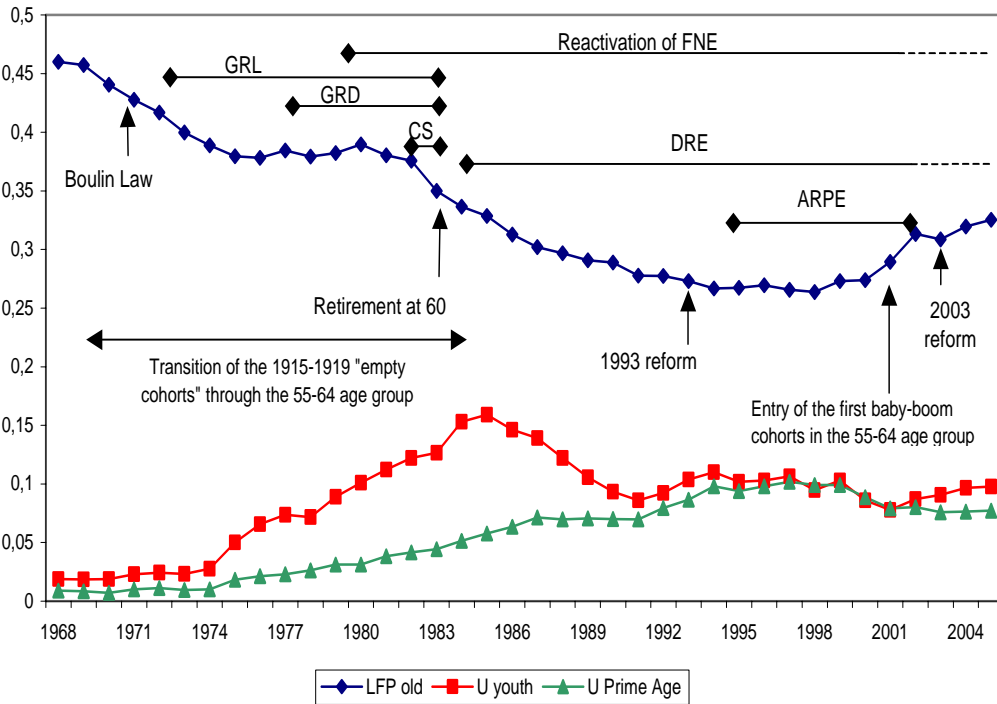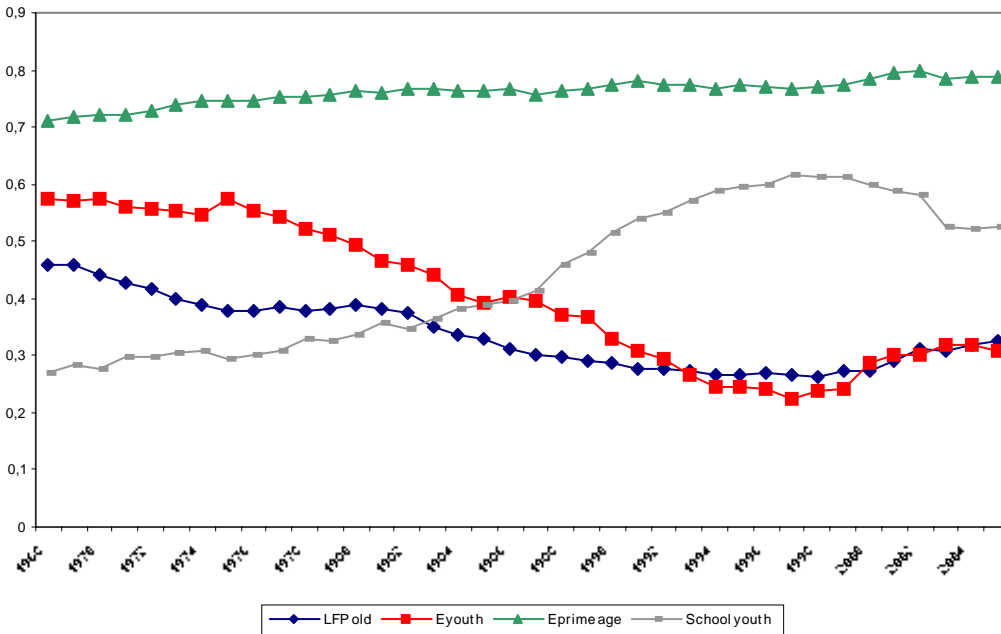

Figure 3: Labor Force Participation of old workers and employment

Participation rates of senior workers are quite low and decreasing over the period with a trend change in the end of the period due to the boom of the late 1990s. Until 1982 the decrease corresponds to a period of early retirement policies. 1982 marks a change in policy with the decrease in the retirement age.

The unemployment rate rose in France during the 1970s and 1980s in all age groups and particularly for the young with a peak in the beginning of the 1980s. The trend reverses after. When considering figure 3, we see that the employment rate of the 20-24 age group is decreasing over nearly the whole period, except a small increase in the beginning of the 21st century. The decrease in the young unemployment rate is due to a massive increase in the school rate and not to a greater employment rate of young workers. The shape of the employment rate of young people is the exact opposite of the one of the school participation rate.

Concerning prime age workers, the employment rate has been quite stable over the period. The stability of the employment rate despite massive unemployment has to be linked with the increase of female labor participation.

2.2. Some Regression Results

To study the long term relationship between labor force participation of the old and employment of the young, we will first present the results of simple OLS regressions. The sample period for our yearly data goes from 1968 to 2005. We consider five dependent variables: the unemployment rate, the employment rate and the school attendance for young people and finally the unemployment and employment rates for prime age workers. The parameter of interest is the coefficient of the labor force participation of old workers. Estimations are conducted in levels but also in 3 years lag and 5 years differences. Two set of estimations have been made. In the first one, covariates included are GDP per capita, its growth rate and the share of this GDP generated by manufacturing. In the second one, we add the mean school leaving age. Results are given in tables 1 and 2.

Table 1: Direct relationship between the elderly labor force participation and the employment and unemployment of young and prime age persons

	Youth 20-24				Prime Age 25-54	
	UE	EMP	SCH		UE	EMP
	No controls				**No controls**	
Levels	**-0,742**	**1,723**	**-1,486**		**-0,480**	**-0,250**
	(0,062)	(0,165)	(0,170)		(0,030)	(0,034)
3 year lag on elderly employment	**-0,492**	**1,783**	**-1,683**		**-0,457**	**-0,185**
	(0,090)	(0,136)	(0,141)		(0,024)	(0,031)
5 year difference	**-0,606**	**0,790**	**-0,208**		**-0,208**	0,049
	(0,003)	(0,199)	(0,198)		(0,051)	(0,039)
5 year log difference	**-2,202**	**0,830**	-0,502		**-1,909**	0,034
	(0,457)	(0,236)	(0,265)		(0,466)	(0,022)
	With controls				**With controls**	
Levels	-0,371	**1,182**	-1,080		**-0,316**	-0,080
	(0,246)	(0,566)	(0,677)		(0,108)	(0,097)
3 year lag on elderly employment	0,161	**1,433**	**-1,845**		**-0,345**	-0,054
	(0,124)	(0,222)	(0,255)		(0,048)	(0,046)
5 year difference	**-0,455**	0,116	0,348		-0,053	0,016
	(0,184)	(0,229)	(0,225)		(0,045)	(0,061)
5 year log difference	-1,297	0,148	0,535		-0,152	0,011
	(1,119)	(0,227)	(0,370)		(0,714)	(0,038)

Notes: Reported is the coefficient on elderly labor force participation. Controls are GDP per capita, growth of GDP per capita, proportion of GDP generated by manufacturing. 3 year lag means that we regress the dependent variable on a 3 year lag of elderly employment. 5 year difference means that we take 5th differences for the RHS and the LHS. 5 year log difference means that we take the log of each X and Y variable, then take 5 year differences.

The first half of table 1 shows that direct estimation of the correlation, without controlling for general labor market conditions, suggest a negative link between senior LFP and youth unemployment and a positive link with their employment. It also depresses their tendency to remain at school. All this goes more or less in the same direction of infirming the Malthusian view: a higher activity rate for senior workers stimulates the insertion of younger people in the labor market.

If we now turn to the case of prime age workers, we observe some differences. We still have a negative relationship between senior LFP and the unemployment rate of these prime age workers, once again an anti-malthusian result. But the correlation with these prime age workers' employment rate is also negative. In other words, a lower senior LFP has the paradoxical effect of simultaneouly increasing the probability to be employed and the probablity to be unemployed for a prime age worker. Probably the explanation of this paradox is in the increase of female labor force participation all over the period.

Anyway, once controls are included, many of these correlations vanish, the coefficients of senior LFP becoming generally insignificant, as shown on the second half of table 1. Those of the coefficients that remain significant nevertheless go on supporting the anti-malthusian view that a high senior LFP is good news rather than bad new for other groups of workers. But controlling for output poses however a number of problems. First, we are interested in unconditional relationship between youth and old employment, so any estimation controlling for GDP will remain unsatisfactory. Next, even if we were only interested in this conditional relationship, it is hard to pretend that our controls perfectly account for changes in labor demand. From these time series regressions, it is impossible to exclude that some simultaneity issue is not at play here.

There is a further issue when looking at youth employment rates, particularly striking in the case of France, which is the role of education policies, that have dramatically affected the situation of people in the 15-24 age group, as was shown on figure 3. To check whether this factor affects our results, we have made a second set regression presented on table 2. This table is comparable to the second half of table 1 but with the mean age at leaving school used as an additional control variable. Results do not dramatically change compared to those of the first approach. Coefficients obtained after controlling for this school leaving age are generally less significant than before controls but, when they are, they generally go on supporting the non

malthusian view that senior workers and workers from other age groups are complements rather than substitutes.

Table 2: Direct relationship between the elderly labor force participation and the employment and unemployment of young and prime age persons, control by the mean school leaving age

	Youth 20-24		Prime Age 25-54	
	UE	EMP	UE	EMP
	With controls		**With controls**	
Levels	*-0,513*	0,213	*-0,103*	-0,001
	(-0,274)	(0,399)	(0,057)	(0,104)
3 year lag on elderly employment	0,072	0,243	**-0,120**	0,070
	(0,177)	(0,259)	(0,036)	(0,043)
5 year difference	**-0,381**	*0,338*	*-0,071*	*0,070*
	(0,178)	(0,182)	(0,041)	(0,038)
5 year log difference	-0,329	0,325	0,300	*0,041*
	(0,801)	(0,207)	(0,645)	(0,023)

Notes: Reported is the coefficient on elderly labor force participation. Controls are GDP per capita, growth of GDP per capita, proportion of GDP generated by manufacturing and mean school leaving age. 3 year lag means that we regress the dependent variable on a 3 year lag of elderly employment. 5 year difference means that we take 5th differences for the RHS and the LHS. 5 year log difference means that we take the log of each X and Y variable, then take 5 year differences.

3. Measuring changes in retirement incentives.

Even when controlling for various determinants of general unemployment, the approach followed in the previous section is difficult to interpret in terms of a causal impact of early retirement policies on employment rates of younger workers. Let's assume that some unobserved factors can have simultaneous impacts on the unemployment of younger workers and on labor force participation of older workers, these impacts being a priori of opposite signs. In principle, this will imply that periods of low labor force participation for older workers will also tend to be periods of high unemployment for younger ones. Let's also assume that a causal impact of retirement policies on youth unemployment actually exists and is of positive sign, i.e. accelerating exits from the labor force by senior workers helps lowering unemployment for younger workers. In such a context, the two relationships will offset each other, and the true benefits of early retirement policies on youth unemployment will be underestimated.

The ideal way to deal with these problems would consist in instrumenting LFP rates of older workers with a variable that explains this labor force participation but cannot be suspected of being endogenous to the global situation of the labor market. If policies had been decided completely independently from this labor market situation, an index summarizing the intensity of such policies would do the job. We shall actually look at the impact of such an index on labor market outcomes for the different age groups. But we know in advance that the exogeneity assumption is doubtful in the French case. Policies encouraging early exits have been at least partly motivated by the labor market situation, as seen in section 1. We shall therefore adopt a more agnostic strategy, looking at the possibility of reciprocal causation between policies and these labor market variables, relying on Granger causality tests.

The next subsection will present the method retained for computing our indicator of incentives to retire. Regressions results and Granger causality tests will be presented in the subsequent one.

3.1. Incentive measures

The purpose of this subsection is to translate the qualitative descriptions of section 1 into quantitative measures of the intensity of policies aiming at accelerating exits from the labor force by older workers. Among the many difficulties of such an exercise, one stems from the intrinsic complexity of the French system, which combines many different regulations applying to different categories of workers: wage earners in the private sector, civil servants, workers from large public firms (the so-called "régimes spéciaux") or self-employed. As we did in section 1, we shall here by-pass this element of complexity by concentrating on the case of wage earners in the private sector, for two reasons: these workers represent the large majority of the labor force (60 to 70%) and it is for this category of workers that the major changes occurred throughout the period.

As far as normal retirement is concerned, wage earners in the private sector are covered by one basic scheme (the regime général) and one or two complementary schemes, ARRCO and AGIRC, the latter being specific to highly qualified workers ("cadres"). Section 1 mentioned the major reforms that have been applied to the *régime général* during the period under review. Our analysis takes these reforms into account and also the associated changes in complementary schemes. Concerning access to preretirement, a one by one inclusion of all the possibilities that

have existed over the period is beyond the scope of this paper and would probably be of little interest given the very aggregate nature of the index we are trying to build. The strategy has been instead to proxy all these routes by the dominant one for each period, but giving to this route a global weight equal to the total flow of early-retirees for each period.

Computations are made by gender, whatever the cohort, with a wage permanently equal to the current social security ceiling and by deciles of length of services. Results are averaged over the subgroups. Assuming a career at the SS ceiling is close to assuming a "median" career, since the social security ceiling changed more or less in phase with the average wage.

Figure 4. Social Security Wealth by date and age at retirement.
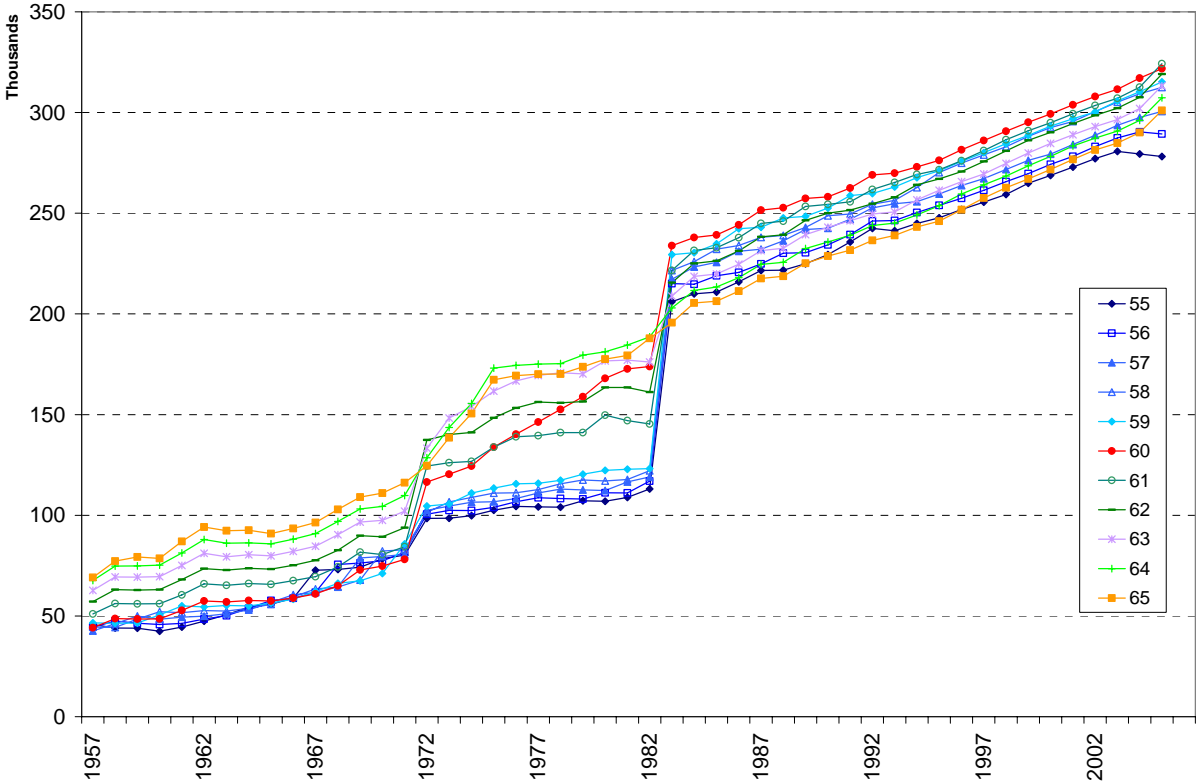
Figure 4 presents results in terms of Social Security Wealth (SSW) depending on age and time at retirement. It actually gives a good view of the main changes observed since the end of the 1960s. SSW series have a general upward trend reflecting general economic growth. Under pre 1971 conditions, we have a strong progressivity of the pension level as a function of age. The 1971 reform leads to a strong jump. The jump is higher for people retiring around 60, especially in 1972, due to transitory constraints on the maximum pension level that minimized the benefit

of the reform for people retiring late. On the whole, the gap between pension levels reached between 60 and 65 remains rather large. The 1983 reform leads to an inversion of the relative position of the different curves: the reason is that offering the same replacement rate at 60 and 65 means offering a higher SSW at 60 than to 65, due to the fact that the expected length of the retirement period is longer at 60 than at 65. The opposite was true before 1983, due to the over-actuarial magnitude of the penalty that applied, before this date to people retiring before 65.

The next step is to try combining these series in a single summary indicator. Let W(a,y) represent the social security wealth of a person retiring at age a in year y. Let q(a,y) represent the probablity of facing such an incentive at this period and at this age, i.e. the probability of being still no retired and of being entitled to such a benefit. Before the first eligibility age of 60, this probability will be zero. After 60, it will be one minus the share of people already retired, i.e. 1-p(a,y). Given these elements, the aggregation strategy consists in average past incentives W(a,y) over the current stock of retirees, since what we want to measure is the cumulative effect of past incentives on current LFP rates of people over 60. The global index that provides this aggregation is:

$$Wbar(y,r) = \sum_{55}^{65}\left[\frac{p(a,y)}{\sum_{55}^{65}p(a,y)}\right]\left[\frac{\sum_{t=0}^{a-55}W(a-t,y-t,r)*q(a-t,y-t)}{\sum_{t=0}^{a-55}q(a-t,y-t)}\right] \qquad (1)$$

where the second bracket synthesizes past incentives faced by people currently retired at age a which are then averaged over all groups of people currently retired and with ages comprised between 55 and 65.

This aggregate indicator is provided on figure 5. It essentially captures the strong impact of the 1983 reform in favor of an earlier retirement.

We have also explored another version of the incentive measure built not only on the expected social security wealth for retiring at a given age, but also based on the difference between the social security wealth derived for retiring now and the maximum possible value of this SSW for later ages at retirement. Let us call PV(a,y) the "peak value", i.e. the maximum of the W(a',y+a'-a) that can be attained for departures at ages higher than or equal to a and a* the corresponding age.

The aggregation of W-PV using the same kind of formula as formula (1) is given by the bottom line of figure 5. The pattern of W-PV appears unfortunately difficult to interpret. Previous results on micro data had underlined the importance of the peak value or of the distance to the peak value in the decision to retire. Following the micro results, an increase in W-PV (W-PV is negative) should induce a decrease in the labor force participation. An increase in W-PV means indeed that individuals are approaching the optimal date to claim for their pension. The 1983 pension reform in France induces a discontinuity in the age of the peak value. Before the reform, the optimal age to claim for a pension was 65. It moves to 60 in 1983. The discontinuity in W-PV makes the aggregation difficult. Figure 5 shows that W-PV presents a decreasing pattern in 1983, even if we were expecting the reverse.

We have nevertheless attempted to build an index mixing the incentives properties of both PV and (W-PV). The elementary formula is of the form:

$$I(a, y, r) = W(a, y) + e^{-r(a^*-a)}[W(a, y) - PV^*(a, y)] \qquad (2)$$

It can be interpreted as a weighted average between the gain if leaving immediately and the additional gain if postponing until the age that maximizes W, with a weighting factor for future gains equal to $e^{-r(a^*-a)}$, which will be proxied by a constant factor α. The incorporation of (2) in the aggregation formula (1) with the conventional values $\alpha=0.3$ and $\alpha=0.7$ leads to the last two curves on figure 5. Given the relatively small difference between these curves and the initial one, we shall here concentrate on results based on W only. For comparison purpose with other countries, we nevertheless give results based on the "Ibar" approach (equation (2)) in the appendix.

Figure 5. Incentives Measures.
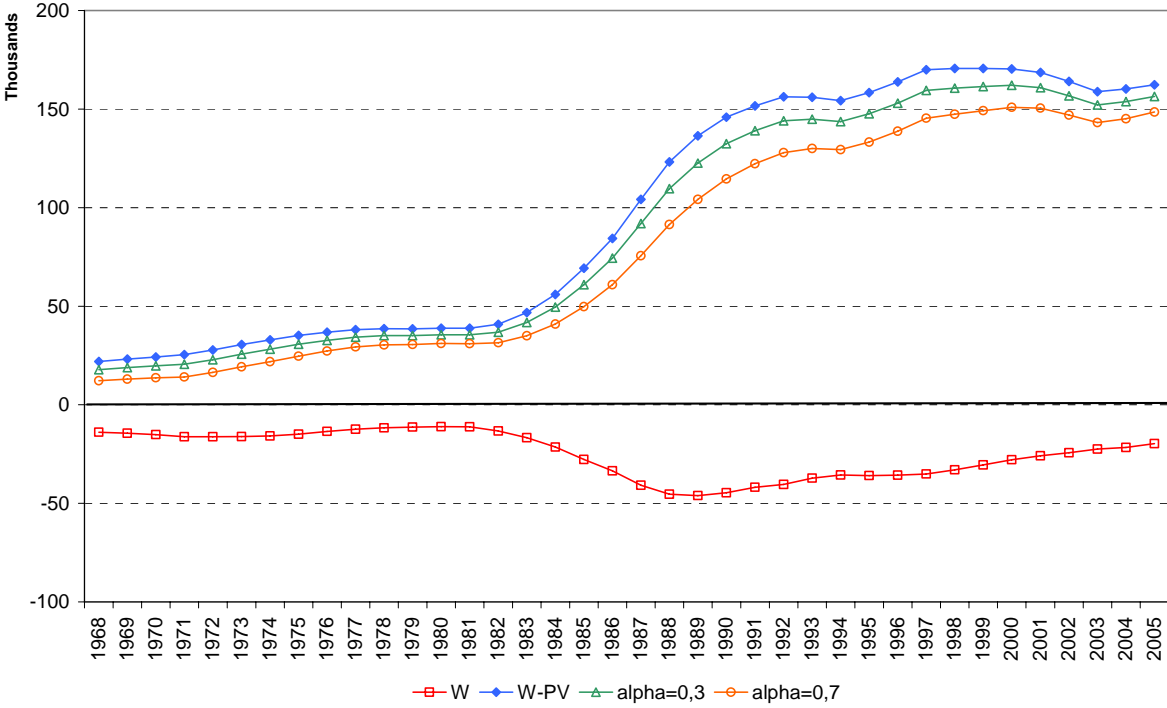
3.2. Measuring the impact of pension policy indexes on labor market outcomes

Tables 3 to 5 present the effects of aggregate Social Security Wealth on different labor market outcomes: labor force participation of the old (denoted LFPold), unemployment and employment rates of the young (denoted respectively Uyouth and Eyouth). Several specifications and sets of control variables are used to test the robustness of the results. In addition to the three control variables used in table 1 (GDP per capita, growth of GDP per capita – denoted DGDP - and the share of manufacturing in GDP - denoted MS), we have also used the mean age of the 55-65 age group[16] (denoted MA_5565) and the ratio of the minimum wage to the average wage (denoted MW). As in our previous analysis, the mean school leaving age (denoted MSLA) is used to measure the impact of education policies, which might have been fostered by concerns about

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[16] The labor force participation of the old is influenced by changes in the age structure. In particular large changes in the mean age of the 55-64 age groups have been experienced in France between 1974 and 1985 as a result of the low fertility rates during World War I, i.e. cohorts born between 1915 and 1918 are much smaller than previous and later cohorts.

youth unemployment and are essential in explaining the drop in youth labor force participation in France.[17]

All three tables have the same structure. In the top part we present the coefficients on the wealth index according to various specifications. In the first specification (column 1), we use the same set of control variables as in table 1 (GDP per capita, its growth rate and the share of manufacturing in production). In the following columns we add or remove control variables according to their relevance for the corresponding labor market outcome, that is the mean age of the 55-65 age group in the LFPold regression, or the minimum wage for Eyouth and Uyouth. The number of observations being relatively low (a maximum of 38 time observations to a minimum of 32 when taking the 5th differences of the variables), we test the robustness of these regressions by limiting the number of control variables either for the business cycle (GDP per capita, its growth rate) or the productive structure of the economy (the share of manufacturing in production) in order to leave explaining power for the more specific variables (columns (3) and (4)). Endogeneity of the pension policy in the French political context, as discussed above, is an issue that could not be put aside. We try to address this issue by implementing some Granger causality tests, in a bivariate framework. We present these results in the bottom part of each table. Control variables are introduced as exogenous variables (we do not have enough degrees of freedom to deal with all variables as endogenous ones). We have two bivariate systems to estimate – youth unemployment and the pension wealth index; youth employment and the pension wealth index – and we test if past youth employment (or youth unemployment) could improve the prediction of the pension wealth index, i.e. if youth unemployment (or employment) at date t helps to better predict the pension wealth index at date t+1, whatever the exogenous variables.

Table 3 corresponds to the regressions with all the variables in levels. First, the effect of the Wealth index on the labor force participation of the old has the expected negative sign. However, it is not significant in specification (2) which includes the largest set of controls and in specification (3), for which the growth rate of GDP per capita has been omitted. When comparing specifications (1) and (4), the inclusion of the mean age of the 55-65 age group instead of the share of manufacturing in production increases the negative impact on the labor force participation of the old of the pension incentives index. For the other labor market outcomes, the effect of the Wealth index is always significant, whatever the set of the control variables and with a similar size and the same sign: negative for both the unemployment and employment of youth,

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[17] The share of the young in school (denoted Syouth) could be an alternative measure of these education policies. Yet it is linked by an identity relationship to unemployment and employment of the young.

and positive for the schooling of the youth. An increase in the social security wealth index is associated both with lower youth employment and with lower youth unemployment. This result is not completely surprising given that the pension wealth index is also associated positively with the share of the young in school. To rephrase this result in the light of our previous descriptive analysis (section 2), at a time of increased youth unemployment, both early retirement policies and expansion of schooling have taken place. Taking into account these education policies, which is done in table 5, may allow us to help shed light on the relationship between retirement policies labor market status of the young.

When looking at the results of the causality tests, we can accept Granger causality between unemployment of youth and the Wealth index in both directions, whereas we reject it between employment of youth and the Wealth index. It is therefore more cautious to avoid causal interpretation of the effect of the Wealth index on the youth labor market outcomes given these endogeneity issues.

Table 3: Regressions in level, Wealth index estimated coefficient

	(1)	(2)	(3)	(4)
LFPold	**-0,022**	-0,000	-0,000	**-0,093**
	(0,012)	(0,011)	(0,011)	(0,008)
Uyouth	**-0,04**	**-0,076**	**-0,070**	**-0,057**
	(0,014)	(0,015)	(0,014)	(0,016)
Eyouth	**-0,191**	**-0,189**	**-0,196**	**-0,194**
	(0,018)	(0,022)	(0,020)	(0,023)
Syouth	**0,244**	**0,234**	**0,242**	**0,219**
	(0,015)	(0,020)	(0,019)	(0,019)

(1) : GDP, DGDP, MS
(2) : LFPold = GDP, DGDP, MS, MA_5565 ;
Uyouth, Eyouth, Syout = GDP,DGDP,MS,MW
(3) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW
(4) : LFPold = GDP,DGDP,MA_5565
Uyouth, Eyouth, Syouth = GDP,DGDP,MW

CAUSALITY TESTS

	(1)	(2)	(3)	(4)
Uyouth-->W	yes	yes	yes	yes
W-->Uyouth	yes	yes	yes	yes
Eyouth-->W	no	no	no	no
W-->Eyouth	no	no	no	no

(1) : GDP, DGDP, MS
(2) : LFPold = GDP, DGDP, MS, MA_5565 ;
Uyouth, Eyouth, Syout = GDP,DGDP,MS,MW
(3) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW
(4) : LFPold = GDP,DGDP,MA_5565
Uyouth, Eyouth, Syouth = GDP,DGDP,MW

Results in table 4 correspond to regressions with all the variables in fifth differences. Differentiation is a way to address the endogeneity issue. By differencing, we loose control variables such as the growth of the GDP per capita then we implement only two specifications. As we loose almost 10% of our observations, the coefficient of the Wealth index is not significant anymore in the regression on the labor force participation of the old. As a result the regressions on the other outcomes cannot be interpreted in a causal way. Surprisingly, the coefficient of the pension wealth index on the other labor market outcomes remains significant

and of the same sign (the size is more volatile) as in the regressions in levels. The Granger causality tests confirm the results obtained in table 3. These results reinforce the need to control for education policies.

Table 4: Regressions in fifth differences, Wealth index estimated coefficient

	(1)	(2)
LFPold	-0,002	**0,050**
	(0,026)	(0,014)
Uyouth	**-0,095**	**-0,063**
	(0,029)	(0,025)
Eyouth	**-0,078**	**-0,027**
	(0,030)	(0,039)
Syouth	**0,137**	**0,078**
	(0,027)	(0,032)

(1) : GDP, MS
(2) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW

CAUSALITY TESTS

	(1)	(2)
Uyouth-->W	yes	yes
W-->Uyouth	yes	yes
Eyouth-->W	no	no
W-->Eyouth	no	no

(1) : GDP, MS
(2) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW

Table 5 is very similar to table 3, except that we add systematically the mean school leaving age in each set of control variables. There remain only two explained variables – employment and unemployment of youth – since the mean school leaving age is not relevant for the 55-65 age group (the coefficient for the LFPold regression is then the same as in table 3) and it is certainly endogenous in the Syouth regression. The effect of the Wealth index on unemployment or employment of the youth, and Granger causality between the Wealth and the two outcomes of interest are the same as in table 3 when controlling for the mean school leaving age.

The causality tests lead us to confirm that these variables are endogenous indeed. Causal relationships are therefore impossible to establish and we are left with the weak evidence of previous sections.

Table 5: Regressions in levels, with the mean school leaving age added
Wealth index estimated coefficients

	(1)	(2)	(3)	(4)	(5)
Uyouth	**-0,106**	***-0,052***	**-0,063**	0,024	-0,062
	(0,027)	(0,028)	(0,028)	(0,031)	(0,045)
Eyouth	**-0,140**	-0,047	**0,078**	**-0,124**	**-0,148**
	(0,033)	(0,039)	(0,039)	(0,048)	(0,038)

(1) : GDP,DGDP,MS

(2) GDP,DGDP,MS,MW

(3) GDP,MS,MW

(4) GDP,DGDP,MW

(5) GDP,DGDP

CAUSALITY TESTS

	(1)	(2)	(3)	(4)	(5)
Uyouth-->W	yes	yes	yes	*yes*	yes
W-->Uyouth	yes	yes	yes	no	yes
Eyouth-->W	no	no	no	yes	no
W-->Eyouth	no	no	no	no	no

(1) : GDP,DGDP,MS

(2) GDP,DGDP,MS,MW

(3) GDP,MS,MW

(4) GDP,DGDP,MW

(5) GDP,DGDP

5. Conclusion

The main objective of this chapter was to study the link between youth labor market status and older worker's labor force participation in the case of France. The main reforms favoring early retirement policies in the decade between 1975 and 1985 were based, at least in the political debate, on the argument that they would foster young workers' employment. Evidence of the correlation between youth labor market outcomes and old worker labor force participation plead more in favor of a positive association between young and old workers in the labor market. An increase in the old workers participation is indeed correlated with an increase in the employment rate of young workers and a decrease in their unemployment rate. Even when controlling for the economic cycle, this positive association remains – albeit less robustly. These correlations based on times series are however not evidence of causal relationship between youth and old employment. For a start, even if we had been able to properly measure substitution between these two age groups, controlling for total output in the economy, we would not be able to state that these policies have been effective in the long term, unconditional on output. In our case, we do not find evidence of substitution conditioning on output. The second caveat of these time series correlations is that it is impossible to exclude that they are not faced with a simultaneity issue, i.e. that general employment conditions, not taken into account in our controls, could explain both employment of the young and of the old.

To deal with this problem, we use instead of LFP rates of older workers an index summarizing the intensity of policies aiming at removing older workers from the labor market, based on Social Security Wealth. The effect of the Wealth index on youth labor market outcomes is always significant, whatever the set of the control variables we use and with a similar size and the same sign. The coefficient is negative for both the unemployment and employment of youth, with or without controlling for school attendance. Granger causality tests between unemployment of youth and the Wealth index show a significant link in both directions, whereas nothing is significant between employment of youth and the Wealth index.

Establishing causal relationship of the reduction of labor force participation of the old on employment prospect of the young is indeed a challenging work. Given the general equilibrium element of their impact and the endogeneity of the policies at stake, one is constrained to look – within one country – at times series. If we do not find evidence that reducing labor force participation of the old provide jobs for the young, we cannot exclude altogether that some general and unaccounted cause is hiding their true effect.

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Appendix

Tables A1 and A2 are defined respectively as tables 3 and 5, except that the pension index here is a composite index defined as:

$$I(a, y, r) = W(a, y) + e^{-r(a^*-a)}[W(a, y) - PV^*(a, y)]$$

The main issue with this pension index is to find a value for α, which is a kind of subjective preference for the present rate. According to the average values of different long term and no risky interest rates on the time period, it can range from 0.3 to 0.7. We thus replicate the same exercise as for the Wealth index for 2 pension indices (denoted Ibar) and tables A1a, A2a (respectively A1b, A2b) report the results for $\alpha=0.3$ (respectively $\alpha=0.7$). Globally, the results are very similar to the results obtained with the wealth index. Indeed, we find that the paradoxes results remains, that is complementarity between employment of youth and the pension index in one hand, and substitutability with unemployment in the other hand.

Table A1a: Regressions in level, $\alpha = 0.3$

	(1)	(2)	(3)	(4)
LFPold	-0,001	*-0,021*	-0,001	**-0,096**
	(0,011)	(0,012)	(0,011)	(0,009)
Uyouth	**-0,082**	**-0,040**	**-0,074**	**-0,067**
	(0,015)	(0,014)	(0,014)	(0,016)
Eyouth	**-0,202**	**-0,198**	**-0,198**	**-0,209**
	(0,023)	(0,019)	(0,019)	(0,024)
Syouth	**0,251**	**0,254**	**0,257**	**0,242**
	(0,019)	(0,013)	(0,013)	(0,018)

(1) : LFPold = GDP, DGDP, MS, MA_5565 ;
Uyouth, Eyouth, Syouth = GDP,DGDP,MS,MW
(2) : GDP, DGDP, MS
(3) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW
(4) : LFPold = GDP,DGDP,MA_5565
Uyouth, Eyouth, Syouth = GDP,DGDP,MW
Uy,Ey Sy = pibt,parmanuf,smic

CAUSALITY TESTS

	(1)	(2)	(3)	(4)
Uyouth-->Ibar	yes	yes	yes	yes
Ibar-->Uyouth	yes	yes	yes	yes
Eyouth-->Ibar	no	no	no	no
Ibar-->Eyouth	no	no	no	no

(1) : LFPold = GDP, DGDP, MS, MA_5565 ;
(2) : GDP, DGDP, MS
Uyouth, Eyouth, Syout = GDP,DGDP,MW
(3) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW
(4) : LFPold = GDP,DGDP,MA_5565
Uyouth, Eyouth, Syouth = GDP,DGDP,MW
Uy,Ey Sy = pibt,parmanuf,smic

Table A1b: Regressions in level, $\alpha = 0.7$

	(1)	(2)	(3)	(4)
LFPold	-0,001	*-0,021*	-0,101	-0,001
	(0,011)	(0,012)	(0,010)	(0,011)
Uyouth	**-0,090**	**-0,040**	**-0,083**	**-0,080**
	(0,014)	(0,014)	(0,016)	(0,014)
Eyouth	**-0,221**	**-0,207**	**-0,226**	**-0,226**
	(0,024)	(0,020)	(0,027)	(0,022)
Syouth	**0,276**	**0,266**	**0,273**	**0,278**
	(0,017)	(0,011)	(0,016)	(0,015)

(1) : LFPold = GDP, DGDP, MS, MA_5565 ;
(2) : GDP, DGDP, MS
Uyouth, Eyouth, Syout = GDP,DGDP,MW
(3) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW
(4) : LFPold = GDP,DGDP,MA_5565
Uyouth, Eyouth, Syouth = GDP,DGDP,MW

CAUSALITY TESTS

	(1)	(2)	(3)	(4)
Uyouth-->Ibar	yes	yes	yes	yes
Ibar-->Uyouth	yes	yes	yes	yes
Eyouth-->Ibar	no	no	no	no
Ibar-->Eyouth	no	no	no	no

(1) : LFPold = GDP, DGDP, MS, MA_5565 ;
(2) : GDP, DGDP, MS
Uyouth, Eyouth, Syout = GDP,DGDP,MW
(3) : LFPold = GDP,MS,MA_5565
Uyouth, Eyouth, Syouth = GDP,MS,MW
(4) : LFPold = GDP,DGDP,MA_5565
Uyouth, Eyouth, Syouth = GDP,DGDP,MW

Table A2a: Regressions in level with mean school leaving age, $\alpha = 0.3$

	(1)	(2)	(3)	(4)	(5)
Uyouth	**-0,123**	**-0,065**	**-0,077**	0,018	*-0,093*
	(0,029)	(0,032)	(0,031)	(0,037)	(0,049)
Eyouth	**-0,160**	-0,056	**-0,091**	**-0,141**	**-0,167**
	(0,037)	(0,045)	(0,045)	(0,056)	(0,042)

(1) : GDP,DGDP,MS

(2) GDP,DGDP,MS,MW

(3) GDP,MS,MW

(4) GDP,DGDP,MW

(5) GDP,DGDP

CAUSALITY TESTS

	(1)	(2)	(3)	(4)	(5)
Uyouth-->Ibar	yes	yes	yes	yes	yes
Ibar-->Uyouth	yes	yes	*yes*	no	*yes*
Eyouth-->Ibar	no	no	no	no	no
Ibar-->Eyouth	no	no	no	*yes*	no

(1) : GDP,DGDP,MS

(2) GDP,DGDP,MS,MW

(3) GDP,MS,MW

(4) GDP,DGDP,MW

(5) GDP,DGDP

Table A2b: Regressions in level with mean school leaving age, $\alpha = 0.7$

	(1)	(2)	(3)	(4)	(5)
Uyouth	**-0,152**	**-0,091**	**-0,103**	-0,004	**-0,153**
	(0,031)	(0,038)	(0,036)	(0,049)	(0,052)
Eyouth	**-0,193**	-0,071	**-0,113**	**-0,165**	**-0,191**
	(0,044)	(0,055)	(0,054)	(0,071)	(0,048)

(1) : GDP,DGDP,MS

(2) GDP,DGDP,MS,MW

(3) GDP,MS,MW

(4) GDP,DGDP,MW

(5) GDP,DGDP

CAUSALITY TESTS

	(1)	(2)	(3)	(4)	(5)
Uyouth-->Ibar	yes	yes	yes	yes	yes
Ibar-->Uyouth	yes	*yes*	no	no	*yes*
Eyouth-->Ibar	no	no	no	no	no
Ibar-->Eyouth	no	no	no	*yes*	no

(1) : GDP,DGDP,MS

(2) GDP,DGDP,MS,MW

(3) GDP,MS,MW

(4) GDP,DGDP,MW

(5) GDP,DGDP