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Early Retirement and Employment of the Young in Germany

Axel Börsch-Supan and Reinhold Schnabel

5.1 Introduction

Early retirement in Germany is very costly and amplifies the burden that the German public pension system has to carry due to population aging. Benefits paid to individuals aged sixty-four years or younger are about one-quarter of total benefits paid. This corresponds to about 5 percentage points of the current contribution rate.

Our earlier analyses (Börsch-Supan and Schnabel 1998, 1999; Berkel and Börsch-Supan 2004; Börsch-Supan et al. 2004; Börsch-Supan, Schnabel, and Kohnz 2007) have shown that an important reason for the large and costly extent of early retirement in Germany is the force of early retirement incentives built into the German public pension system. The provisions driving workers into early retirement are not accidental side effects of the pension system design. They are still in place, with the explicit motivation to “make room for the young.” Underlying this is the popular belief that employment of older individuals crowds out employment of younger individuals. Turned positively, many believe that for each individual sent into early retirement, a younger individual can take up a new job.

The belief is deeply rooted in the analogy of a small enterprise with a fixed

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and small number of clients who have a fixed demand for the product of the enterprise. Such an enterprise is boxed into a fixed amount of output and therefore can only employ a fixed lump of labor.

This chapter shows that this boxed-in enterprise is not at all a good analogy to an entire economy. In fact, our evidence shows that higher employment of older individuals is *positively* correlated with higher employment of the young. In contrast to the small enterprise just described, entire economies can grow, increasing the demand for all goods and services and therefore also the demand for labor. It is a fallacy to believe that there is a fixed lump of labor to be distributed among the young and the old: jobs for the old do *not* have to be taken away from the young. Moreover, costs for early retirement cannot be put on someone else's shoulders, as enterprises often can do it. In an entire economy, all social transfer expenses have to be borne by tax and contribution payers.

This insight might be unpopular. However, it is anything but new. Figure 5.1 shows data from a set of Organization for Economic Cooperation and Development (OECD) countries clearly indicating that countries with a high prevalence of early retirement generally have *higher* unemployment rates and *lower* employment of the young.

In spite of such suggestive evidence, the misconception of a fixed lump of labor that has to be shared between the old and the young (the “lump of labor fallacy” or the “boxed economy view”) keeps dominating much of the policy debate on pension reform in Germany and elsewhere. The suggestive power of a small enterprise with a fixed and small number of clients as a model for the entire economy appears to be stronger than the suggestive power of figure 5.1.¹

The topic is timely and relevant in Germany. A controversial 2007 reform (“Rente mit 67”) will raise the statutory retirement age from sixty-five to sixty-seven in annual steps between 2012 and 2028. According to the original reform design, at the end of the transition phase in 2028, full benefits will be paid at age sixty-seven, and retirement at age sixty-five will lead to a 7.2 percent reduction (two years times 3.6 percent) of benefits.

This fundamental decision to adjust the length of working life to the increased total life span has been confronted with the argument that raising the retirement age would lead to higher unemployment among the young, and it continues to be watered down. First, already during the legislative process, the actuarial adjustments were limited to persons with an employment career of less than forty-five years—that is, there will be no actuarial adjustment for those with a “full” working life of forty-five years or more. Moreover, the duration of unemployment benefits has been extended for older workers, thereby reversing important decisions of the so-called Hartz

1. Figure 5.1 is only suggestive, as it depicts a positive correlation between two macrolevel variables but not a causal relationship; see the following discussion.

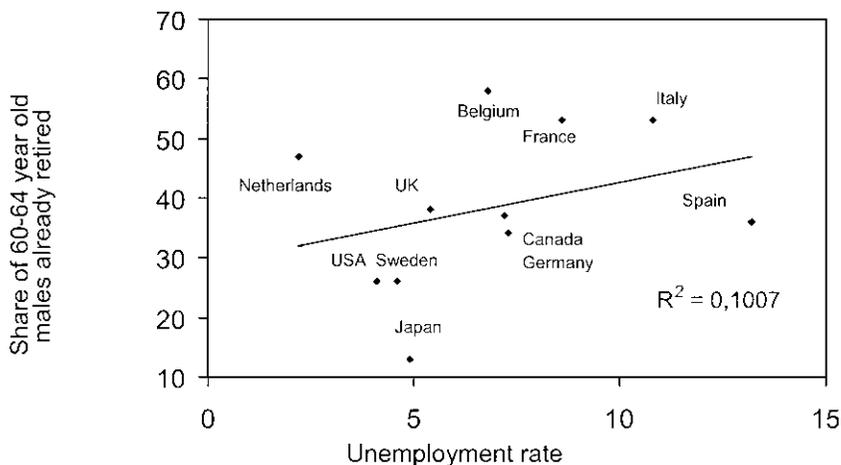


Fig. 5.1 Early retirement and unemployment in the OECD

Source: Own calculations based on OECD *Employment Outlook 2007*.

reforms of the German labor market. Finally, there is increasing pressure by the unions to extend subsidizing part-time retirement. Such subsidies were originally introduced to permit a flexible transition from full-time work via part-time work/part-time retirement to full retirement. However, almost all workers choose to divide the five-year transition period into one block of full-time work and another block of full retirement, effectively reducing the early retirement age by 2.5 years (“Blockaltersteilzeit”).

Given the actual policy debate, it would be extremely helpful to know more about the relationship between retirement policy and employment of the young, specifically in Germany, and to provide a causal interpretation of figure 5.1. This is the aim of this chapter. It shows that the German data provide no evidence for the belief that older workers take jobs away from the young. In fact, if there is a link at all, higher employment of older individuals in Germany is positively correlated with higher employment of the young.

The chapter uses various pension design changes in Germany as instruments to identify how higher or lower employment of older individuals has affected the employment of the young. The central question of this chapter, therefore, is: how did pension reforms affect the labor market—in particular, employment and unemployment of the old versus the young?

Section 5.2 of the chapter summarizes important pension reform steps in Germany. Section 5.3 describes employment and unemployment over time by age group and attempts to draw first links between changes in employment patterns and pension reforms. Section 5.4 provides the analytical part of the chapter. We quantify the changes of early retirement incentives over time and measure their effect on older workers’ employment. This follows our earlier work. We then answer the central and more difficult question:

how did this affect the labor market, in general, and employment of the young, in particular? Section 5.5 concludes.

Our methodology can be interpreted as a reduced-form analysis. We regress labor market outcomes for the young on employment of the old, using pension policy changes for a regression discontinuity design. We also regress labor market outcomes directly on changes in the policy instruments. The theoretical framework behind this reduced-form analysis is a macro-economic model of a pension system, labor markets for young and old, and product demand. Such a model is provided, for example, by Börsch-Supan and Ludwig (2008). It is noteworthy that such a model produces a *positive* correlation between retirement age and employment.

Quite clearly, we need “strong” reforms in order to empirically identify the effects of pension policies on labor market outcomes for the young, since there are many confounding factors operating at the same time. In Germany, we can identify several such important reforms that dramatically changed retirement incentives. In response, retirement behavior changed equally dramatically.

Moreover, we have to care about the potential endogeneity of pension policy changes. An endogeneity problem arises if the pension reform was triggered by higher youth unemployment. In this case, the reform cannot be used as an instrument in econometric analysis, and causal analysis will fail.²

Finally, pension reform may be just one element in a reform package, which also includes labor market reforms. In this case, it may be impossible to identify which reform element actually caused the results.

In order to take care of these concerns, we exploit what we know from the historical policy debate (section 5.2) and what we can learn from the labor market outcomes at that time (section 5.3). With respect to endogeneity, we will argue that at least two reforms were not motivated by employment concerns. The first reform came into effect in 1972 in a period of labor shortage, not youth unemployment. The second reform was drafted before reunification in 1989 in a situation of decreasing unemployment and was phased in between 1998 and 2004. This reform was motivated by concerns about the long-term solvency of the public pay-as-you-go (PAYG) pension system (Prognos 1995, 1998) in the face of population aging.

Potentially confounding factors were other reforms in Germany, among them being the extension of worker protection rules (layoff protection), the reductions in standard working hours through collective contracts, various changes in education policy (increasing educational attainment, prolonged education), and changes in immigration policy. Most of these other policy changes can be dated precisely. Hence, we focus on those pension reforms that did not concur with general labor market reforms. In addition, we will

2. A causal interpretation of figure 5.1 suffers from this critique.

investigate the time and lag patterns in order to minimize the contamination of the relation between retirement and employment of the young.

5.2 Regimes of Retirement Policies in Germany

The German pension system, designed by Bismarck almost 120 years ago, began as a funded system but was transformed into a pay-as-you-go system in 1957 after about half of the capital stock was lost in two world wars and a hyperinflation.

As opposed to other countries such as the United Kingdom and the Netherlands, which originally adopted a Beveridgian social security system that provided only a base pension, public pensions in Germany are designed to extend the standard of living that was achieved during working life also to the time after retirement: individual pension benefits are essentially proportional to individual labor income averaged over the entire life course and feature only few redistributive properties.

The following brief history of the German pension system distinguishes four phases:³ (a) a relatively stable phase after the introduction of the pay-as-you-go system until 1972; (b) a phase of increasing generosity precipitated by the 1972 pension reform; (c) a phase of cost-cutting reforms after 1992, leading to a sustainable pension system by 2007; and (d) first signs that we may actually experience a phase of reform backlash. While this section focuses on pension reforms, we will at several instances refer to the following section 5.3 for concurring labor market outcomes.

5.2.1 Phase 1 (1957 to 1972): Stability

Initially, the pay-as-you-go system introduced in 1957 had a single eligibility age for old-age pension: age sixty-five for men and age sixty for women (conditioned on a minimum number of years of service). Earlier retirement was impossible unless one could prove a disability. Disability rates were very high after World War II and then declined; employment of elderly males was increasing until about 1967 and declined slightly after the recession of 1967 (see the employment history provided in section 5.3—in particular, figure 5.6).

5.2.2 Phase 2 (1972 to 1992): Increasing Generosity

The 1972 reform was a major change in policy. It introduced “flexible retirement” by providing old-age pension benefits at age sixty-three, given that workers had a minimum of thirty-five years of which they contributed to the system. These benefits were not actuarially adjusted. It is important to note that the 1972 reform was not motivated by labor market con-

3. For a detailed description of the evolution of the German pension system, see Börsch-Supan and Wilke (2006).

cerns. Rather, this very popular bipartisan reform decision was celebrated as a major achievement to provide more leisure to the workers. Indeed, the average retirement age dropped by more than two years, and employment rates of older individuals plummeted (see figure 5.6).

Between 1984 and 1987, early retirement was further extended by creating a “bridge to retirement.” The government introduced more generous unemployment insurance benefits for older workers, which were especially attractive in the age range from fifty-five to fifty-nine years: up to thirty-two months of unemployment insurance benefits at 63 or 68 percent of former net wages. These benefits were not means tested, and job-search activities were not required for those unemployed who were aged fifty-five and older. In addition, severance pay became tax advantaged for the employees.

As opposed to the 1972 reform, these changes in the eligibility and duration of unemployment benefits were explicitly motivated by the increasing unemployment (see figure 5.2) and the desire to “make room for young workers.” As a result of the “bridge to retirement,” registered unemployment of the elderly (age fifty-five to fifty-nine) rose immediately, and the pathways to retirement changed dramatically. Disability benefits declined, while the uptake of unemployment insurance became the most important pathway to retirement by 1990 (see figure 5.5).

5.2.3 Phase 3 (1992 to 2007): Sustainability Reforms

Threatened by demographic change, Germany began in the early 1990s a fifteen-year-long process of reform steps. These reform steps were not masterminded; some “happened” due to budget crises and new political constellations. Seen from hindsight, however, the reform steps follow an astoundingly consistent red thread.

Step 1: Toward Actuarial Adjustments (1992)

The first step in the long German reform process was the 1992 reform. It anchored benefits to net rather than to gross wages. This removed an odd mechanism that would have created a vicious cycle of increasing pension benefits in response to increasing contribution rates. At the same time, credits for higher education were abolished and survivor benefits reduced.

The second important element in the 1992 reform was the introduction of “actuarial” adjustments to benefits to retirement age. “Actuarial” is set in quotation marks because the adjustment factors have been set discretionarily at 3.6 percent for each year of earlier retirement and are not directly linked to changes in life expectancy. They are about 1.5 percentage points lower than current life tables, and a 3 percent discount rate would imply.⁴

4. Actuarial computations depend on a discount or interest rate, which makes payments made or received at different points in time commensurable. Usually, a rate of 3 percent is assumed—sometimes 4 or 5 percent. The German computations rest on a discount rate of about 1 percent.

Nevertheless, their gradual introduction between 1998 and 2006 reduced incentives to retire early, and retirement age and labor force participation of older individuals has indeed increased since then, almost symmetrically to the decline after the 1972 reform (see figure 5.3 and Börsch-Supan (1992) for an early prediction of this effect).

Step 2: Toward a Genuine Multipillar System (2001)

The financial situation of the pension system worsened rather quickly after the 1998 elections that brought the Social Democrats to power in Germany. As a remarkable irony in politics, the former union leader, then secretary of labor Walter Riester, successfully passed a major reform bill through parliament in 2001.⁵

The Riester reform is a major change of the German public pension system. It changed the monolithic pay-as-you-go retirement insurance to a genuine multipillar system by partially substituting pay-as-you-go financed pensions with funded pensions. The reform aimed to achieve three main objectives. First, the reform was to stabilize contribution rates. The Riester reform law actually states that contribution rates to the public retirement insurance scheme must stay below 20 percent until 2020 and below 22 percent until 2030, while the net replacement rate must stay above 67 percent. Failure must precipitate further government action. Second, a new pillar of supplementary-funded pensions was introduced. Contributions to this pillar are subsidized, either by tax deferral and tax deduction or by direct subsidies. These supplementary pensions, however, are not mandatory. Third, benefits of the pay-as-you-go system were scheduled to be gradually reduced in proportion to the maximum subsidized contribution to the new supplementary pensions.

Step 3: Toward Sustainability (2004)

Although praised as a “century reform,” it quickly became obvious that the cost-cutting measures of the Riester reform would not suffice to meet the contribution rate targets. A new reform commission, the Commission for Sustainability in Financing the German Social Insurance Systems, was established in November 2002.⁶ Its twin objectives were those of the Riester reform: to stabilize contribution rates, while at the same time ensuring appropriate future benefit levels.

The commission met in 2003 under very different circumstances than Riester faced just a few years earlier. Unexpectedly high unemployment rates and the poor performance of the German economy with extremely low growth rates precipitated a short-run financial crisis of the pension system

5. The 2001 reform, therefore, is popularly referred to as the Riester reform.

6. This was popularly referred to as the Rürup commission after its chairman, Bert Rürup. The commission was in charge of making reform proposals for the pension system, health care, and long-term care insurance. We only refer to the proposals of the pension group, which was cochaired by one of the authors of this chapter.

and created a sense of urgency for reform. Moreover, the electorate became increasingly aware that stabilizing social security contributions and thus limiting the increase of total labor compensation would be essential for enhancing future growth. This paradigm shift away from thinking in pension claims toward thinking in financing possibilities had a noticeable impact on the commission's reform proposals.

The commission proposed an entire reform package (Kommission 2003). In addition to a gradual shift of the retirement age in proportion to the expected change of life length after retirement, the key element of the commission's reform proposal was a new pension benefit indexation formula, linking benefits to the system dependency ratio, called the "sustainability formula."⁷ It would lead to further decreases in pension benefits vis-à-vis the path planned by the Riester reform. Most of the commission proposals, and most significantly the introduction of the sustainability formula, were quickly passed by the German Parliament in May 2004.

In parallel, the government also passed major changes to the unemployment insurance system, called the "Hartz reforms."⁸ They dramatically shortened the duration of unemployment benefits, especially for older individuals, to eighteen months (rather than thirty-two months) and made unemployment insurance much less attractive as a substitute for early retirement benefits.

Step 4: Toward Later Retirement Ages (2007)

The commission also proposed an increase of the normal retirement age from sixty-five to sixty-seven years, according to a schedule from 2011 to 2035 reflecting expected future changes in life expectancy. The underlying rationale was to divide the life time gained in proportion to the current division between life time in work and in retirement—namely, two to one. In order to prevent substitution into early retirement and disability pensions as a result of the increase of the retirement age, the commission also proposed to increase the early retirement ages (to the same extent and on the same schedule as the normal retirement age) and to increase the actuarial adjustments for disabled and long-term insured workers.

The shift in the retirement age was deemed too politically dangerous and was excluded from the legislation package in March 2004. The unions heavily opposed this adaptation of retirement age to life expectancy, arguing that it would lead to higher unemployment and take jobs away from the young.

Nevertheless, in yet another ironic move, just two years later, with population aging high on the political agenda, the then labor secretary Müntefering unilaterally announced an accelerated increase of the retirement age, to be fully effective in 2028. It was legislated in March 2007.

7. Technical details are described in Börsch-Supan and Wilke (2006).

8. Peter Hartz, former chief personnel officer at Volkswagen, headed the commission.

5.2.4 Phase 4: Reform Backlash?

The increase of the retirement age angered the left wing and was watered down by exemptions for those workers who had forty-five years of service. This may have been the beginning of a period of reform backlash. Under increasing pressure from the newly founded “Left Party,” the grand coalition government reverted the decision to shorten the duration of unemployment insurance benefits for older workers, which was part of the “Hartz-IV” labor market reform. Moreover, the government decided in the spring of 2008 to make a two-year exemption from the sustainability formula in order to increase pension benefits in 2008 and 2009 when federal elections would be held. Finally, the issue of “blockwise partial retirement”—essentially, an early retirement device—is back on the agenda. It is too early to judge whether these changes will end the phase of sustainability reform and begin a phase of reform rollbacks. It is important to note that the “make place for younger workers” argument is quoted almost always as a motivation to revert earlier reform steps.

5.3 Descriptive Analysis: Employment and Retirement Over Time

As noted, most pension reforms—those that increased generosity as well as those that cut costs to improve sustainability—had immediate consequences for employment and retirement. This section provides a more detailed depiction of employment and retirement patterns between 1960 and 2006. It is based on employment and labor force participation data taken from the German Bureau of the Census (“Mikrozensus”), unemployment figures from the Federal Labor Agency (“Bundesagentur für Arbeit”), and retirement patterns from the German Public Pension Administration (“Deutsche Rentenversicherung Bund”).

We first give an extensive description of the employment, unemployment, and retirement patterns before and immediately after the 1972 reform. Subsection 5.3.2 then summarizes the main labor force trends between 1972 and 2006, with particular attention to two further reform steps—namely, the “bridge to retirement” in 1984 and the gradual phase in of actuarial adjustments after 1998. The third subsection is devoted to a detailed analysis of youth (un)employment. Subsection 5.3.4 draws first conclusions from our descriptive analyses.

5.3.1 Employment, Unemployment, and Retirement Patterns before and after the 1972 Reform

The 1972 reform was introduced during a time of full employment—or better, even labor shortage. Unemployment rates, quickly declining during the German “economic miracle” in the 1950s, were very low in the 1960s and early 1970s before the first oil shock; see figure 5.2.

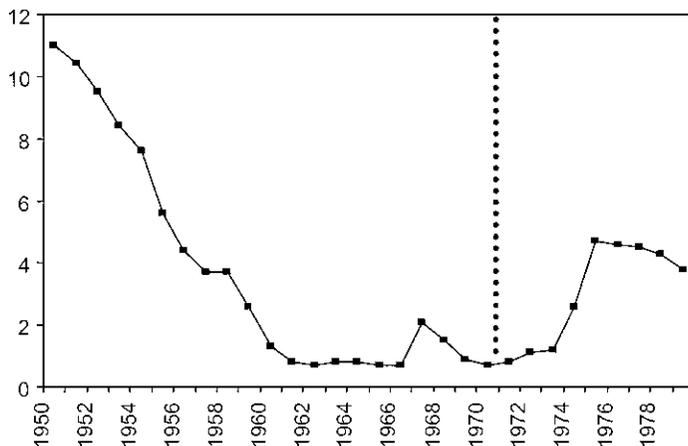


Fig. 5.2 Unemployment rate in West Germany, 1950 to 1979

Source: Statistisches Bundesamt.

Even in the recession year 1967, the aggregate unemployment rate barely exceeded 1 percent. As a matter of fact, companies were forced to hire millions of foreign workers from southern Europe and Turkey to overcome serious problems of labor shortage. Therefore, the pension reform of 1972 (indicated by the dotted line in figure 5.2 and drafted well before that year) was certainly not motivated by labor market problems of the young. The unemployment rate of young workers below age twenty-five was about the same as the average rate of 0.7 percent in the prereform year 1971; see table 5.1. During the sixties and early seventies, youth unemployment was consistently low and about the same level as unemployment of prime age workers (age twenty-five to fifty-four).

The unemployment rate of elderly workers was only slightly higher at 1.06 percent in the prereform year 1971. During the recession of 1967, the unemployment rate of the elderly jumped to 3.6 percent, which was twice the average rate. However, it is also unlikely that labor market problems of the elderly motivated the pension reform of 1972, given that unemployment of the elderly normalized to levels around 1 percent immediately after the recession of 1967 (figure 5.2).

The 1972 reform had an immediate effect on the labor force participation of older men.⁹ Figure 5.3 shows the dramatic decline of the mean retirement age from about age sixty-five years in the years preceding the reform to about age 62.5 after the reform. The subsequent stability of the retirement age during the eighties and nineties is remarkable; a significant change occurred only after the year 2000.

The effect of the 1972 reform is particularly pronounced as a change in

9. The law did not change the much earlier retirement age for women.

the most frequently chosen retirement age; see figure 5.4. Before the 1972 reform, the most frequent retirement age was sixty-five—the statutory retirement age—with retirement before that date only due to disability. In 1975, two peaks emerged: age sixty-five—the statutory retirement age—and age sixty-three—the new early eligibility age. In 1980, age sixty became

Table 5.1 Unemployment rates by demographic groups in year 1971 (%)

All	Males	Females	Age < 25	Age 25 to 54	Age 55+
0.70	0.6	0.9	0.76	0.59	1.06

Source: Statistisches Bundesamt.

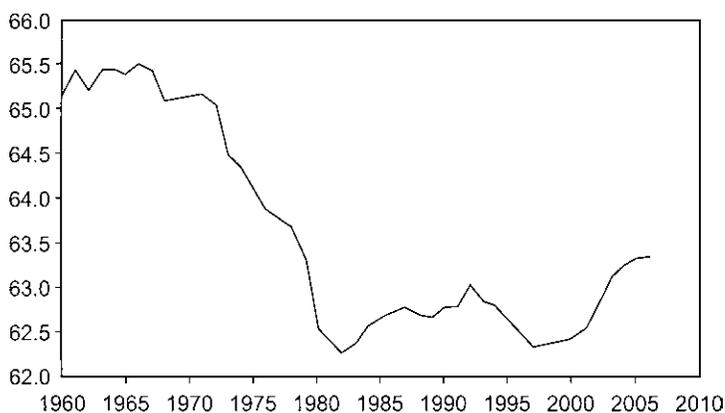


Fig. 5.3 Mean retirement age, old-age pensions, males

Source: Deutsche Rentenversicherung Bund, Rentenzugangsstatistik.

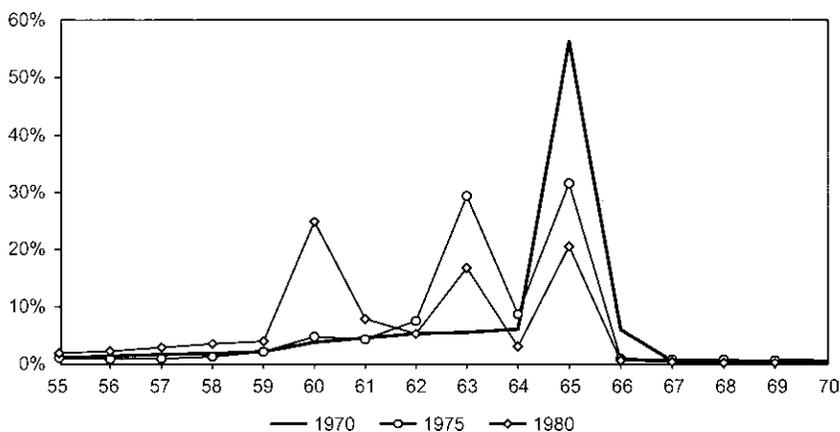


Fig. 5.4 Distribution of retirement ages: Males

Source: Deutsche Rentenversicherung Bund, Rentenzugangsstatistik.

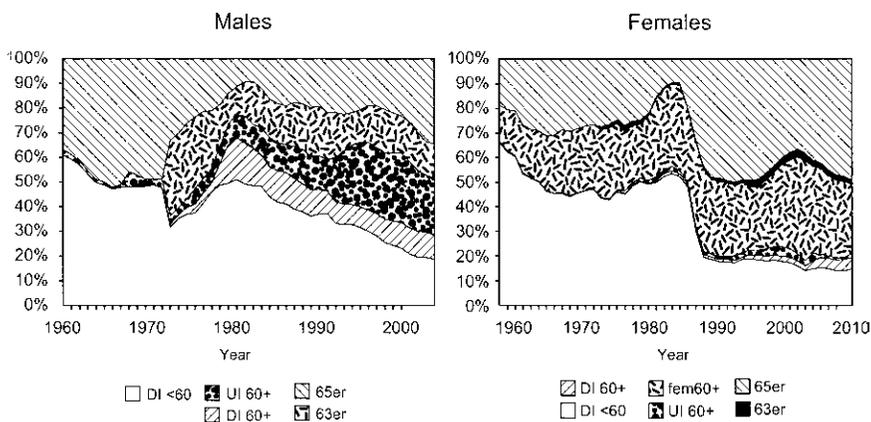


Fig. 5.5 Pathways to retirement

Source: Deutsche Rentenversicherung Bund, Rentenzugangstatistik.

the most frequent actual retirement age, reflecting the various exemptions from the early eligibility age of sixty-three that were due to unemployment, among other things.

The 1972 reform law also dramatically changed the pathways to retirement for men; see figure 5.5. The new “flexible retirement” at age sixty-three became very popular and replaced a substantial portion of disability pensions. After a short while, however, people discovered that the newly introduced old-age pensions for the disabled and/or unemployed were even more attractive, creating the spike at age sixty that is visible in figure 5.4. Note that there was no corresponding change in retirement pathways of women, who were not affected by the 1972 reform.

5.3.2 Employment and Unemployment after the 1972 Reform

Labor force participation of the elderly dropped immediately after 1972—see figure 5.6—reflecting the earlier exit from the labor force (the first vertical bar indicates the 1972 reform). By the end of the eighties, only 30 percent of the age group sixty to sixty-four were employed.

However, this did not seem to help the young, whose labor force participation actually fell in parallel to labor force participation of the old. The youth unemployment rate actually jumped to 5.6 percent in 1975 and remained at that level until 1978; see figure 5.7.

The cause for the dramatic change in labor market conditions after 1973 was the first oil shock. Unemployment rose to new levels in Germany, reaching 4 percent in 1975. The youth workforce was hit most by that recession. Youth unemployment became a major political concern at the end of the seventies. This was also connected to the concern that the large size of the baby boom generations might cause additional problems.

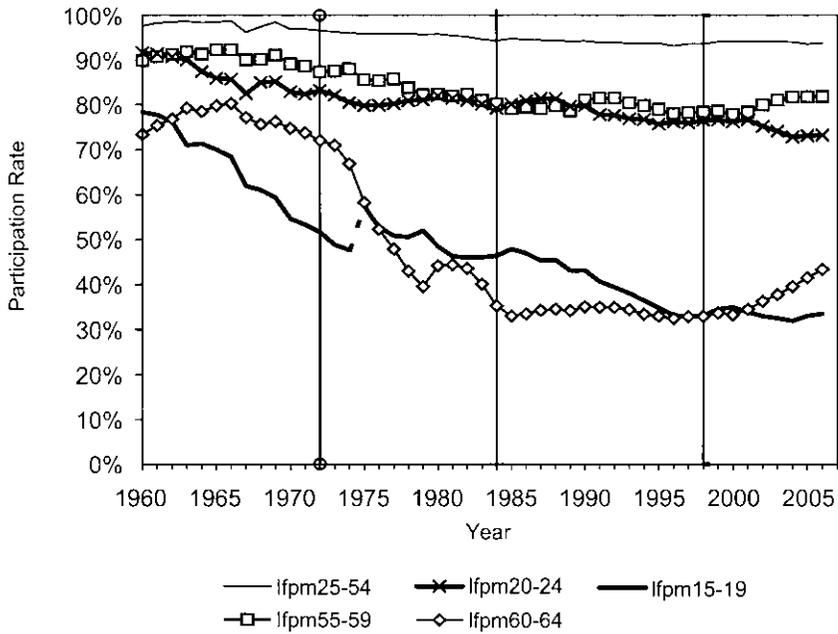


Fig. 5.6 Labor force participation of youth, young and elderly males

Source: German Mikrozensus.

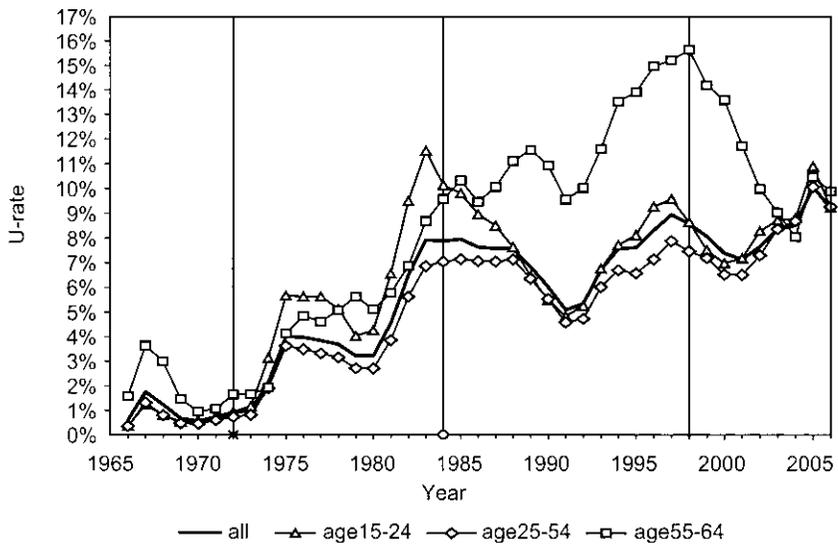


Fig. 5.7 Unemployment rates, 1966 to 2006, by age groups (West Germany)

Source: Bundesagentur für Arbeit.

A new problem evolved in the 1980s: unemployment did not return to prerecession levels after the first oil shock. Instead, it remained high and exhibited the pattern of a hysteresis problem. This pattern was repeated in each of the following business cycles. Unemployment rates hit a high in the winter of 2004/2005.

In 1984, the “bridge to retirement” (see section 5.2) was introduced (indicated by the second vertical bar in figures 5.6 and 5.7). It decreased employment of individuals aged fifty-five to fifty-nine (see figure 5.6). At the same time, their unemployment rate went up dramatically, indicating the popularity of using unemployment insurance as an early retirement pathway (figure 5.7). The employment effects on the young, however, did not go up in response (figure 5.6), as those who believe in the “boxed economy view” would have predicted.

Another reform step is indicated by the third vertical bar in figures 5.6 and 5.7. It represents the phasing in of “actuarial” adjustments after 1998. Figures 5.3 and 5.6 show the trend reversal of employment of the elderly: labor force participation increases from 30 percent to 40 percent in the age group from sixty to sixty-four years.

5.3.3 Employment and Unemployment of the Young

Labor force participation of the young (ages fifteen to nineteen) was as high as 80 percent in 1960. It dropped below 50 percent due to extended schooling (introduction of tenth grade in middle school) and rising participation in higher education (gymnasium, college) well before the 1973 recession; see figure 5.8.

The main expansion of education took place in the years from 1960 to 1974—that is, during times of full employment: the number of the young in education doubled from 20 percent to 40 percent in the years between 1960 and 1974. Extended general schooling was not a device to take youth from the unemployment rolls; if anything, it aggravated labor shortages.

Unemployment rose quickly after 1974. If extended education had been a substitute for unemployment in those years, we would expect increasing education during times of rising unemployment (i.e., 1974 to 1977, 1980 to 1983). Education rates, however, stayed fairly constant around 40 percent from 1974 to 1990.

College enrollment increased linearly from 1960 to 2003, very independently from economic booms and busts. Enrollment as a fraction of the population at ages nineteen to twenty-nine was 3 percent in 1960, 8.5 percent in 1974, 12.8 percent in 1988, and 18.5 percent in 2002.

5.3.4 Conclusions from the Descriptive Analysis

Combining the insights from sections 5.2 and 5.3, the following four conclusions can be drawn:

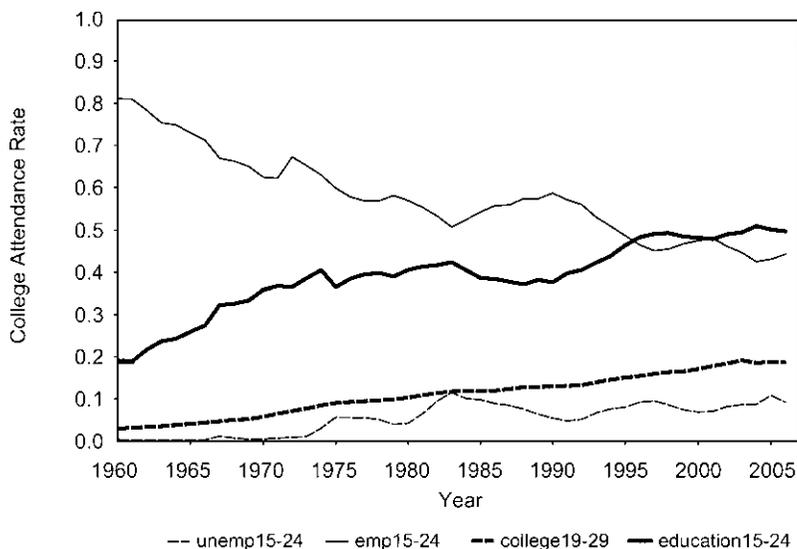


Fig. 5.8 Youth employment, unemployment, education, and college

Source: Own calculations based on the German Mikrozensus (Statistisches Bundesamt 2007) and unemployment statistics (Bundesagentur für Arbeit 2008).

- The 1972 reform was not driven by labor market considerations. It dramatically reduced retirement age, labor force participation, and employment of older individuals. In spite of the dramatic reduction of old-age employment in the aftermath of the 1972 reform, youth employment did not increase.
- The “bridge to retirement” introduced in 1984 further decreased employment of individuals aged fifty-five to fifty-nine. Their unemployment rate went up dramatically, indicating the popularity of using unemployment insurance as an early retirement pathway. Employment of the young, however, did not go up in response.
- The phasing in of “actuarial” adjustments after 1998 reversed the trend of early retirement. Employment increased from 30 percent to 40 percent in the age group from sixty to sixty-four years. There is a very slight concurrent decrease in employment of the young.
- Increasing education from 1960 to 1974 was not driven by labor market problems of the young. Over the entire period (1960 to 2006), there is no correlation between the uptake of education and youth unemployment.

Hence, the “boxed economy view” is not supported by the employment trends from 1960 to 2006. In almost all cases, employment of the young

and the old moved in tandem up or down. The only exception is the time after 1998. We claim, however, that the slight decrease in employment of the young is a reflection of the business cycle and not a response to the introduction of actuarial adjustments. In order to show this claim, we proceed to a more analytical approach in the following section.

5.4 Regression Analysis: Effects on the Young

Our regression analysis is based on the assumption that an exogenous policy $Z(t)$ changes the labor supply of the elderly—for example, by raising the implicit tax on labor for the elderly. In our earlier work, we have shown that such a change in the incentives to retire significantly affects the employment of the *elderly*. In this section, we focus on the empirical effects of early retirement policies on the employment of the *young*, focusing on three labor market outcomes:

- $\text{EMP}(a, y)$ = employment rate (employment in age group a in year y /population in age group a in year y)
- $\text{UE}(a, y)$ = unemployment rate (unemployed persons in age group a in year y /labor force participation in age group a in year y)
- $\text{SCH}(y)$ = educational participation of the young (persons in education in age group fifteen to twenty-four in year y /population aged fifteen to twenty-four in year y)

We use age group fifteen to twenty-four to indicate young individuals because of the specific German system of schooling and training. The regular school leaving age used to be fifteen (after ninth grade). This was followed by an apprenticeship, which counts as employment, and combined on-the-job training and work on four days with formal schooling on one day per week. Prime aged individuals are defined as aged between twenty-five and fifty-four.

5.4.1 Labor Outcome for the Young as Function of Elderly Employment

We first regress the labor outcome variables of young and prime aged individuals on the elderly employment variable. Results are shown in table 5.2. The first panel shows the coefficients of elderly employment without controls, the second panel with controls. These controls should account for general macroeconomic effects and include gross domestic product (GDP) per capita and the growth rate of GDP per capita, plus the average wage and the effective minimum wage (social assistance benefits on an hourly basis).

Each panel of table 5.2 includes four different specifications: a regression in levels, a regression in levels with a three-year lagged dependent variable, a regression in differences (five years), and a regression in log differences.

Table 5.2 Labor market outcomes of young and prime aged persons as a function of elderly employment

	Youth, 15 to 24			Prime age, 25 to 54	
	Unemployment	Employment	School	Unemployment	Employment
	<i>No controls</i>				
Levels	-.5069** (.0545)	1.3025** (.1825)	-63.9830** (8.7886)	-.4003** (.0511)	-.3557** (.0732)
Three-year lag on elderly employment	-.4768** (.0533)	1.1500** (.1457)	-67.6406** (6.6038)	-.4265** (.0409)	-.4167** (.0582)
Five-year difference	.0107 (.0911)	-.4804** (.2184)	.4896 (3.2134)	.0710 (.0630)	.3426** (.0940)
Five-year difference in logs	-1.5536 (1.6741)	-.2452 (.1632)	-.0310 (.0881)	-1.036 (1.8496)	.2075** (.0578)
	<i>With controls</i>				
Levels	-.2535** (.1374)	-.3641 (.2335)	-9.7485** (4.1037)	-.1267 (.0930)	-.0879 (.0689)
Three-year lag on elderly employment	-.1666** (.0848)	-.3680** (.1311)	1.2367 (2.4476)	-.1285** (.06315)	-.0058 (.0502)
Five-year difference	-.0024 (.0963)	-.4709** (.2361)	-.1026 (3.3805)	.0692 (.0657)	.3509** (.0980)
Five-year difference in logs	-1.5023 (1.7613)	-.2389 (.1760)	-.0415 (.0931)	-.9751 (1.9131)	.2156** (.0614)

Notes: Reported is the coefficient of elderly employment. Standard errors in parentheses. Significant effects in bold and marked with asterisks. Estimates in accordance with the boxed economy view are italicized. Controls include GDP per capita, growth rate of GDP per capita, minimum wage equivalent, and average wage. Data from 1960 to 2006, men and women.

**Significant at the 5 percent level.

Results are very sensitive to the specification chosen. However, there are very few specifications that support the “lump of labor” view (marked in bold italics). In many more specifications, higher employment of the elderly goes hand in hand with higher employment and lower unemployment of the young (marked in bold). The “effect” of elderly employment on unemployment of the young is either significantly negative, or it is insignificant. The same holds for the relation between elderly employment and unemployment of prime age persons, once controls are active.

The relation between employment of younger and elderly persons seems to be a bit more complicated. Most of the coefficients indicate a positive relationship. Only for the employment of prime age persons do we get a significant negative relationship.

Adding controls to the specification reduces the effects of elderly employment in general. A notable exception is the five-year difference effect on prime age employment. Here, we see that the strong positive effect of elderly employment on prime age employment remains strongly positive.

5.4.2 Labor Outcome for the Young as Function of Incentives to Retire Early

We first calculate the incentives to retire. We do this separately for men and women. We use two incentive variables used in our earlier work—namely, social security wealth (SSW) and peak value (PV). We compute these values considering two pathways to retirement: disability retirement and old-age retirement. We weight the two incentive measures using the probability to retire through disability.

We then combine the two incentive variables as follows. Let social security wealth at age a in year y be denoted by $SSW(a, y)$ and peak value by $PV^*(a, y)$. Then, our comprehensive incentive measure is defined as

$$I(a, y) = \{SSW(a, y) + \alpha[SSW(a, y) - PV^*(a, y)]\}$$

with weight

$$\alpha = (1 - r)^{(a^* - a)}.$$

We set r equal to 3 percent; a^* denotes the age at which SSW is maximized. If pension benefits are unavailable at age a , then the pension in the given year is set to zero.

Finally, we combine values for men and women using weights of the labor force participation of males and females by age and year.

The results for the regressions on the incentives variable are presented in table 5.3. Again, we report the results for two age groups, with and without controls, for level and first differences and for various outcome measures.

Table 5.3 Labor market outcomes of young and prime aged persons as a function of incentives to retire early

	Youth, 15 to 24			Prime age, 25 to 54		Elderly
	Unemployment	Employment	School	Unemployment	Employment	Employment
	<i>No controls</i>					
Levels	.1547** (.0171)	-.4888** (.0379)	23.939** (1.803)	.1377** (.0128)	.1571** (.0151)	-.2189** (.0323)
First difference	-.3775 (.5855)	.0742 (.0581)	-.8753 (.4957)	-.2503 (.5968)	.0287 (.0194)	.0366 (.0259)
	<i>With controls</i>					
Levels	.1015** (.0250)	-.0717 (.0530)	.3597 (.8262)	.0708** (.0184)	-.0374** (.0149)	.0163 (.0362)
First difference	-.0107 (.0172)	-.0081 (.0358)	-.4632 (.5107)	.3506 (.5222)	.0091 (.0159)	.0168 (.0569)

Notes: Reported is the coefficient of the comprehensive incentive variable. Standard errors in parentheses. Significant effects in bold and marked with asterisks. Estimates in accordance with the boxed economy view are italicized. Controls include GDP per capita, growth rate of GDP per capita, minimum wage equivalent, and average wage. Data from 1960 to 2006, men and women.

**Significant at the 5 percent level.

In addition, we report the effect of incentives on elderly employment in the last column of table 5.2.

Looking at the first row of results (in levels), we see that stronger incentives to retire early reduce employment of the younger age groups and increase their unemployment. The last column shows the expected negative impact on old-age employment. However, switching to a first-difference specification renders the results insignificant. (A similar result is obtained with a five-year difference specification.)

Adding controls mitigates the statistical relationship between incentives and employment measures in the level specification. The signs remain unchanged. We do not display in the table the relationship between elderly employment and young employment. Adding controls in the difference specification does not change results, either; the first-difference results remain insignificant, with or without controls.

5.5 Conclusions

The provisions driving workers into early retirement are often motivated by “making room for the young.” Underlying this is the popular belief that employment of older individuals crowds out employment of younger individuals. Such beliefs play a strong role in the current German discussion about increasing the retirement age from sixty-five to sixty-seven.

This chapter shows that there is no empirical evidence for this belief. In fact, if there is a link at all, the German data reveal that higher employment of older individuals is positively correlated with higher employment of the young. We first looked at employment trends between 1960 and 2006. In almost all cases, employment of the young and the old moved in tandem up or down.

We gave particular attention to those time periods after pension reforms when those pension reforms were *prima facie* not motivated by labor market concerns. This avoids potential endogeneity issues. Good cases are the 1972 reform—which dramatically expanded the German public pension system—and the 1992 reform—which started a cost-cutting reform process. Again, employment of the young and employment of the old were positively correlated in the aftermath of these reforms.

Finally, we used various regression approaches to purge this correlation from business cycle effects and to study the direct effect of early retirement incentives on youth and prime age employment. The results vary considerably across specifications; many remain insignificant. Of the significant ones, few specifications follow the “boxed economy view,” while many more support the positive correlation visible in the time series data.

Hence, the suggestive power of the often invoked analogy of a small enterprise with a fixed and small number of clients as a model for the entire economy is grossly misleading. In contrast to a small enterprise, entire

economies can grow, increasing the demand for all goods and services and therefore also the demand for labor. Moreover, costs for early retirement cannot be put on someone else's shoulders, as enterprises often can do it. In an entire economy, all social transfer expenses have to be borne by tax and contribution payers. Since costs for early retirement increase total labor compensation of the young, thus making their labor more expensive, it should not come as a surprise that early retirement for the old causes less employment of the young.

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