Part III
Economic consequences of late-career job loss
7 Literature review and research questions

In the previous two chapters, I have examined income trajectories around labor force exit, focusing on voluntary retirees whose retirement choices are not constrained by job displacement or declines in health. This part of the study complements this analysis by taking a closer look at employment and income trajectories around late-career job loss. Consistent with the counterfactual conceptualization of causality articulated in Chapter 4, I will not only examine the trajectories of displaced workers, but also compare them to a control group of observationally similar non-displaced workers. This DID matching strategy identifies the additional employment/income effects of late-career job loss, that is, beyond those attributable to voluntary retirement dynamics. This chapter prepares the empirical analysis by providing some additional conceptual and theoretical background, by formulating a set of research questions and hypotheses, and by reviewing previous empirical research.

Unlike with planned or voluntary retirement, there can be little doubt that job loss often has serious negative effects on well-being. A sizable literature documents that the unemployed are disadvantaged in numerous respects, including their financial situation and psychological well-being, and longitudinal studies provide compelling evidence that a large portion of these differences is attributable to the causal effect of job loss or unemployment rather than to other differences between the employed and the unemployed (e.g., in personality or baseline levels of happiness). Some studies have looked at the consequences of job loss for disposable household income (DiPrete and McManus 2000; Ehler 2012) and several studies have analyzed its impact on subsequent earnings, that is, after reentering employment. These latter studies show that reemployed displaced workers have lower earnings than similar non-displaced workers even several years after job loss (e.g., Arulampalam 2001; Gangl 2004b, 2006; Farber 2005). The consequences of job loss may thus extend beyond the ensuing period of unemployment, and research suggests that these longer-term ‘scar’ effects, too, are not confined to earnings (see, for example, Young’s [2012] analysis of

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1 In addition, job loss has been found to be a major trigger of poverty entries in research on poverty dynamics (McKernan and Ratcliffe 2002).
long-term changes in psychological well-being). In addition, some workers of course remain unemployed for very long periods of time.

Previous research on the consequences of job loss has mostly studied prime-age workers, but there is also some work on older workers in their 50s and 60s, which I will review below. In Chapter 3, I already discussed several reasons why the labor market situation of older workers is special and how this is related to labor market and welfare state institutions. This chapter further extends these ideas in order to prepare the empirical analysis in the next chapter. The next section provides a brief discussion of the employment and earnings/income effects of job loss, with a special focus on the situation of older workers. Against this background, Section 7.2 then draws on the institutional information provided in Chapter 3 to formulate a number of research questions and hypotheses. Section 7.3 concludes with an overview of related empirical research.

7.1 Employment, earnings and household income after late-career job loss

To get an analytical grip on the economic consequences of job loss it is useful to make a stylized distinction between workers who eventually return to work and those for whom displacement triggers a long-term or even permanent exit from employment.² Permanent exits occur at all ages, but previous research shows that older workers are considerably more likely not to return to work (Farber 2005; Frosch 2006; Johnson and Mommaerts 2011). This is consistent with the finding that job displacement is a primary trigger of involuntary early retirement (Lachance and Seligman 2010).

In this section, I first provide a brief general discussion of the financial risks associated with these two pathways (return to work vs. permanent exit). In a second step, I then address a crucial related question: How do contextual/institutional factors affect the likelihood that a displaced older worker will end up on one of these pathways rather than the other?

² The stylized distinction between long-term/permanent leavers and returners is of course a simplification. For example, returners could be usefully differentiated with respect to the length of the intermittent non-employment spell, the change in work hours, or the stability of their postdisplacement jobs. Nevertheless, the distinction between long-term leavers and returners is a useful one, particularly in the present context, because it captures the crucial decision displaced older workers are facing: Whether to seek reemployment or leave the labor market permanently and retire earlier than planned.
By definition, workers who do not return to work after losing their job will no longer have access to earnings from their own employment. The impact of this decline in earnings for economic well-being will depend on what other sources of income they can tap into. While workers can be expected to rely on a large and heterogeneous array of income sources – including spousal earnings, asset income, and severance payments – public support programs for the unemployed as well as complementary and public retirement benefits will often be of primary importance. As noted in Chapter 3, research also suggests that job loss may induce some workers to apply for disability benefits, a group whom Autor and Duggan (2003) refer to as ‘conditional applicants’ because their application is conditional on having experienced job displacement.

For workers who eventually return to work, the economic consequences of job loss accrue in two broad phases. During the first phase, workers are not employed, but many will be actively searching for a new job. The length of this episode may differ considerably across workers and some may transition more or less seamlessly to a new position. The majority, however, will spend some time out of employment. During this phase, earnings drop to zero and, just as for long-term leavers, public benefits and alternative private income sources become crucial for maintaining economic well-being. Returners enter a second phase after becoming reemployed. While the loss of labor income during unemployment may be the most conspicuous economic consequence of job displacement, research on long-term scar effects shows that for the typical displaced worker negative economic effects persist long beyond eventual reemployment (e.g., Farber 2005).

Job loss affects earnings beyond eventual reemployment because post-displacement earnings are usually lower than they would have been in the absence of displacement. The most obvious reason is that postdisplacement earnings tend to be lower than before displacement. Earnings declines tend to be particularly large for older workers because the latter have often been long-tenured on their prior jobs and because employer/job tenure is positively related to earnings (Couch 2011). Importantly, however, the

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3 The empirical regularity that earnings rise with employer tenure is well-established, but some debate remains concerning the sources of this relationship. Human capital theory emphasizes the acquisition of employer-specific skills. By definition, these skills are not transferable across employers and will therefore no longer be remunerated after job loss (Becker 1962; Mincer 1962). Another explanation for ascending wage-tenure profiles comes from efficiency wage theory, which argues that employers will devise labor contracts with deferred compensation to promote employee loyalty (Lazear 1981): Workers will be paid a wage below their marginal productivity in younger years and receive a wage exceeding their marginal productivity in
statement that earnings are lower ‘than they would have been in the absence of displacement’ highlights that the total scar effect of losing a job may be larger than suggested by a simple comparison of reemployed workers’ pre- and postdisplacement earnings. More specifically, the potential outcomes framework outlined in Chapter 4 suggests that any earnings (and associated income) increases that did not occur because of displacement (but would have occurred in its absence) must be included in the overall effect of job loss. In other words, the ‘earnings decline’ component must be augmented by a ‘foregone earnings increase’ component (see, for example, Farber 2005). DID designs provide a straightforward way of including losses due to foregone earnings increases in the estimated effect of job loss. In one exemplary study using a DID approach, Farber (2005) examines the earnings effects of job loss among American workers aged 20 to 64 from the mid-1980s to the mid-2000s. He finds that foregone increases account for a substantial portion of the total effect of job loss on earnings, for more than a third on average (Farber 2005: Figure 12).4

As in the part on retirement, the empirical analysis in the next chapter will focus on the impact of job loss two/three and four/five years after displacement. These effects are longer-term in the sense that displaced workers will have had plenty of time to search for a new job. In addition to the benefits available to older workers, the consequences of late-career job loss will therefore crucially depend on whether displaced workers return to work and on how their postdisplacement earnings differ from those of non-displaced workers.

How does the likelihood of returning to work differ across workers and how is it related to contextual factors? A straightforward expectation is that the probability of returning to work will depend on the availability of reemployment opportunities, and on their attractiveness compared to permanent exit/retirement. In other words, it will depend on the relative attractiveness and accessibility of the ‘work path’ compared to the ‘non-employment/early retirement path’ (see Burkhauser and Daly [2002] for similar arguments in the context of disability onset/health shocks). While various kinds of non-pecuniary considerations influence the relative attractiveness of work later years. Finally, the earnings-tenure relationship could result from a job matching process whereby workers’ wages depend on the quality of the worker-job match (Jovanovic 1979). Irrespective of their relative importance, all of these explanations suggest that earnings losses due to displacement rise with employer tenure (Couch 2011; Johnson and Mommaerts 2011).

4 Farber’s findings also suggest that the ‘foregone earnings increase’ component was relatively more important in the 1990s than in the 1980s, perhaps due to procyclicality.
vis-à-vis retirement, the expected financial implications of choosing one option over the other can be expected to be a crucial factor.

Economic models of job search provide a somewhat more elaborate justification for these expectations. Search models assume that workers influence their chances of (and time until) finding reemployment through their level of search effort (cf. Maestas and Li [2006], on which the following summary is based). Yet, while highlighting the role of individual effort, economic search models also emphasize that the optimal level of search effort is itself dependent on (demand side) factors beyond the worker’s immediate control: There is no point in searching for a new job if there are no good jobs out there. And there is little (economic) need to search for a job if public benefits make up for most of the earnings loss.

More generally, standard search models assume that workers face a (known) wage offer distribution $F(w)$, that is, a distribution of potential wage offers. The wage offer distribution essentially captures the demand side of the labor market. For example, if older workers are subject to (statistical) discrimination their wage offer distribution will be less favorable than for comparable younger workers. A worker’s search effort positively influences the arrival rate, that is, the rate at which a worker receives (random) offers from the wage offer distribution. A worker will accept a job offer if the expected utility from working at the offered wage is greater than the expected utility from remaining unemployed. The wage above which this is the case is usually referred to as the reservation wage. A worker’s reservation wage will be higher when the wage offer distribution is more favorable (because a given wage offer will then compare less favorably with potential future job offers) and when utility during non-employment is greater, for example, because of higher public benefits or private non-labor income.5

Search models assume that workers take these relationships into account when deciding on their level of search effort. As search effort entails (direct and opportunity) costs, workers will choose a limited amount of search effort. Other things being equal, they will exert greater search effort when the wage offer distribution is more favorable and when their level of well-being during non-employment is lower, because in both cases the expected gains from intensified job search will be greater. Again, this essentially means that search intensity will depend on the relative attractiveness of reemployment

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5 As noted by Maestas and Li (2006), while the terms ‘wage offer distribution’ and ‘reservation wage’ suggest a narrow focus on remuneration, the model is general enough to accommodate richer definitions of job quality and their possible interaction with worker characteristics such as health (Blau 1991).
opportunities compared to remaining non-employed and retiring earlier than planned. It also bears repeating that, despite emphasizing the (supply-side) search decision of the worker, search models do incorporate the demand side of the labor market via the wage offer distribution and the relationship between search intensity and the arrival rate. Both the wage offer distribution and the arrival rate likely differ according to individual characteristics, including age, and contextual factors. Importantly, one American study suggests that demand-side constraints may prevent older workers from becoming reemployed even if they exert considerable search effort (Maestas and Li 2006).

Chapter 3 identified several factors – (perceived) obsolescence of skills, age discrimination, and labor market boundaries – that may limit the demand for older workers. On the supply side, public and complementary (early) retirement and other benefits may often provide a financially viable long-term alternative to reemployment that younger workers are lacking. Importantly, the discussion in Chapter 3 also suggests that the salience of these factors differs between Germany and the US as well as over time. In the next section, I recapitulate the most important insights from that discussion to arrive at a set of research questions and hypotheses for the empirical analysis in the next chapter.

7.2 Institutional context and the impact of late-career job loss on employment and income: research questions and hypotheses

Chapter 3 identified various institutional differences between the US and Germany that are likely to result in very different employment trajectories after late-career job loss. In particular, displaced German workers should be less likely to return to work than their American counterparts. On the demand side, while displaced older workers presumably are in a more difficult situation than their younger counterparts in both countries, the German labor market appears especially unaccommodating. Important reasons for expecting displaced older German workers to face very limited job opportunities are a low participation in continuing training, pronounced labor market boundaries that limit opportunities for occupational mobility, strict employment protection legislation, and a ‘culture’ of early retirement that may foster ageist stereotypes and (statistical) age discrimination. On the supply side, Germany’s generous ‘welfare-sustaining early exit policies’ (DiPrete et al. 1997) can be expected to pull displaced older workers toward
retirement. This suggests the following expectation, with the label \( h_{j1} \) denoting that the hypothesis refers to the consequences of job loss:

\[
h_{j1}: \text{German workers are more likely to leave employment after late-career displacement. Americans are more likely to return to work.}
\]

\( h_{j1} \) also has obvious implications for the relative importance of different types of income among displaced older workers, suggesting the following hypothesis:

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h_{j2}: \text{German workers receive a larger portion of their postdisplacement income from public sources. American workers receive a larger portion of their income from their own earnings.}
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As discussed in Chapter 2, recent literature on household income mobility has highlighted the insurance function of income pooling within the family. The greater prevalence of two-earner families in the US (cf. Chapter 3) suggests that, on average, American workers see a greater portion of their earnings losses offset by this ‘family buffer’, as has already been shown to be the case among prime-age workers (Ehlert 2012). In the following empirical chapter, I will approach the role of family buffering in two principal ways. The first is to analyze changes in spousal labor supply, or so-called ‘added worker effects’, around late-career job loss. I will discuss this issue shortly. The second is to adopt Ehlert’s (2012) approach and compare the relative decline in displaced workers’ own earnings to the relative decline in pre-government income, that is, income after all types of private or market income, including the private incomes of other household members, have been included.

It should be noted, however, that this difference (the reduction in average relative losses through including all types of market income) is a relatively rough indicator of family buffering, particularly among older workers. This is because pre-government income includes private income that accrues to the displaced worker herself rather than to other household members. Complementary pension income presumably is the most important income of this sort, but other forms of market income (e.g., from assets) may also be crucial. Among prime-age workers, the importance of market incomes other than earnings may be quite limited, but among older workers it presumably is not, especially in the US where complementary pensions likely are an important resource for cushioning the impact of job loss. To acknowledge this fact, I will refer to the difference between individual earnings losses and
losses in household pre-government income as ‘private income buffering’, while noting that ‘family buffering’ through the market incomes of other household members is an important factor contributing to the overall extent of private income buffering.

A second reason why the difference between individual earnings losses and pre-government household income losses is an imperfect measure of family buffering is slightly more subtle. To grasp this issue, note that the most compelling conceptualization of family buffering would arguably define it in terms of a comparison of two states of the world: the actual state of the world where some (displaced) workers coreside, and pool their income with, additional household members, and the counterfactual state of the world where the same workers live on their own. This suggests that the most compelling measures of family buffering income would be based on comparing actual income changes with hypothetical income changes under the relevant counterfactual. The simplest strategy for obtaining a first approximation to the relevant counterfactual would be to exclude all income that flows to the household only because of the presence of other household members from the calculation of income changes.\(^6\) Importantly, this aggregate (i.e., income flowing to the household by virtue of other household members’ presence) should also include public pension and transfer income that accrues to household members other than the focal (displaced) worker. This differs from Ehlert’s (2012) approach to gauging family buffering which treats it as restricted to the sphere of market income.\(^7\) I considered constructing a more compelling measure of family buffering along the lines sketched above, but this was not feasible using the data at hand.\(^8\)

These issues make it difficult to pin down the precise extent of family buffering. However, with respect to the extent of private income buffering (as defined above), the greater salience of complementary pension income and greater prevalence of dual-earner couples in the US suggest the following expectation:

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\(^6\) Such an approach would of course rest on the implicit assumption that the focal workers’ income is independent of the incomes of other family members, which is unlikely to hold in practice (e.g., because the labor supply decisions of household members are interdependent).

\(^7\) Again, such an approach is more readily defensible in the case of younger workers, but the importance of public transfers such as unemployment or disability benefits for at least some younger households suggests that the more rigorous conceptualization of family buffering might lead to different conclusions even for this age group.

\(^8\) In particular, labor earnings are the only income component that is provided at the individual level by the CNEF. All other income components, including private and public pension income, are only provided as household-level aggregates.
Compared to their German counterparts, displaced workers in the US see a larger portion of their earnings losses cushioned by other types of market income, that is, by their own private non-labor income and the earnings and private non-labor income of other family members.

An analysis of changes in spousal labor supply around late-career job loss, that is, of an ‘added worker effect’ (AWE), can provide less ambiguous evidence on the role of the family in buffering income losses. As noted in Chapter 3, a generic form that the AWE might take among older couples is that of delayed retirement (cf. Coile’s [2004] study of added worker effects after late-career health shocks). Research on prime-age workers has focused on transitions from non-employment to work and on increases in work hours (see, for example, Stephens 2002; McGinnity 2004; Cullen and Gruber 2000; Ehlert 2012). Among older ‘added’ workers, delaying retirement may turn out to be more important than hours increases or entries into employment, as opportunities for the latter may be limited by the very factors that depress the employment prospects of displaced older workers themselves.

On closer inspection, the economic rationale for an AWE seems particularly compelling for older workers. As noted above, displaced older workers may be facing especially large wage scars: The wage of a working non-displaced spouse may thus often exceed the wage a displaced older worker could expect to earn after reemployment. This simple economic incentive for an added worker effect may be further reinforced by certain features of the earnings replacement benefits available to displaced older workers. Often these will be individualized insurance-type benefits that do not involve household means-testing, but have no or very limited earnings disregards (i.e., do not allow recipients to combine transfer income with earned income). For a displaced worker drawing such benefits, the effective marginal tax rate will often be much higher – that is, the net gain from earning another Dollar or Euro will be much smaller – than for his/her partner or spouse. Of course, this also applies to younger workers who receive similar benefits; yet younger workers typically have a much longer career horizon. When comparing a wage offer with the alternative of remaining unemployed, younger workers should therefore factor in that they will work in the prospective job (or in subsequent jobs that may only become available if they do not stay unemployed for too long9) for many years after their earnings-related benefits would be exhausted. The

9 This could, for example, be because long unemployment leads to depreciation of human capital or sends a negative ‘signal’ to prospective employers (Spence 1973).
shorter career horizon of older workers, by contrast, may often not extend far beyond the time when their benefits would expire.

While there may thus be compelling economic reasons for an awe, several factors may limit its empirical relevance. A first obvious (supply-side) factor is the alleged preference for joint leisure that is often invoked to explain the phenomenon of coretirement discussed in Chapter 6 (cf. Coile 2004). The role of public and complementary earnings replacement benefits may also be more ambiguous than suggested in the previous paragraph. In particular, economic literature on the awe suggests that public benefits may reduce the need for, and thus ‘crowd out’, spousal labor supply responses (Cullen and Gruber 2000). On the demand side, the very factors that depress older displaced workers’ reemployment prospects (e.g., skill obsolescence or discrimination) may also limit the scope for added-worker-type processes. As for country differences, this suggests that, if they exist at all, added worker effects should be stronger in the US (where replacement rates are lower and where the employment prospects of older workers are arguably better):

HJL 4: Increases in spousal labor supply after late-career job loss are larger in the US than in Germany.

Hypotheses HJL 1 to HJL 4 address German-American differences in the employment/retirement trajectories of displaced older workers and their spouses and in the relative importance of different income sources. It is more difficult to predict how changes in disposable income or poverty status differ between the two countries. This is because demand-side factors and the generosity of earnings replacement benefits work in different directions. As noted repeatedly, there are several reasons to expect that the reemployment prospects of displaced workers are better in the US, whereas earnings replacement benefits, including early retirement options, are more generous in Germany. While this leads to clear predictions concerning the reemployment rates and ‘income packages’ of displaced older workers, the net effect on disposable income is ambiguous.

The pessimistic perspective on the American context is that displaced older workers are in a difficult situation in any country and that late-career job loss therefore often is a devastating event that the American welfare state does little to cushion. Older workers would then be left with a choice between retiring on rather unfavorable terms and returning to work at the cost of suffering considerable wage scars. In a stylized description of the American life course regime, Mayer (2005: 37) expresses this pessimistic
view when he writes that ‘older workers can be fired easily, and on the other hand, older workers continue to work even at lower wages because of the low level of expected pension income’. The optimistic perspective is that the flexible American labor market offers reasonably good reemployment opportunities for displaced older workers and that the American approach has therefore been well-balanced, at least during the observation period of this study when the American economy was mostly strong.

The pessimistic perspective on the German context would be that welfare-sustaining policies, while being generous, have presumably not eliminated the consequences of late-career job loss altogether and are therefore at most a ‘second best’ (and costly) solution in a country whose rigid labor market provides little opportunities for displaced older workers. The optimistic perspective would be that the German approach, albeit only a ‘second best’, is much more attractive than the harsh American model of ‘market-induced employment maintenance’ (Buchholz et al. 2011) which pushes workers back into work at the cost of substantial earnings scars.

The upshot of this discussion is that it is quite difficult to formulate clear expectations concerning country differences in the impact of job loss on disposable income and I will therefore leave this issue as an open, though very important, question.

One might be tempted to hypothesize that displaced German workers are better off conditional on leaving employment after late-career job loss, as they can rely on a broader and more generous set of benefits. The rationale behind such a prediction would again be that Germany sustained much more generous programs facilitating early exit from work throughout the observation period. However, the discussion of search models in the previous section highlights the likely selectivity of the older workers’ retirement/reemployment trajectories with respect to expected retirement income. Particularly if job opportunities for displaced older workers are good, those who leave work after late-career job loss may be a selective subgroup who can expect comparatively high levels of income conditional on taking the ‘retirement path’. More specifically, if the reemployment opportunities of displaced older Americans really are much better than those of their German counterparts, Americans who retire after late-career job loss might be a selective subgroup with good access to alternative income sources.

10 In a related vein, Schils (2008) argues that early retirement in general (i.e., regardless of whether related to employment interruptions) is more selective in countries with a less generous public pillar.
This would work against the seemingly straightforward prediction that involuntary retirees suffer smaller losses in Germany. By a similar argument, even assuming that the reemployment prospects of older workers are much more favorable in the US, workers who actually return to work after late-career job loss might well be better off in Germany: Given that retiring likely is a more attractive alternative for the average displaced worker in Germany, those German workers who actually return to work may be a selective group of workers who received exceptionally good job offers. As in the case of displaced workers as a whole, it therefore seems difficult to formulate clear expectations concerning country differences in income changes by postdisplacement employment/retirement trajectory. Nevertheless, separate analysis of ‘involuntary retirees’ who leave employment and ‘returners’ who become reemployed after late-career job loss will provide interesting additional detail on the processes shaping the income trajectories of displaced older workers.

A major goal of this study is to ascertain whether recent welfare state change has led to greater economic insecurity. Chapter 3 identified several changes in welfare state programs that are directly relevant to the economic situation of displaced older workers. In Germany, financial penalties for drawing public pension benefits early rose noticeably over the course of the observation period. In the US, the shift from defined-benefit plans (which often provide generous early retirement options) to defined-contribution benefits (which are actuarially neutral by construction) has presumably raised the costs of retiring early. Finally, alternative public transfer programs such as long-term unemployment or disability benefits were also cut back, especially in Germany. These policy changes were accompanied by other reforms intended to raise work incentives (not only, but also for older workers): Prominent examples are expansions the Earned Income Tax Credit in the US (which is, however, of greater importance for households that include dependent children) and of in-work benefits in Germany.

Germany has thus clearly begun to shed its tradition of providing generous options for early retirement, thereby raising the importance of income from (re)employment for the economic well-being of displaced older workers. Institutional changes in the US, including those in the complementary pension pillars, likewise seem to have further heightened the importance of reemployment for maintaining economic well-being.

How have these changes affected the employment and income trajectories of displaced older workers? A straightforward expectation is that increased emphasis on the (re)activation of displaced older workers has actually raised their probability of returning to work:
HJL 5: Over time, German and American workers have become less likely to leave employment after late-career job loss.

Turning to period differences in the impact of late-career job loss on economic well-being, the pessimistic perspective on the German case would be that generous early retirement in Chapter 5 options are functional requirements of a system that is characterized by marked labor market boundaries and other features that depress the reemployment prospects of displaced older workers (cf. Chapter 3). This perspective would suggest that displaced older workers in Germany find it very difficult to conform to the new paradigm of late retirement. It receives additional credibility from the fact that overall labor market conditions in Germany were relatively unfavorable during the 1990s and early 2000s. Against this background, it seems likely that the economic consequences of late-career job loss have become more severe for German workers.

Recent discussions about an increase in economic insecurity suggest a similar trend for displaced older workers in the US. However, there are at least three reasons why such a prediction is less obvious in the American case: First, retrenchment of public policies cushioning the impact of late-career job loss was not as marked as in Germany, even though changes in complementary pensions have presumably raised the costs of retiring early. Second, as noted repeatedly, weaker labor market boundaries and other institutional differences arguably make the American labor market more accommodating to displaced older workers. In other words, displaced American workers should find it easier to conform to increased pressures to return to work. Third, overall labor market conditions were relatively benign during the 1990s and early 2000s and better, on average, than in the 1980s.

On the whole, these considerations suggest that the effectiveness of welfare state buffering has declined over time and that – partly because of this trend – the economic consequences of late-career job loss have become more severe, particularly in Germany:

HJL 6: Over time, public taxes and transfers (including pensions) have become less effective in buffering the economic consequences of late-career job loss, especially in Germany.

HJL 7: The impact of late-career job loss on disposable income and poverty status has become more severe over time, especially in Germany.
7.3 Previous empirical research

I will now review previous research on the consequences of late-career job loss in Germany and the United States. As in my review of research on income dynamics around retirement, I will mostly limit the discussion to longitudinal studies. In addition to research on income changes, I will also summarize studies on the consequences of late-career job loss for subsequent employment/retirement. I will also discuss a few studies of changes in spousal labor supply around job loss, even though none of them has explicitly looked at older workers.

Employment effects. Chan and Stevens (2001) study the impact of late-career displacement (at ages 50 and older) on subsequent employment in the US. They analyze men and women separately, but broad patterns are similar for both genders. Chan and Stevens find that displacement has a marked and long-lasting negative effect on employment rates. Displaced older workers have much lower employment rates than non-displaced workers for many years after job loss, even though the gap declines over time as some displaced workers become reemployed and as non-displaced workers retire. Nevertheless, for workers displaced at age 55, a noticeable gap persists until the early to mid-60s (Chan and Stevens 2001: 510, Figure 4). Chan and Stevens (2001) also analyze a subgroup of displaced workers who become reemployed quickly after displacement. These quickly reemployed displaced workers initially have lower employment rates than nondisplaced workers. Interestingly, however, their employment rates begin to exceed those of nondisplaced workers when they reach their early 60s (for workers displaced at age 55) or their mid-60s (for workers displaced at age 60). This suggests that late-career displacement induces some American workers to postpone retirement, perhaps to compensate for wage scars, foregone earnings, or lower pension claims.

In another American study, Johnson and Mommaerts (2011) compare the incidence of, and employment patterns after, job loss across age groups. They show that older workers in their 50s and 60s are less likely to experience job displacement than younger workers, yet this difference is fully accounted for by age differences in job tenure. This finding is extended by a recent study (Zhivan et al. 2012) which finds that age differentials in displacement risks have narrowed between the mid-1980s and mid-2000s and that declining age differences in employer tenure are an important
reason for this convergence." Johnson and Mommaerts (2011: 18-19) also find that reemployment rates after job loss are considerably lower for older workers. For example, they estimate that six (twelve) months after job loss 69 (87) % of workers aged 25-34, but only 58 (79) % of those aged 50 to 61 and 48 (63) % of those aged 62 and above were reemployed.

Mauer and Mosley (2009) use social insurance records to study employment and benefit trajectories of German workers who entered (registered) unemployment at ages 50 to 64 in the early 2000s. One year after entering unemployment only 21% of workers in their sample were working in unsubsidized employment relationships (Mauer and Mosley 2009: 33). Frosch (2006) uses the same data to study age differences in reemployment rates. She finds that 79% of workers aged 35 to 49, but only 67% of workers aged 50-54 and a mere 29% of workers aged 55-59 became reemployed within two years after job loss. She also finds that reemployment rates decline more steeply with age for engineers than for other occupations. Her primary explanation for this result is that, due to different rates of technological innovation, skills become outdated more quickly in engineering than in most other occupations.

Using the SOEP, Rinklake and Buchholz (2011) calculate the proportion of older workers who become reemployed following the first unemployment spell after age 50. They also compare reemployment rates across birth cohorts. They find that 23 (20) % of the oldest male (female) birth cohorts (1934-39) were eventually reemployed. For the youngest cohorts (1946-51) these proportions are 51 (52) %, which constitutes a rather dramatic increase in the propensity of displaced older workers to return to work (Rinklake and Buchholz 2011: 42, Table 2.1). However, they do not control for differences in the age at unemployment, which may partly account for these cohort differences (their observation window ends in 2007, when workers from the 1946-51 cohorts were aged 56 to 61). Again using the SOEP, Giesecke and Kind (2012) also find that reemployment rates of displaced older workers have increased in recent years. They conclude that this trend is at least partly due to changes in early retirement options.

**Spousal labor supply.** There seem to be no studies of spousal labor supply responses to job loss that have looked specifically at older workers. In one influential American study, Stephens (2002) investigates wives' responses to husbands' job loss. His sample is restricted to couples where both partners

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11 However, in terms of absolute rates, convergence is driven by declining displacement risks for younger rather than increasing risks for older workers.
are between ages 25 and 65 and he does not differentiate by age of husband and/or wife. Stephens finds modest increases in labor supply among the wives of displaced workers, which partly occur already before the displacement event. In another American study, Cullen and Gruber (2000) focus on the possibility that unemployment benefits crowd out spousal labor supply. Their sample comprises couples where both partners are between ages 25 and 54. Consistent with the crowd out hypothesis, they find that the wives of unemployed husbands work less when the husband’s potential unemployment benefits are higher. In additional analyses, they split their sample into older and younger couples (where both spouses are under 40). Their estimates suggest that the wife’s labor supply response is weaker in older couples. Cullen and Gruber tentatively attribute this result to the greater savings of older couples, which would allow them to smooth consumption without drawing on increased earnings by the wife. These two American studies have thus documented a limited awe after displacement, with one study suggesting that it may be weaker for older workers. A systematic analysis of awe-type processes among older couples, however, remains yet to be done.

Recent evidence on the awe after job displacement in Germany (and the US) comes from Ehlert’s (2012) German-American comparison of the consequences of becoming unemployed. He shows that women who did not work prior to their partner’s job loss increase their (absolute) work hours in both countries, with the effect being larger in the US. Increases in hours are smaller for women working part-time before their partner’s job loss — in Germany they are essentially zero. A further study documenting a limited awe after job loss in Germany is McGinnity (2004), who does not find an awe in Great Britain, a result that she attributes to British earnings replacement benefits being means-tested at the household level (both displaced worker and spouse thus face similar effective marginal tax rates). Prieto-Rodriguez and Rodriguez-Gutierrez (2003) provide a comparative study of added worker effects in 11 European countries. In the German case, they find an awe for wives of inactive men, but not for wives of unemployed men (perhaps because transitions to inactivity are more likely to be longer-term exits, a possibility that they do not examine more closely). Their results also suggest that the strength of the awe declines with the age of the wife, but this finding is based on a simple linear interaction of the husband’s employment status with the wife’s age.

Earnings and income effects. Research on the financial consequences of late-career displacement has primarily focused on its impact on earnings. For American men (women) displaced at ages 50 to 61, Johnson and Mommaerts
(2011: 50, Tables 10 and 11) estimate that median monthly earnings after reemployment are 21 (17)% lower than before job loss, with practically all of the change being attributable to changes in hourly earnings (as opposed to changes in the number of hours worked per month). At least among men, these losses are considerably greater than for younger workers. Regression results show that longer predisplacement job tenure is associated with greater earnings losses for both men and women, but age differences in tenure do not seem to account for a large portion of the observed age differences in wage losses. The finding that older workers suffer particularly large earnings losses confirms earlier studies such as Farber (1997), who also shows that this pattern is robust across different levels of education.

Couch et al. (2009) use administrative data to study earnings changes among workers in Connecticut who were displaced in the course of ‘mass layoffs’ during 1999-2004 and who were aged 40 and above at the time of displacement. Their results are difficult to compare with those of Johnson and Mommaerts (2011) because of the regionally specific sample and differences in study design. In particular, the approach of Couch et al. (2009) differs from Johnson and Mommaert’s in that they compare the earnings trajectories of displaced workers with a control group of nondisplaced workers. Their most important results are that relative earnings losses are very persistent, remaining considerable six years after job loss, are broadly similar for men and women12, tend to rise with age at displacement, and are larger for workers who change industry (presumably because these workers no longer see their industry-specific skills rewarded).

Turning to household income, Couch (1998) calculates that workers displaced at ages 51 to 60 in 1990 had an average annual household income of approximately $45,000 in 1991, which was 24% lower than for current workers as a whole. However, his data do not contain information on pre-displacement income, so this difference may partly reflect the fact that displacement is concentrated among low-income households. O’Rand and Hamil-Luker (2011) find that the number of times a worker is unemployed after age 50 is associated with significantly lower public and private pension income. Johnson et al. (2005) study a sample of Americans aged 51 to 61 in 1992 and investigate how exposure to adverse events affects the probability of having low income in 2001. One of their measures is an indicator variable for having been laid off after 1992. In group-specific probit regressions, the estimated effects of this variable on the risk of having low income are generally positive, but mostly small and statistically insignificant. The one

12 In absolute terms, losses are greater for men due to their higher predisplacement earnings.
exception are single men for whom the estimated marginal effect is around 14 percentage points and highly significant.

Compared to the US, evidence on the financial consequences of job loss for older workers in Germany is even more scant. There is some work on the consequences of job loss for wages or earnings (e.g., Burda and Mertens [2001]; Gangl [2004b]; Strauß and Hillmert [2011]) and a smaller literature on changes in household income and poverty dynamics (McGinnity 2004; Ehlert 2012). However, most of these studies are restricted to prime-age workers, and even when they are not, age differences are usually not explored systematically.

One noteworthy exception is Strauß and Hillmert’s (2011) recent study of earnings losses after unemployment using administrative data. They exclude workers aged 50 and older, but provide age-specific results for workers below this threshold. Results for men confirm that older workers (ages 45-49) experience greater earnings losses than younger age groups. Age differences are noticeably larger when they include spells with zero earnings in the outcome measure rather than comparing earnings conditional on employment. This suggests that there are important age differences in the length of unemployment and/or in the stability of post-unemployment jobs. Perhaps some workers who are displaced at ages 45-49 even leave employment permanently. For women, earnings losses are found to be largest in the youngest (age 30-34) and the oldest age group (45-49).

As discussed already in Chapter 5, Rinklake and Buchholz (2011) analyze SOEP waves 1984-2007 and find that the negative relationship between late-career unemployment at age 58 and absolute (inflation-adjusted) pension income is substantially stronger for the youngest birth cohort (1946-51) than for those born between 1934 and 1945.

In summary, previous research on the consequences of job loss for older workers, while not including direct German-American comparisons, does suggest that reemployment rates are substantially higher in the United States. Studies also show that even within the group of older workers, age at job loss has a strong negative effect on the likelihood of returning to work. This is not surprising because older workers have a shorter career horizon. Further, age directly influences access to early retirement benefits or the possibilities for using other resources (e.g., unemployment benefits or private savings) to bridge the time until retirement benefits become available.

In my implementation of the DID matching approach in the next chapter, I will therefore match displaced workers to comparison workers with the same age, that is, I will perform exact matching on age. For Germany, there
is also some preliminary evidence that displaced older workers have become more likely to return to work in recent years.

Research on spousal labor supply responses to job displacement has documented a limited added-worker effect for both countries. So far, no study has explicitly focused on older workers, even though some findings suggest that added worker effects may be smaller among older couples. In general, research on the added-worker effect has focused on the labor supply responses of ‘wives’ to the unemployment of their ‘husband’. This is natural given their focus on prime-age workers: Because most prime-age men already work full-time, the potential for a ‘male’ added-worker effect is very limited. Among older workers, there may be greater scope for labor supply responses by husbands: Some men might already have reduced their work hours and the added-worker effect could also take the generic form of delayed retirement. In the next chapter, I will therefore explore the existence of added-worker-type processes for both genders.

As for previous research on the earnings and income effects of late-career job loss, one clear finding of German as well as American studies is that older workers who do become reemployed tend to suffer greater earnings losses than younger workers. Given the lack of genuinely comparative studies, it is more difficult to draw conclusions about German-American differences in the impact of late-career job loss on earnings or even on household income. In addition, there is practically no evidence on how the financial consequences of late-career job loss have changed over time. To provide such explicit comparisons across space and time is the main goal of the next chapter.