STAYING, MOVING, AND VOCATIONAL TRAINING: EXPLAINING THE CAREER WAGE MOBILITY OF LOW-END SERVICE WORKERS IN THE U.S. AND W. GERMANY

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ABSTRACT

Michael A. Schultz: Staying, Moving, and Vocational Training: Explaining the Career Wage Mobility of Low-end Service Workers in the U.S. and W. Germany
(Under the direction of Arne L. Kalleberg)

Do strong vocational training systems lead to higher wages for low-end service workers over their careers? Low-wage work is growing in the advanced capitalist countries raising the question of how differences in vocational training systems affect wage mobility. Previous studies of wage mobility for low-wage workers rarely account for the influence of detailed occupations or country-level institutions. I address these weaknesses by analyzing the career wage mobility of workers in seven low-end service occupations in the U.S. and West Germany. I find that workers entering these occupations in both countries have similarly low rates of wage growth. The primary route to upward mobility in both countries is by moving occupations. Occupational mobility is lower in Germany likely due to barriers created by the strong vocational training system. This results in lower odds for upward mobility in Germany than in the U.S. for workers in the same low-end service occupation.

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LIST OF ABREVIATIONS

BLS	U.S. Bureau of Labor Statistics
Ger.	Germany
ISCO-88	International Classification of Occupations 1988
KldB-88	German Klassifikation der Berufe 1992
p25	25th percentile
p50	50th percentile
p75	75th percentile
PSID	U.S. Panel Study of Income Dynamics
ref.	reference category
SIPP	Survey of Income and Program Participation
SOEP	German Socio-Economic Panel
VET	Vocational education and training system

STAYING, MOVING, AND VOCATIONAL TRAINING

The transition to the service economy in the advanced capitalist countries of Europe, Asia, and North America is creating a new economy. For the past the 30 years, the number of manufacturing jobs had declined. Jobs in finance and business services on the high-wage end and retail, hotels, and restaurants on the low-wage end are replacing them (Wren 2013). Most of the job growth since the 2008 Great Recession in the U.S. is in low-end service occupations. Consequently, the recession may have hastened the trend towards the new economy dominated by low-wage work. Many observers are interested in how this transition to a new economy is affecting the career trajectories of the working poor (e.g. Connolly, Gottschalk, and Newman 2004, Cockx and Picchio 2012). In the U.S., low-end service occupations are low-wage, low skill, and likely dead-end jobs (Kalleberg 2011). Workers in these jobs are not expected to achieve higher wages over the course of their careers. Some evidence indicates that there is a route out of low-wage work for workers who move to and stay with firms that offer higher wages for low-skilled workers (Andersson, Holzer, and Lane 2005).

The growth of low-end service occupations is occurring in all the advanced capitalist countries. Many of these countries have stronger institutions that shape the wages, working hours, and the careers of low-wage workers than the U.S. (Gautié and Schmitt 2010). Huber and Stephens (2014) find these institutional differences are related to the level of inequality in a country. Vocational training systems, collective bargaining agreements, and unions are institutions expected to shape the wages of low-end service workers. Pontusson (2011) describes how collective bargaining is related to wage compression in the Nordic countries. Thelen (2004)

explains how vocational training systems affect skill formation and matching to jobs.

Despite these differences, cross-national studies of the careers of low-wage workers are scarce. Notable exceptions are the case studies edited by Gautie and Schmidt (2010) comparing low-wage work in several industries for 5 countries and Salverda and Mayhew's (2009) quantitative analysis of the incidence and mobility out of low-wage work in 13 countries. I begin to address this gap by modeling the wage mobility over the career for U.S and West German workers in seven low-end service occupations. My primary research question in an institutional question: Do strong vocational training systems lead to higher wages for low-end service workers over their careers? I narrow in on vocational training systems as the primary country-level institution in this study.

The seven service occupations I study are large, growing, low-wage, and low-skill in the U.S. Working in these occupations is considered a "bad job" (Kalleberg 2011:1). Most previous studies of mobility out of low-wage work ignore detailed occupations (but see Mouw and Kalleberg 2015) and analyze all workers below a given low-wage threshold. In contrast, I study the wage growth of all workers entering seven occupations over the remainder of their careers: retail salespersons, personal & home care aides, childcare workers, cleaners, waiters & waitresses, hairstylists & barbers, and general office clerks. Low-wage work spans industries and occupations, but much of the growth in low-wage work is occurring in occupations like these at the bottom of the service sector.

An occupational analysis has several benefits. It allows me to compare workers doing the same work by matching detailed occupations across countries. Low-wage workers in different countries can be in different occupations and industries. Comparing workers in the same occupation allows me to isolate returns to tenure in a particular occupation. The effect of

vocational training systems is expected primarily through higher skills and occupational tenure. As a result, an occupational approach helps me to isolate the effect of vocational training systems on wage mobility.

Previous Work on the Mobility of Low-wage Workers

Sociologists studying mobility have mostly focused on intergenerational mobility from parents to children following Blau and Duncan (1978) (see Diprete 2007 for a review). With some exceptions, most of the recent work on intragenerational mobility or the careers of workers in sociology comes from comparative life course sociologists like Blossfeld and colleagues in Germany (e.g. Blossfeld et al 2005, Blossfeld and Hofmeister 2006, Blossfeld and Bernardi 2006). Mobility in this literature is conceptualized in terms of status attainment using occupational prestige scores and/or categorical groupings of a measure of socio-economic status (Grunow 2006). Some economists use occupational prestige to study mobility as well (Connolly, Gottschalk, and Newman 2003, Knabe and Plum 2010). Sociologists using a life course perspective to study worker's careers follow Elder (2003) and emphasize either worker's transitions into and out of unemployment (e.g. Grunow 2006) or, in the case of women's careers, time out of the labor force do to having children (e.g. Aisenbrey and Grunow 2009).

In contrast, economists study intragenerational wage mobility in order to refine theories of human capital. Recent work in this area is focusing on the distinctions between firm-specific (Pavan 2011), industry-specific (Neal 1995) occupation-specific (Kambourov and Manovskii 2009), and task-specific forms of human capital (Gathmann and Schöenberg 2010, and Yamaguchi 2012). This work seeks to better understand and test the importance of different types of skills for wage growth (see Sanders 2014 for a recent review). The theory is that workers accrue each type of human capital through tenure in a firm, industry, or occupation.

Occupations can be understood as bundles of tasks. Gathmann and Schöenberg (2010) use a three-part typology of tasks: analytical (research, design, program), manual (manufacture, clean, serve), and interactive (sell, teach, manage). Their approach makes a distinction between skills that are obsolete when changing occupations (occupation-specific) and transferable skills (task-specific). In studies not making this distinction, measures of occupation-specific human capital encompass both types. The prevailing finding of this literature is that task-specific human capital and occupation-specific human capital are the most important for wage mobility. Firm-tenure produces small effects in some studies, while the effects of industry-specific human capital are negligible.

A primary interest of economists studying wage mobility is the mobility of workers out low-wage jobs (e.g. Stewart and Swaffield 1999, French et al 2005). A central question in this literature is whether low-wage jobs are stepping-stones to higher wages; in other words, that labor market attachment builds human capital for unemployed and low-skill workers (Connolly and Gottschalk 2001, Knabe and Plum 2010, Cockx and Picchio 2012). Andersson et al (2005) find that moving to and staying with an employer with a higher wage differential is a key path out of low-wage work. The importance of firms it highlighted through the distinction between high-road (Costco) and low-road (Walmart) employers (in the retail sector).

While more economists are including occupational categories in their models to account for occupation- or task-specific human capital, these tend to be broad categories. For example: Aertz and Gürtzgen (2012) and Holmes and Tholen (2013) use 6 occupational categories in their analysis. Fedorets (2013) goes one step farther and uses 1-digit codes from the German KldB-88 occupational classification system in addition to using a measure of task-difference at the

detailed 3-digit level. Yamaguchi's (2012) recent work uses detailed 3-digit occupational codes, but he models the wage mobility for all workers.

State dependence, unobserved heterogeneity, or the problem of selection is a central concern of the economic literature on mobility out of low-wage work – concerns that the related literature on poverty in sociology is starting to take more seriously (Andriopoulou and Tsakloglou 2011). The problem of selection is whether workers in low-wage jobs are selected into low-wages due to unobserved factors "such as 'ambition' or 'ability' that affect mobility" (Mouw and Kalleberg 2015:5). In reviewing this literature, Mouw and Kalleberg find that existing studies are problematic due to untenable assumptions and propose an alternative method to mitigate the selection problem (2014:5). They theorize that there are two kinds of workers moving out of low-wage jobs: (1) workers who move up quickly and are selected on unobserved characteristics and (2) workers who move up more slowly due to acquiring task or occupational-specific human capital with experience. Workers who move up due to accruing human capital likely do so by moving to an occupation with similar skills. By modeling the accrual of skill through occupational duration (positive state dependence), they mitigate the effects of selection. Mouw and Kalleberg's innovative approach is bringing together the work on task-specific human capital and mobility out of low-wage work and applying a sociological lens.

In recent years, there has been a growing resurgence by sociologists in studying intragenerational mobility and worker's careers. Sociologists are revitalizing an earlier literature that starts with Spilerman (1977) (see also Rosenfeld 1992; Abbott 2004). Maume and Wilson (2015) compare the wage mobility of workers aged 18 to 30 in the 1979 and 1997 cohorts in the National Longitudinal Study of Youth. They find that the early career wage mobility for workers in the millennial cohort is much slower than that experienced by the boomer cohort. Grunow's

(2006) finds similar results and shows that more recent cohorts are more insecure in West Germany. Maume and Wilson attribute this change to the growing precarity associated with the transition to the new service economy.

Newman (2008) studied the careers of workers who applied to a fast-food restaurant in Harlem in 1993. Starting with a sample of 294 individuals in 1993, Newman re-interviewed 103 individuals in 1997 and 40 individuals in 2002 to learn about their career trajectories. She documents that some "high-flyers" achieve high wage mobility of over $5 over 4 years from 1993 to 1997 (2008:73). Connolly, Gottschalk, and Newman (2003) use the Survey of Income and Program Participation (SIPP) to replicate Newman's qualitative sample using a nationally representative dataset. They confirm Newman's original findings. In the SIPP analysis, 11% of male and 13% of female metropolitan food workers from poor near poor households are high flyers in the 1990s. The number of high-flyers increases to 19% and 17% when all non-management workers in poor or near poor households are included. Mouw and Kalleberg (2015) find a similar level of mobility out of low-wage work in the U.S. In their analysis of SIPP data, 16% of low-wage workers making below $11 an hour escape from working poverty over a three-year period. A pathway out of low-wage work appears to exist for some workers in the U.S., but most low-wage workers remain in low-wages.

Newman's (2008) in-depth interviews reveal the importance of family context and the different pathways high-flyers take to achieve higher wages. Family support helps workers remain in the labor market and acquire the job tenure and career experience needed to move to higher wages. In Newman's sample, stable families help individuals achieve stable employment, a key determinant of wage mobility. Women who were able to use family for childcare were more likely to remain in the labor force. Newman documents five strategies high flyers used to

move out of low-wage work: internal labor markets, inter-firm occupational mobility, education credentials, union jobs, and government jobs. The first three are forms of human capital development: firm-specific skills, occupation-specific skills, and by completing higher educational credentials. Union jobs and government jobs on the other hand offer higher-wages and employment stability do to the firm institutional environment, including negotiated collective bargaining agreements and seniority systems.

A comparative literature in sociology and political economy describes the importance of institutions for shaping work outcomes. These comparative institutional studies of work and careers build off the work of political economists and political scientists in the comparative welfare state (e.g. Huber and Stephens 2001, Esping-Anderson 1990) and varieties of capitalism (Hall and Sockice 2001, Thelen 2014) literatures. Gangl (2006) finds that labor market structure, unemployment insurance, and employment protection legislation strongly influence whether unemployment results in decreased wages. Mason and Salverda (2010) find that countries with stronger labor market institutions have lower amounts of low-wage work. This evidence collaborates the industry case studies in the same volume (Gautie and Schmidt 2010). Stronger country institutions also matter for the level inequality (Huber and Stephens 2014) and poverty (Brady 2009) in a country. Brady et al (2013) in a comparative study of states in the U.S. find that "unionization is the most important state-level influence on working poverty" (2013:889). This finding suggests that unionization has spillover effects beyond the direct effect of raising the wages of unionized workers. Iversen and Stephens (2008) and Busemeyer and Trampusch (2011) describe differences in education systems, including vocational training between countries and describe how these differences shape human capital formation.

Cross-national studies of wage mobility out of low-wage work are scarce. Most studies of

wage mobility focus on one country (Stewart and Swaffield 1999; Andersson et al 2005, Cockx and Picchio 2012, Holmes and Tholen 2013, Mouw and Kalleberg 2015). Exceptions are recent studies by Salverda and colleagues (Salverda and Mayhew 2009; Mason and Salverda 2010). Salverda and Mayhew (2009) is a follow-up article that builds on Mason and Salverda's (2010) book chapter (published later) in *Low-wage work in the wealthy world*. They use data from Panel Study of Income Dynamics and the European Community Household Panel from 1994 to 2001 to study the mobility out of low-pay work in 14 countries, including the U.S. and Germany. Low-pay work is defined as work below 2/3rd the median income. Salverda and Mayhew (2009) find that from 1995 to 2001, the percentage of low-pay workers moving out of low-pay is 41% in the U.S. and 25.6% in Germany. Their analysis indicates that there is a weak relationship between the incidence of low-pay in a country and the mobility rate out of low-pay.

Research Design

I first model wage growth over the career for workers in 7 low-end service occupations in the U.S. and West Germany. I use quantile regression to explore the variation in wage trajectories of workers at the bottom, middle, and top of the distribution. I then model upward mobility of workers in these low-end service occupations out of the bottom two quintiles of the full-time hourly wage distribution for both countries. Comparing the results from the U.S. and West Germany allows me to answer my primary research question: do strong vocational training systems increase the wages of low-end service workers over their careers? The U.S. and Germany are good cases to answer this question about the advanced capitalist countries. The vocational training system in the U.S. is weak and mostly non-existent in the service sector,

while the vocational training system is strong a central part of the German education system even in the service sector (Thelen 2004; Protsch and Solga 2015).

I make two primary contributions to the existing literature: (1) I compare the effect of vocational training systems on the wage growth and upward mobility of low-wage workers; and (2) I use detailed occupations to model wage growth and upward mobility over the career. Most previous research on mobility out of low-wage work is of a single country and does not study institutional differences across countries. Recent work using detailed occupations to study mobility focused on mobility between pairs of occupations and not over the career (see Mouw and Kalleberg 2015). Furthermore, my cross-national comparison moves forward the debate over whether low-wage work is a stepping stone or a trap by explaining the effect of vocational training systems on wage mobility.

An Occupational Approach

I selected the 7 occupations in the study because they are large, growing occupations with low wages and education requirements in the U.S. (see Table 1). These 7 occupations are meant as a descriptive look at growing low-end service occupations and are not intended to be an exhaustive list. Occupations are harmonized across U.S. and German occupational systems. The result is some detailed occupations in the Bureau of Labor Statistics (BLS) data are combined together to make the harmonized occupations shown in Table 1. For example, the occupation personal and home care aides in the study combines the occupational categories of personal care aides and home care aides from the BLS classification system together (see Appendix A for more on the harmonization process).

There are several benefits of using detailed occupations to analyze the wage mobility of low-wage workers. First, detailed occupations allow me to study whether occupational tenure

translates into higher wages. Human capital theorists predict that workers accrue occupation-specific and task-specific skills by working in a given occupation (Gathmann and Schöenberg 2010). Higher occupation-specific skills could result in higher wages as workers are rewarded for higher skills and productivity. Occupations are bundles of tasks and as such some occupations can be arranged on a gradient of similarity in task-specific skills. The stepping stone argument is that low-wage workers can accrue task-specific skills and then move to an occupation with similar tasks. If this new occupation pays higher wages, then this is a route to upward mobility. The trap or dead-end hypothesis is that workers in low-wage occupations are low-skill and so workers do not accrue any valuable occupation- or task-specific skills. As a result, workers will remain in or churn between similar low-wage, low-skill occupations. The workers who achieve upward mobility in the dead-end job scenario do so by moving to an occupation with a dissimilar skill profile.

Second, studying the mobility of all workers in an occupation highlights the possible variation within a particular occupation. An occupation could be a stepping-stone for some types of workers and not others. While on the whole these are low-wage occupations, some workers in these occupations may have higher wages possibly as a result of a 'high-road' firm strategy. The literature has often studied the hardest case (the lowest paid workers) to answer questions of human capital theory and overlooked the variation within the occupations where the low-wage jobs are.

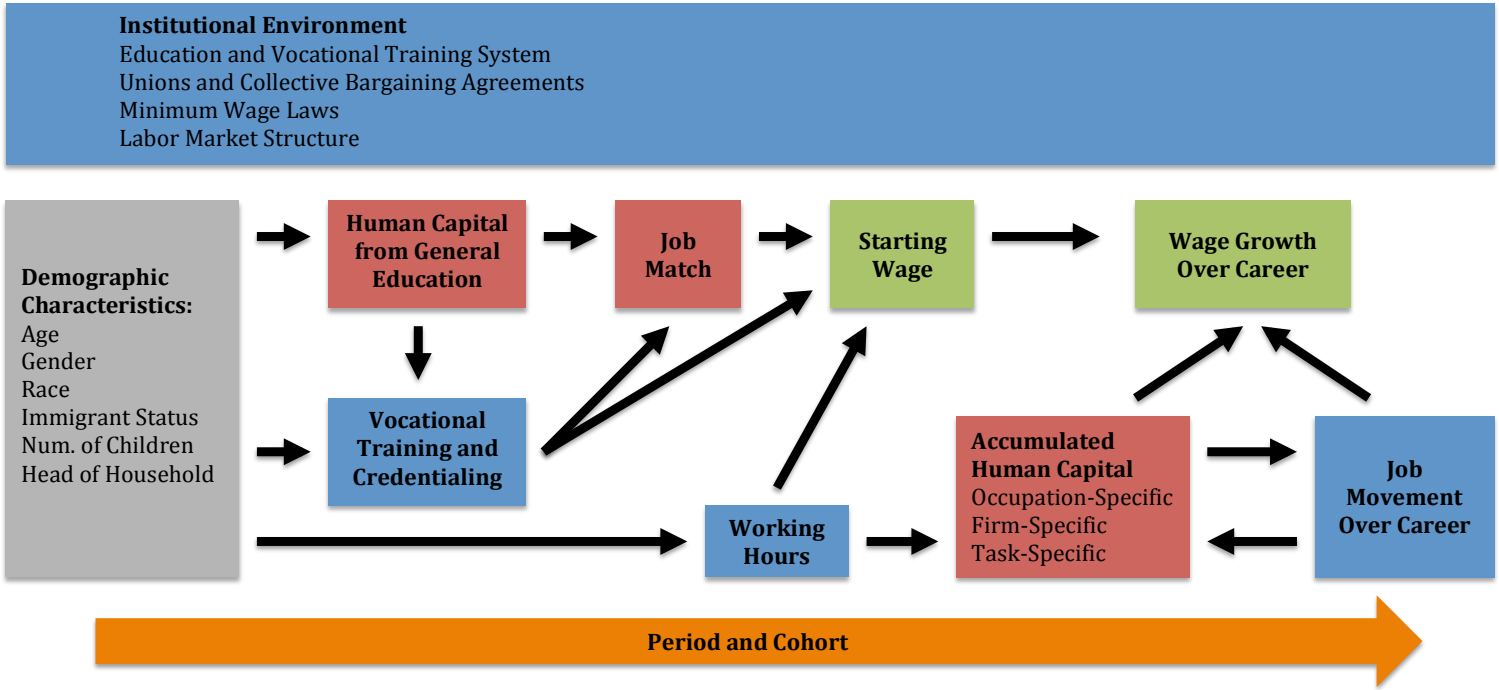
Finally, when comparing across countries it is important to use detailed occupations to compare the same work. While growth in low-end services in a cross-national phenomenon, the shape of labor markets differs across countries. Low-wage workers may be in different occupations and industries. Detailed occupations allow me to isolate the same work and compare

Table 1: Wage, employment growth, and modal education for 7 large, growing low-wage occupations in the U.S

Harmonized Occupation Title	Median Hourly Wage [1]	Annual Median Wage [1]	Total Emp. 2012 (1000s) [2]	Total Est. Emp. 2022 (1000s) [2]	2012-2022 Growth (1000s) [2]	2012-2022 Growth % [2]	Typical Education [3]
Personal and Home Care Aides	$9.85	$21,423	1,032.9	1,535.4	502.5	48.7%	High School Diploma or Less
Waiters and Waitresses	$8.87	$23,549	2,665.8	2,942.6	276.9	10.4%	High School Diploma or Less
Childcare Workers	$9.42	$22,480	1,312.7	1,496.8	184.1	14.0%	High School Diploma
Cleaners	$10.45	$20,044	1,879.3	2,111.0	231.7	12.3%	High School Diploma
Hairstylists and Barbers	$11.16	$28,040	663.3	746.6	83.4	12.6%	Post-Secondary Certificate
Retail Salespersons	$10.16	$21,140	4,447.0	4,881.7	434.7	9.8%	High School Diploma
Office Clerks, General	$13.49	$22,160	2,983.5	3,167.6	184.1	6.2%	High School Diploma

[1] Bureau of Labor Statistics' (BLS) Occupational Employment Statistics (OES) May 2013 [2] BLS Employment Projections 2012-2022 [3] BLS O*Net

Figure 1: Wage mobility conceptual framework



how the careers of workers differ across institutional contexts.

Conceptual Framework

My conceptual framework is presented in Figure 1. Wage growth over a worker's career is a result of accumulated human capital and institutional environment and varies by demographic characteristics that reflect different choices, privilege, and discrimination. Human capital is accumulated through education and work experience. Full-time workers accrue more human capital than part-time workers and this is reflected in starting wages and wage growth. A worker's choice to move occupations and/or firms influences her wage growth over her career. Staying with the same firm or occupation will likely return rewards to gained skill. Moving firms within the same occupation likely results in higher wages as firms compete for a worker's skills. Moving occupations could result in higher wages if the destination occupation utilizes a worker's accumulated task-specific skills. It could also result in lower wages if firm-specific human capital is not-transferrable when moving to a new firm or if the worker moves to an occupation with dissimilar task-specific skill requirements.

Gender, race, and immigrant statuses influence human capital formation through differential educational attainment, labor market attachment, and discrimination. The number of children in the household and whether the worker is the head of the household combine with gender to influence whether a worker works part-time or exits the labor force. Worker preferences and household types are different between the U.S. and Germany and could be a primary source of differences in wage mobility between countries. Discrimination might result in a higher probability that minority groups experience more spells of unemployment do to bad job

matches. The social construction of racial and ethnic categories varies significantly between the U.S. and Germany. This makes comparisons difficult and problematic.

The institutional environment is an important feature that shapes how individuals are matched to jobs and the wages and wage mobility they obtain over the course of their careers. Labor market institutions aren't independent. The presence of unions affects the education system. A strong vocational education system can reinforce support for collective bargaining agreements. The structure of the labor force shapes the jobs available and is shaped by the supply of workers with different skills. Institutions change over time and affect a worker's steps from education to job, to job trajectories and wages over her career. The education system affects the type of human capital created from education and vocational training. Unions and collective bargaining agreements affect the matching of workers to jobs and their starting wages and expected working hours.

The shift to the new economy is changing the structure of the labor market. The shifting occupation structure may be increasing the supply of available workers to low-end service work even as the size of these occupations increases. As a result, wages may be driven down over time relative to rising median wages without intervention from strong minimum wage laws or collective bargaining agreement. Economic conditions could operate as period effects. Connolly, Gottschalk, and Newman (2003) present evidence that the number of high-flyers is stable across different economic environments.

Age and cohort effects are expected. A worker in earlier cohort experiencing unemployment due to the transitioning economy in mid-life may remain stuck in low-wage work if his previous skills are obsolete. More recent cohorts are receiving higher levels of education. This potentially improves their ability to move between jobs until finding a good firm or

occupation match in which to accrue firm- or occupation-specific human capital. In Germany, the deterioration of collective bargaining agreements could be having a downward effect on wages and the skill profiles of low-end service occupations with more recent cohorts.

Vocational Training in the U.S. and Germany

The strength of the German vocational education and training (VET) system has traditionally been in the craft and manufacturing sector. However, by 1980 half of the apprenticeships in West Germany were in service occupations (Protsch and Solga 2015). So, the German vocational training system began several decades ago to adapt to the service expansion. In 2011, Protsch and Solga the number of apprenticeships in service occupations had increased to 59% in West Germany. The increase from 1980 to 2011 is mostly the result of a decline in the number of apprenticeships in crafts and manufacturing and is not due to a growth in the number of apprenticeships in the services. A lingering weakness of the German VET system is an inability to attract more employers in the service sector to take on apprenticeships. As a result, a growing proportion of students (22% in 2013) where in a school-based only VET program that consists of occupations in agriculture, trades, and domestic services (Protsch and Solga 2015). So many of the workers in the low-end service occupations in this study are expected to have vocational training credentials.

The U.S. vocational training system is weak and almost non-existent when it comes to service occupations. A notable exception is the apprenticeships in U.S. auto industry. The U.S. education system develops general skills and then relies upon on-the-job training (Iversen and Stephens 2008). Occupational licensing can serve a similar function as vocational training by requiring specific training. Hairstylists and barbers are an example of a low-end service occupation in my sample with strong occupational licensing in the U.S.

My primary research question is an institutional question. I am interested in the overall effect of the vocational training systems (following Allmendinger 1989) on workers' wages. A strong vocational training systems should increase wages by increasing occupational tenure and occupation-specific skills. There are two theories for why strong vocational training systems would increase occupational tenure. The first is a strong vocational training system results in a more structured and credentialed labor market (Protsch and Solga 2015). This results in more barriers to entry into jobs which limits occupational mobility and increases occupational tenure. A second theory is a strong vocational training system creates a better match between workers' skills and jobs. The better match is expected to result in workers voluntarily staying longer in their current position which will increase occupational tenure. However, Witte and Kalleberg (1995) found that workers with apprenticeships in Germany were less likely to report that their training matched their job. They theorize that this is because apprenticeships provide general skills, as opposed to specific skills as predicted by this theory. General skills are more applicable when changing occupations which is how Witte and Kalleberg explain why apprenticeships provide more opportunity for occupational mobility. Witte and Kalleberg's findings suggest that job match for workers may not be as significant a factor in increasing occupational tenure.

Another way stronger vocational training systems could increase wages and wage growth for low-end service workers by up-skilling traditionally low-skill occupations. Employers could arrange the tasks within an occupation to increase the skill profile of the job in order to match the increased training. One approach would be to give workers' more autonomy and responsibility in job tasks. Increasing the skill profile of the job could result in higher wages and higher wage growth for returns to skill over time. Similar to the approach of a high-road firm strategy,

increasing the skill of these occupations could lower employee turnover and reduce the number of needed employees and offset the cost to employers of paying workers higher wages.

A stronger vocational training system could also more effectively sort workers into jobs (Arrow 1973). Students in Germany are tracked after grade 4 or 6 into the lower secondary school (Hauptschule), intermediate secondary school (Realschule), or upper secondary to obtain the university entrance degree (Arbitur). There is a strong relationship between secondary school degree and the type of vocational training program a student is able to enter (Protsch and Solga 2015). If this sorting is meritocratic, then it could be that those workers with the least aptitude end up with the lowest credentials and in the lowest-paid jobs - like the low-end service occupations in this study. In contrast, in a country like the U.S., where the education system is more open and focused on general skills, there may be more opportunity for a person to be wrongly sorted based on their education credential. As a result, more workers with higher ability could find their way into low-wage jobs. Higher ability workers would be expected to have a much higher rate of upward mobility. An employer is more likely to promote a worker with higher ability faster. Similarly, a worker may realize she has higher ability and be able to find a different job that better matches her skills. So, a higher mobility out of low wage work in a country with a less structured labor market could be because more workers with high ability become low-wage workers before moving on to jobs that better match their skills.

Other Important Institutional Differences

There are several other important institutional differences between the U.S. and West Germany other than the vocational training system that may affect the mobility of low-end service workers. Recent work integrates the varieties of capitalism (Hall and Soskice 2001) and welfare state typologies (Esping-Andersen 1990 to create three ideal types of advanced capitalist

countries: a Nordic type (e.g. Sweden, Denmark), a Liberal type (U.S., U.K.), and a Continental type (e.g. Germany, France) (see Huber and Stephens 2001, Schröder 2009). The Nordic countries are known for their universal welfare state and strong unions. Thelen (2014) describes how even when Nordic countries liberalize they do so in a way that strengthens social solidarity rather than creating duality. In the Liberal countries, unions and employment protections are weak and the welfare state uses a market logic that results in targeted, means tested benefits.

Continental countries are known for traditionally strong unions that negotiate strong collective bargaining agreements for higher wages, leave and other benefits, and employment security. The welfare state is Bismarkian and built around a male breadwinner model with employers making important contributions to the system along with the government. Palier (2010) finds that union membership and collective bargaining coverage are waning in the continental countries. Gautie and Schmidt (2010) find low-paying work is growing. The result of these changes is labor market dualization or segmentation where labor market insiders obtain high wages and employment security and outsiders work in low-wage, flexible arrangements (Palier 2010; Thelen 2014). The Continental welfare state faces challenges in adapting its male breadwinner- orientated model to the needs of workers to balance work and family and to mitigate the greater risks of unemployment in the new economy, particularly for single parent households (O'Connor 2015). In response, new reforms to the welfare state in Continental countries have introduced targeted programs with lower benefit levels and work requirements. Palier (2010) describes this reform as creating a dualization in the welfare state with different benefits for labor market insiders and outsiders.

The U.S. is a prototypical Liberal country in the typology. Unionization rates continue to decline, particularly in the private sector. Service workers have proven difficult for unions to

organize and so most workers in low-end service occupations are not in a union or covered by a union contract. Minimum wage laws are the primary institution shaping the wages of low-end service workers in the U.S. As a result of not being indexed to inflation, most increases in the minimum wage occur on an ad hoc basis at politically opportune moments. The federal minimum wage has deteriorated over the last several decades and was particularly low in the 1980s. States are able to set their own minimum wages many of which are higher the federal minimum wage.

Union strength has been historically strong in Germany, but the percentage of workers in a union is now less than a third of the workforce (Pontusson 2011). Nevertheless, industry-wide collective bargaining agreements still cover most workers in Germany. These agreements should have the same effect as minimum wage laws in the U.S. and raise the wage floor for low-end service workers. In recent years, these collective bargaining agreements have begun to erode. Sub-contracting to contractors not covered by the agreements has become more common in the low-wage sector. Germany used tax policy to create untaxed 'mini-jobs' for part-time workers at a fixed low-wage rate (Gautie and Schmidt 2010). Many women who are the secondary earners in their household find these mini-jobs attractive. These changes help explain the growth of low-wage work in Germany since the 1990s (Salverda and Mayhew 2009). In response, Germany approved the country's first minimum wage in 2014.

A major difference for low-end service workers in the U.S. in Germany is their ability to get health insurance. All Germans receive health insurance through a de-centralized system of sickness funds that receive employer, employee, and government contributions (Huber and Stephens 2001). Most workers in the U.S. have health insurance through their employers. The tax structure incentivizes this practice by not taxing employer contributions to health insurance.

As a result, employers offer benefits to medium- and high-wage workers instead of wage increases. However, most low-end service workers lack employer-sponsored health insurance and other benefits including retirement, paid sick leave and vacation time (Kalleberg 2011). Because the jobs are low-wage and low-skill, employers gain little from offering benefits and workers lack the power to bargain for higher wages and/or benefits. Workers without health insurance through their employer can buy insurance through the market or be covered through a spouse's employer plan, but at a high cost. The passage of the Affordable Care Act in 2010 has begun to remedy some of these gaps in coverage.

Another important difference between the U.S. and Germany is women's labor force participation and attachment. In this U.S., the dual-breadwinner model is the norm with most women working full-time (O'Connor 2015). However, homophily in marriage and partnership is common in the U.S. This means that low-end service workers are likely to be partnered with a worker with a similar level of education and earning power. Women in Germany are more likely to work part-time than their U.S. counterparts and are more likely to rely upon their partner as their primary breadwinner. O'Connor (2015) calls this the one and a half breadwinner model with women working part-time as the half part of the model. This raises the possibility that many more women in Germany are choosing to take low-paying service jobs, as typified by the tax-incentivized mini-job for part-time work, for reasons of fit or work-family balance. For these workers, developing their skills and achieving higher wages over their careers may not be the goal. So, low-end service workers in Germany could be better off then their American counterparts even if they have lower wage mobility. In this type of arrangement, the low-wages and lack of some benefits of a low-end service job could be offset by flexibility in work schedule. Furthermore, if her partner earns higher wages and receives benefits, then a low-end

service worker in Germany could have a higher household income and greater household economic security than a similar worker in the U.S.

In this paper, I study the wage growth and wage mobility of low-end service workers in the U.S. and Germany. However, the welfare state literature reminds us that wages are only part of the story. Studying wages masks cross-national variation in health insurance and other benefits. So, low-wages or even similar rates of mobility do not necessarily mean that low-end service jobs are equally bad for the individual workers across countries. As Kalleberg (2007) points out, workers may choose jobs that fit their needs for flexibility, geographic proximity, interests, or many other characteristics. Comparing other aspects of job quality, including subjective measures like job satisfaction and objective measures like task repetition and benefits, is beyond the scope of this paper.

Furthermore, low-wages do not necessarily equate to poverty. Households share income and resources and make shared labor market choices. So, poverty and other measures of relative deprivation are measured at the household level. Low-wages are also more likely to lead to poverty in the absence of health insurance and other benefits. Using household budgets or other methods to incorporate households is also beyond the present analysis. However, cross-national researchers of low-wage work should seek to address this problem in future research.

Hypotheses and the Problem of Selection

I hypothesize that the strong vocational training system in Germany will result in longer occupational tenure for workers in low-end service occupations than in the U.S. I theorize that this longer tenure results from barriers to occupational mobility due to the high level of credentialing as a result of the vocational training system. Longer occupation tenure should allow workers to accrue more occupation-specific skills and result in higher wages. If the vocational

training system has resulted in these occupations being up-skilled, then I expect a higher starting wage and a higher rate of wage growth for low-end service workers in Germany. Stronger collective bargaining agreements in Germany could also account for a higher wage floor in Germany than in the U.S. A similar rate of wage growth in the same occupation across countries would indicate that the returns to a year of experience are the same.

Workers with longer occupational tenure in a low-end service occupation develop more task-specific skills. So, I expect that workers with longer occupational tenure should be more likely to use the low-end service occupation as a stepping-stone to a better paying occupation. Since occupational tenure is higher in Germany, the use of low-end service occupations as stepping-stones should be higher in Germany. I am not able to directly test the skill similarity between a worker's origin low-end service occupation and the destination occupation for worker's who moves occupations. I plan to incorporate such a test in future work. However, if a longer occupational tenure in a low-end service occupation increases wage growth for a worker after she moves to a new occupation, this is evidence that there was some benefit to tenure in the low-end service occupation. While indirect, returns to occupational tenure in a low-end service occupation suggest this occupation was used as a stepping-stone.

High rates of movement out of a low-end service occupation could be an indication that workers understand the job as a dead-end with limited opportunity for upward mobility. In this case, a vocational training system that limits mobility between occupations may further trap low-end service workers in low-wage jobs. If low-end service occupations are dead-ends, there are several ways to account for the workers who achieve upward mobility. First, select workers could be using the occupation as a transition to the labor market. For example, a recent college graduates could enter a low-end service occupation to pay the bills while they look for a better

job. Younger workers and overqualified workers (with a college degree) are the most likely to use low-end service jobs as a temporary transition. These workers are expected to move quickly to an occupation that more closely matches their education and pays higher wages. The occupations these workers move to are likely to be highly dissimilar in the task profile when compared to low-end service occupations.

Second, workers could realize these occupations are dead-end and increase their education to achieve higher wages. Similar to the workers using the job as transition to the labor market, after increasing their education they are likely to move quickly to another occupational that utilizes their new credential. Finally, workers selected on unobserved characteristics like ambition or ability not captured by education credentials are more likely to upwardly mobile. As described earlier, the upward mobility on unobserved characteristics could be higher in the U.S. if the vocational training system in Germany more effectively sorts workers with unobserved characteristics into the different schools where they obtain different credentials and job opportunities. Workers with unobserved skills should achieve wage growth and mobility more quickly as employers recognize and reward their skills in the same occupation or workers recognize their ability and move to a job that is better suites their skills and ability.

If low-end service occupations are dead-end jobs than workers who achieve mobility do so quickly and move to occupations more dissimilar skills profiles. This fits with Mouw and Kalleberg's (2015) theoretical framing and analytic approach to dealing with the problem of selection on unobserved characteristics. They define a "dead-end job" as one where the accrual of skill does not result in increased probabilities of mobility (Mouw and Kalleberg 2015:10).

In my models, I control for current education level and increases in education attainment. I cannot control away selection based on unobserved characteristics. Yet, by looking for a

positive duration dependence leading to wage growth or mobility, some of risk of bias from selection on unobserved characteristics is mitigated. This is because the biasing effect of unobserved heterogeneity is downward, so any positive duration dependence is not a result on unobserved heterogeneity. Mouw and Kalleberg use a measure of skill similarity between pairs of occupations to verify that higher wage mobility after occupational change is a result skill transfer. I recently obtained a comparable measure of skill similarity between pairs of occupations in Germany, but have not yet been able to incorporate this measure into my analysis. However, by seeing if there is an effect for occupational tenure in the initial occupation on wage growth or mobility, my analysis can suggest whether workers moving occupations and achieving mobility are using low-end service occupations as stepping-stones.

Data and Methods

The data for my analysis come from the Panel Study of Income Dynamics (PSID) for the U.S. and the Socio-Economic Panel (SOEP) for Germany. I use the odd years of the survey from 1985 through 2007. The PSID moved to surveying respondents every other year starting after 1997. Occupational and firm moves are central to my analysis and so I drop the even years so all moves are observed over equal two-year periods. 1985 corresponds to the first odd year of available data from the German SOEP. Since I do not have data that extends through and beyond the global financial crisis I end my analysis in 2007 in order to not introduce the effects of the crisis into my analysis. Workers enter my sample when they enter one of the 7 low-end service occupations in the study during the odd years of the observation period from 1985 to 2007. I exclude all workers from East Germany because of the different wage structure in East Germany and the lack of observations spanning the whole observation window. A limitation of the analysis I present in this paper is the high degree of missing data. This is true particularly on my

key variable of interest hourly wages (calculated from monthly earnings and average hours worked a week) as well as covariates like firm tenure. My analysis could be improved by using multiple imputation to address this issue.

I use hourly wages to account for differences in full-time working hours between countries. I normalize each worker's hourly wages to the country median hourly wage using a 3-year rolling average of all workers in the PSID and SOEP. An alternative approach is the use the Purchasing Power Parity that compares the buying power of different currencies based on a standard basket of goods. However, this measure has been criticized because what goods people buy varies across countries based on difference in consumption behavior. Using the median hourly wage to normalize wages is more akin to relative poverty measures as it measures the relative distance to a median person in the country. This is appropriate since the concern over low-wages is usually that they produce working poverty.

The U.S. and German education systems are structured differently. I use a 3-category schema to harmonize education credentials across countries. The first category is workers with a secondary school education or less and no vocational training. In the U.S., this includes workers with a high school diploma or equivalent or less and workers with some college, but no college degree or vocational training credential. The second category is workers with a secondary school education and vocational training. In the U.S., this includes workers with a high school diploma or equivalent or less and all workers with a vocational training credential, but no college degree. The final category is all workers with a college or university degree or higher. In the U.S., this includes workers with an Associate's degree. I follow Solga (2004) in highlighting the distinction between workers in Germany with and without vocational training credentials. Solga finds that these workers are stigmatized much like high school dropouts are in the U.S. with

employers not considering workers without the requisite credential. I include this education variable in all my models, but I do not expect that workers with or without vocational training will achieve higher wage growth or upward mobility. This is because education credentials are used to sort workers into jobs. Since I am selecting all workers already in low-end service occupations, I do not expect differential returns to education. I do expect that workers with college degrees, who are likely using as transitional jobs into the labor market, will achieve higher wage growth and upward mobility.

The focal part of my analysis is modeling human capital acquisition. I include whether a worker is working part-time or full-time, since part-time workers accrue less human capital from experience. I model increases in education and a spells of unemployment two years previously, since educational credentials and unemployment spells are important signals to employers of skills and employability. I am not able to account for the reason for unemployment spells. As such, workers who are unemployed could also be out of the labor force by choice, for example a parent could be taking time out of the labor force with young children, or as a result of job loss.

Since I dropped all the even years of the data due to the survey gap in the PSID, two years ago is the previous observation in the sample. As a result, my measures of occupational tenure, firm tenure, and occupational and firm moves are measured over 2 year intervals. I distinguish between occupational tenure in the initial low-end service occupation and occupational tenure in the current occupation where appropriate. In the wage growth models, I distinguish between voluntary and involuntary firm and occupation changes. Voluntary changes are changes where workers obtain the same wage level or an increase in the new occupation or firm, while involuntary are changes with a wage decrease. The two-year gap in measurement likely means that some workers experienced unobserved spells of unemployment between firm

or occupation changes. Workers are unlikely to move jobs and reduce their wages voluntarily. However, some workers may choose a new job for reasons of job match that I cannot account for. In the wage growth models, I allow for the occupation and firm change effects to last for 2 observation periods (4 years) as workers may receive a wage increase or decrease when changing occupations or firms that would then dissipate over time.

I model variation among demographic groups and household status. I include measures of age started in the given low-end service occupation, gender, race or ethnic group, martial status, a dummy for children in the household, and a dummy for not married with children. The race or ethnicity variables differ for West Germany and the U.S. In the U.S. models, I use a dummy variable for white or non-white. In West German models, I use a dummy variable for Western European ethnicity or not. I include these variables in an attempt to see whether dominant racial or ethnic groups enjoy privilege or status of higher wage mobility even out of low-wage work. The household composition variables are important to control for differences in household composition between countries. Women (and particularly married women with children) are more likely to work part-time in West Germany than in the U.S.

I first present results from a pooled analysis of all 7 low-end service occupations. Results are available for each occupation individually. The trends I describe characterize them all. While pooled, movement out of the low-end service occupation could include moving to one of the other 6 occupations in the sample. I achieve this by isolating all workers in a given low-end service occupation and creating the requisite variables for occupational tenure and occupational moves. I then combine these separate datasets together for the analysis. As a result, some workers may be represented in the data more than once if they entered more than once of the low-wage occupations during the observation window.

I present two methods to answer my research question: quantile regression of wage growth and discrete-time event history analysis of upward mobility. I make use of quantile regression as a form of growth curve analysis. A growth curve model predicts the average worker across the attributes in the model. In contrast, quantile regression allows me to model wage growth of low-end service workers at the 25^{th}, 50^{th}, and 75^{th} percentiles. I include estimates from a growth curve analysis along with the quantile regression estimates in Appendix B. Quantile regression allows me to explore how wage growth trajectories differ at the bottom, middle, and top of the distribution.

There are three benefits of using a wage growth method over the event history mobility method. First, I am able to include all workers in the 7 occupations in my analysis. The mobility method requires using a wage threshold and as a result all workers must start below the threshold, which hides variation within the occupation in terms of wages. Second, using a threshold hides differences in starting position relative to the threshold. As Salverda and Mayhew (2009) note, low-pay workers in some countries like the U.S. start much farther from the threshold than workers in other countries. Third, the growth curve method allows me to differentiate between factors influencing the level and slope. I first model the wage growth of workers while they remain in the initial low-end service occupation. I then separately model the wage growth of workers who move occupations after the change occupations and through all remaining observations in the survey data. These models predict logged normalized hourly wages. Separate models for wage growth for workers in the initial occupation and after a move from the initial occupation allow me to more clearly show the effects occupational tenure (and by extension the vocational training system) on wage growth.

In the second set of models, I present results from a discrete-time event history analysis predicting mobility out of the bottom two hourly wage quintiles for low-end service workers. The primary benefit of this method is the same as the weakness I cited above. By isolating only workers at the bottom of the hourly wage distribution, I am better able to discern the effects of occupational tenure for achieving upward mobility into the middle of the distribution. In addition, I model the effect of the time in the initial occupation and occupational moves on upward mobility. The benefit of event history method over logistic regression is the ability to control for right censoring due to sample attrition. This allows me to distinguish between stepping stone and trap forms of mobility.

I use the hourly wage distribution for full-time workers in the PSID and SOEP to create quintiles. I conceptualize upward mobility as receiving the wages of a standard worker and so I use the distribution for full-time workers. The result is a threshold that is higher than the traditional cut-off of 2/3rds the median wage for low-wage work. The bottom quintile cut-off is 73.5% and the second quintile cut-off is the median hourly wage (100%) for all workers in U.S. The cut-offs for W. Germany are 73.3% for the bottom quintile and 91.6% for the second quintile. The higher second quintile cut-off point for the U.S. is likely a reflection a larger gap in hourly wages between part-time and full-time workers in the U.S. than in W. Germany. Wage compression due to a higher wage floor from collective bargaining agreements is a possible explanation. In the future, I plan to re-do my analysis for different wage thresholds to check the robustness of my results.

Results and Discussion

Table 2 provides descriptive statistics for workers starting in the 7 low-end service occupations in the U.S. and West Germany. As expected, the occupation duration or tenure is

much shorter than in the U.S. The median worker in these occupations in the U.S. stays in the occupation less than 2 years. In Germany, the median worker stays much longer at 6 to 8 years. I use survival analysis to model these occupational durations to account for right censoring. Waiters and waitresses are the one occupation of the 7 in Germany with similar occupation duration as the U.S. This is possibly a result a higher percentage of young, college educated workers using this occupation as a transitional job. Similarly, education credentials differ as expected with most U.S. workers in these occupations having a high school education or less without vocational training. In Germany, it is reversed with most having secondary school with some vocational training credential. There are a mildly higher percentage of workers in these occupations in Germany with a college or university degree (12% to 8%). This suggests that more workers use low-end service jobs as transitional in W. Germany than the U.S.

Table 2: Descriptive statistics for workers starting in low-end service occupations

	U.S.	W. Ger.
N	3431	2041
Median Occ. Duration (years)	**0 to 2**	**6 to 8**
Mean Normalized Wage	62 (44)	61 (31)
Mean Age Started in Occupation	35 (12)	34 (12)
% Female	75%	81%
% Part-time	57%	62%
% Secondary School or Less	***74%***	28%
% Secondary School & Voc. Training	18%	***60%***
% Union Member	10%	15%
% Firm Change	2%	6%
% Not Married w/ Children	22%	14%
% Nonwestern European (Ger.)	--	18%
% Non-white (U.S.)	47%	--
% Married	57%	59%
% Single	26%	29%
% Children in Household	58%	49%

Perhaps most surprisingly, the mean normalized hourly wages are about the same. The variation in wages is much higher in the U.S. This is likely a result of the difference wage

structures in each country. Wages in West Germany are more compressed towards the median than in the U.S. Union membership is higher in West Germany, but not by a large amount. It is coverage under collective bargaining agreements, not union membership directly that is expected to matter for wages and benefits. The demographic composition is similar. There are a somewhat higher proportion of female and part-time workers in Germany. The average age workers start in one of these low-end service occupations is around the same age at 34 or 35. There is similar variation in age at start in both countries. More workers in the U.S. are in the precarious status of being not married with children. Conceptualizing racial or ethnic disadvantage is difficult in the German (and European) context. As a proxy I use, Nonwestern European ethnicity under the theory that being a member of the dominant group results in privilege. A much higher percentage of workers in the U.S. are of a minority racial group.

The results in Table 2 show that occupational mobility is lower in West Germany (at least for workers in low-end service occupations) than in the U.S. Does lower occupational mobility result in lower wage mobility? Table 3 shows the level of mobility out of the bottom two quintiles of the hourly wage distribution at 4 years and 10 year intervals for workers in low-end service occupations. I use the hourly wage distribution for full-time workers. For a comparison point, I compare the mobility of all earners in the bottom two quintiles in the SOEP and PSID to those in the low-end service occupations. Note that these estimates require a worker to have wage observations at 4 years and 10 years reducing the sample size. An alternative approach would be to measure mobility in 4 years and 10 years using failure analysis. Time zero for low-end service workers in the year they were first observed in the occupation. Time zero for all earners in the bottom two quintiles is any observation of an hourly wage in the bottom two

quintiles with a valid wage at 4 and 10 years respectively. For the all earners measure, I randomly selected one interval per person.

For this analysis and the upward mobility analysis to follow, I necessarily exclude workers in these occupations whose starting wages are in the third quintile or above. 10.13% of West German and 6.75% of U.S. workers in my sample are excluded for these analyses. It is important to remember that all workers in low-end service occupations are not homogenous and some of them do not receive low wages. Again, the difference between the countries in this regard is somewhat smaller than might be expected given Germany's collective bargaining agreements. I include both a measure of occupational tenure in the initial low-end service occupation as well as time since moving occupations.

Table 3: Mobility out of bottom two quintiles of the full-time hourly wage distribution

	U.S.		W. Ger.	
At 4 Years	***N***	***%***	***N***	***%***
Low-end Service Workers	1,768	19%	1,281	13%
All Earners	*8,291*	24%	*8,261*	24%

	U.S.		W. Ger.	
At 10 Years	***N***	***%***	***N***	***%***
Low-end Service Workers	972	28%	545	21%
All Earners	*5,745*	41%	*5,469*	44%

The upward mobility for all earners in the bottom two quintiles is similar in the U.S. and West Germany. Despite more limited occupational mobility, there does not appear to be more limited upward mobility for all earners in the bottom two quintiles. In a related estimate, Salverda and Mayhew (2009) find an overall mobility rate of 41% in the U.S using the PSID from 1994 to 2001 (7 years) with a low-wage threshold of the 2/3rds of the median wage. My estimate is in line with theirs given the higher threshold and longer time period. Their estimate for Germany over the same period using data from the European Community Household Panel is

much lower than my estimate at 25.6% in 7 years. The discrepancy could be because Salverda and Mayhew use data from East and West Germany. Lower rates of mobility in East Germany could be expected because wages are lower in East Germany, but the median wage for the whole country is likely little moved because the population of West Germany is many times larger.

Upward mobility is higher in the U.S. than in W. Germany for low-end service workers by 6% at 4 years, which increases to 7% at 10 years. In both countries and at both intervals, upward mobility is much lower for low-end service workers than all earners in the bottom quintiles. An explanation for this difference is that many young workers in a wide range of occupations start their careers with hourly wages in the bottom 40% of the distribution. As these workers gain experience in the labor market their hourly wage rate goes up moving them up the wage distribution. The upward mobility gap between U.S. and W. German low-end service workers holds steady at 10 years. So, the first fours years are where the upward mobility gap is created between countries. The longer occupational tenure in low-end service occupations in W. Germany is the likely cause. So, these initial descriptive findings support the theory that a strong vocational training system limits the upward mobility out of workers in low-end service occupations by increasing occupational duration.

There are other possible explanations for this upward mobility gap between the U.S. and W. Germany. These include differences the demographic composition of these occupations, the greater prevalence of part-time work in W. Germany potentially indicating worker choice, and selection of unobserved characteristics. I begin to address some of these concerns using quantile wage growth models. Figures 2 and 3 present the predicted normalized wage growth over time (years) in a low-end service occupation and after moving occupations. I use quantile analysis to describe how these trends differ across the bottom (25^{th}), middle (50^{th}), and top (50^{th}) of the

wage growth distribution. I use the margins command in Stata 13 to calculates the average marginal effect across all the covariates in the model. The results shown in the figures are normalized hourly wages. Full results from the quantile regressions can be found in Appendix B.

Even though most workers in the U.S. stay less than 2 years in a low-end service occupation, Figure 2 predicts normalized wages if a worker stayed in the occupation longer. Wage growth for workers while in one of the 7 low-end service occupations is similar in the U.S. and W. Germany. A typical worker with median wage growth who stayed in the occupation for 10 years in the U.S. or W. Germany would see an increase of about 1% of the median hourly wages a year – a modest growth rate. So, if the median hourly wage was $15 an hour that would be an increase of 15 cents a year or $1.50 in 10 years above inflation. The biggest difference in wage growth for workers accruing tenure in a low-end service occupation comes from workers at the bottom. In W. Germany, the workers with the lowest wages are able to achieve wage growth at about 2% of the median a year or double the growth rate of the median worker in either country. This rate is also double the rate of U.S. workers at 25th percentile while in the initial low-end service occupation. The major difference between the U.S. and W. German workers for wage growth in low-end service occupation is in the starting wages. Across the board, at the 25th, 50th, and 75th percentiles the differences of starting wages between the countries are statistically significant for wage growth in the initial low-end service occupation.

The wage growth models for workers after moving from a low-end service occupation in Figure 3 show a similar wage gap in wage levels between the U.S. and W. Germany at the 25th and 50th percentiles. These differences are statistically significant. The gap in wage levels between countries is absent at the 75th percentile for workers moving to a new occupation. The persistent gap in wage levels between the countries is likely due to the presence of collective

Figure 2: Predicted wage growth for workers while in a low-end service occupation, quantile models

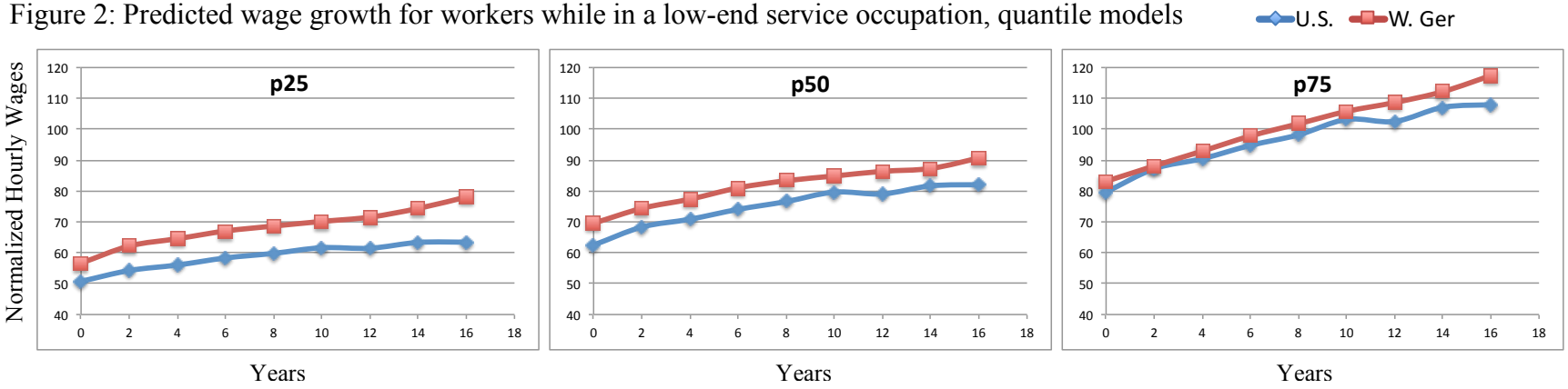


Figure 3: Predicted wage growth for workers after they move from a low-end service occupation, quantile models

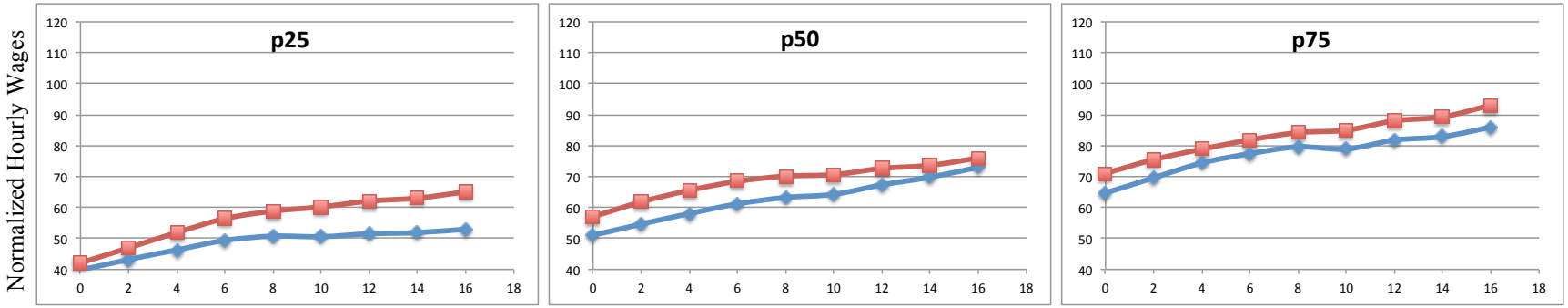
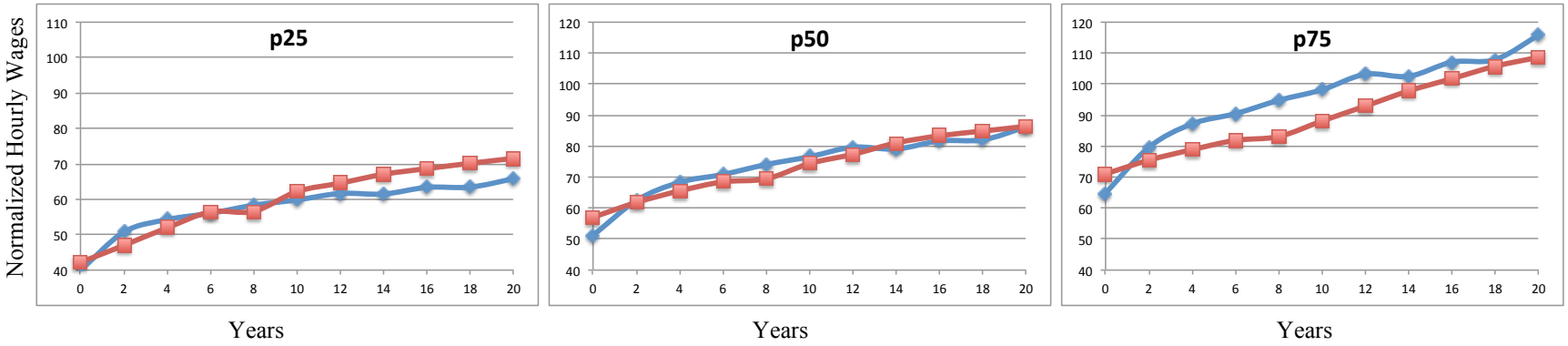


Figure 4: Predicted career wage growth for a worker with an average duration in a low-end service occupation, quantile models



bargaining agreements in Germany that are raising the wage floor. The growth rates differ significantly top and bottom percentiles. While workers at the bottom (25th percentile) retain a modest growth rate of about 1% a year, a worker with a median growth rate has wages that would grow at a rate of about double at 2% a year, while workers at the top (75%) have a growth rate that begins to near 2.5% a year. The similarly low wage growth rates in both countries suggest that the vocational training system in Germany has not up-skilled these occupations resulting in higher returns to occupational tenure.

The higher growth rates and higher wage levels of workers who move from a low-end service occupation suggest that the primary path to upward mobility is by moving occupations. This appears to be true even for workers with the lowest starting wages and wage growth. Using a 2/3rds of the median wage as low-wage threshold threshold, an average low-end service workers in Germany at the bottom (p25) would only cross this threshold after 16 years in the occupation. An average U.S. worker at the bottom doesn't come close to crossing this low-wage threshold even after a similar number of years. Workers who stay in the occupation in W. Germany with wage trajectories above the median can move above the low-wage threshold in less than 6 years of occupational tenure. Using the more stringent threshold of the bottom two quintiles, W. German workers in these occupations would need 16 years in the occupation to make it to the 3rd quintile of the hourly wage distribution if they had wage growth at the 75th percentile. None of the wage growth models for U.S. workers come even close to achieving upward mobility to the 3rd quintile after in 16 years of minimal wage gains. Only workers who move occupations with wage trajectories at the p50 (16 years) or above (4 years for p75) for W. Germany or the p75 (8 years) for the U.S. can achieve this level of upward mobility. These

findings indicate that for most low-end service occupations are dead-end jobs without a route into wages in the 3rd quintile of the full-time hourly wage distribution.

In Figures 4, I use average occupational tenure to combine the results from Figures 2 and 3 to illustrate an actual average career wage trajectory for a worker staring in a low-end service occupation and then moving to a new occupation. Since occupational tenure differs greatly between the two countries, where the first models end and second model begins are different for each country. I use the median occupational duration in a low-end service occupation. This is less than 2 years for the U.S. and 6 to 8 years in West Germany. This is for illustrative purposes only because while likely, it isn't clear that the worker at the 25th percentile in the first model is at the 25th percentile in the second model.

What Figure 4 demonstrates is that the major difference between countries in wage trajectories is at the top of the distribution. U.S. workers who move out quickly to a better job experience much higher wage growth over their career. In contrast, workers in West Germany at the top of the distribution experience steady wage growth that accelerates after moving occupations 8 years after starting in the low-end service occupation. Moving out of a low-end service occupation in W. Germany appears to result in a small wage penalty for the workers at the p25 and p50 percentiles. However, this bump goes away two years later and more or less matches the steady wage growth for U.S. low-end service workers who change occupations more quickly.

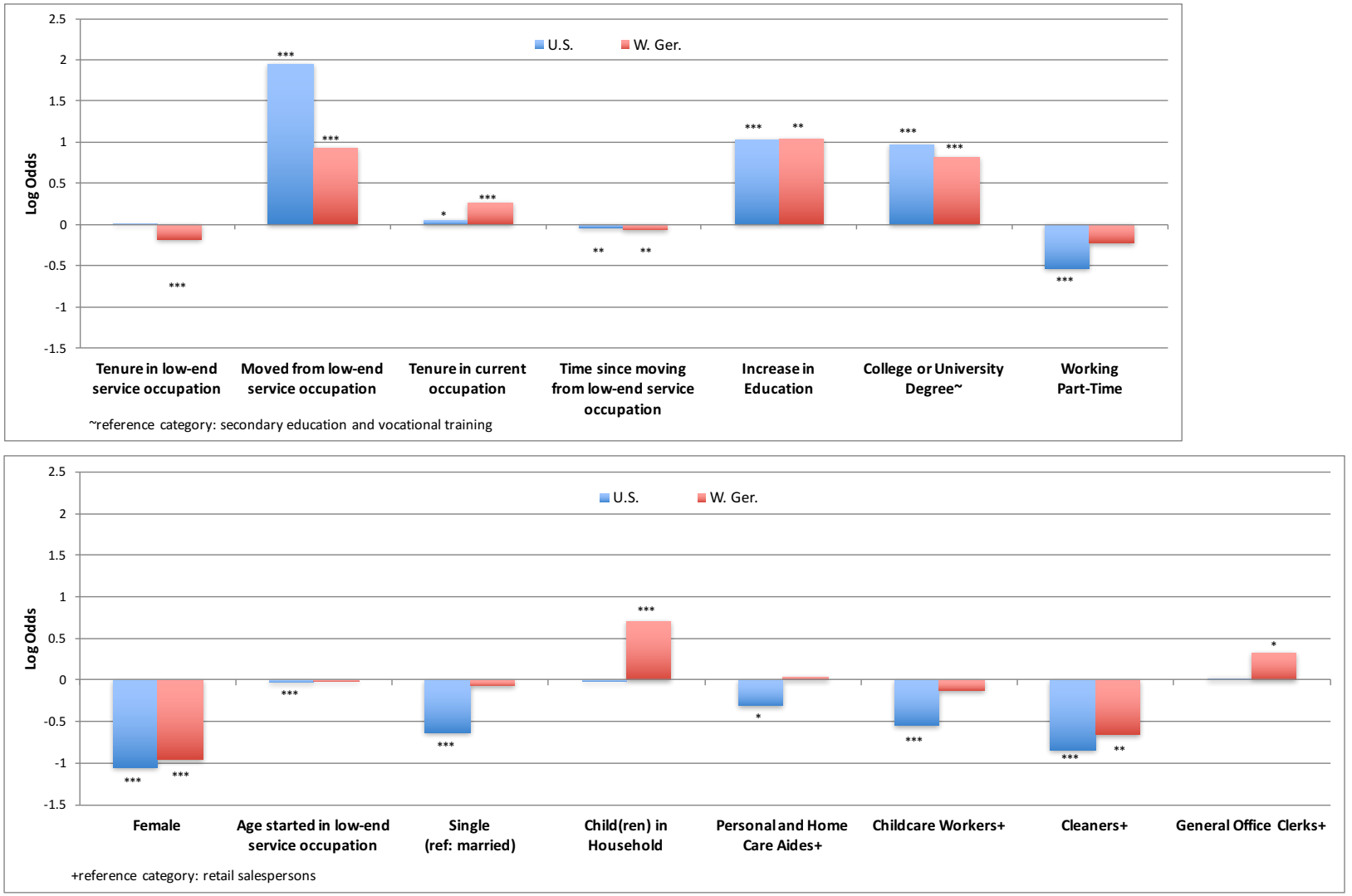
To confirm the results from the quantile models, I use a discrete-time event history analysis to model the factors contributing to the upward mobility of workers in low-end service occupations out of the bottom two quintiles. As a reminder, I necessarily exclude workers in these occupations whose starting wages are in or above the 3rd quintile. 10.13% of West German

and 6.75% of U.S. workers of my sample of 7 low-end service occupations are excluded. These workers likely had wage trajectories above the 75th percentile in the wage growth models. In Figures 5, I present log odds from the final models for the event history model. Significant coefficients are marked with stars as on a standard table of regression results. Full result tables for seven nested models for each country can be found in Appendix B.

The variable for occupational tenure in the initial low-end service occupation is negative and significant for W. German workers. This measure is a constant. For workers who move occupations before achieving upward mobility, it is set to the number of years worked in the initial low-end service occupation. For workers achieving upward mobility in the initial occupation, it is set to the tenure they had the year they were observed to achieve wages in the 3rd or higher quintile. The negative effect indicates that W. German workers who move occupations sooner have an increased probability of achieving mobility into the 3rd or higher quintile. The effect increases with each year of tenure in the initial occupation. Staying 6 years in a low-end service occupation (as the does the median low-end service worker in W. Germany) decreases the log odds by about the same amount as increasing your education by obtaining a college degree. This is strong evidence that moving occupations quickly in W. Germany leads to upward wage mobility. The effect for occupational tenure in the initial low-end service occupation is small and insignificant in the U.S. models. Most workers move out of low-end service occupations within two years in the U.S., so my data are not detailed enough to find a gradient in the cost of increasing occupational tenure in a low-end service occupation.

The largest effect in the U.S. model is moving occupations. The effect size is double the effect of moving for W. German low-end service workers. 60% of W. German low-end service

Figure 5: Significant coefficients from a discrete-time event history analysis, mobility out of the bottom two quintiles of the hourly wage distribution, full model, log odds



*** p<0.001, ** p<0.01, * p<0.05

workers starting in the bottom quintiles achieve upward mobility by moving occupations. In the U.S. 90% achieve upward mobility by moving occupations. The variable occupational tenure tracks current tenure in a worker's current occupation. The significant positive effect on occupational tenure for workers in both countries indicates that accruing tenure does increase the log odds of achieving upward mobility. This effect is particularly important for W. German workers. The effect size is large and increases with each year of tenure. Accruing 4 years of tenure after moving occupations in W. Germany increases the log odds of achieving upward mobility by the same amount as moving occupations or obtaining a college degree. A W. German worker in a low-end service occupation needs to move occupations and accrue 4 years on tenure in the new occupation in order to match the log odds of a U.S. worker changing occupations. The final negative effect in Figure 5 indicates that a worker's log odds of achieving mobility decrease slightly with every passing year after moving to a new occupation.

The mobility analysis confirms what I found in the quantile wage growth models: low-end service occupations are primarily dead-end jobs. Workers with a college degree who are likely using the job as transition, workers who increase their education level, and workers who moved quickly for unobserved reasons all have much greater log odds of achieving mobility out of the bottom wage quintiles in both countries. Younger workers are also more likely to achieve upward mobility in the U.S. Given the low levels of overall mobility out of low-end service occupations, these factors probably explain most of the upward mobility. One possibility for testing this hypothesis would be to remove workers who increase their education, have higher levels of education, and those who move up quickly.

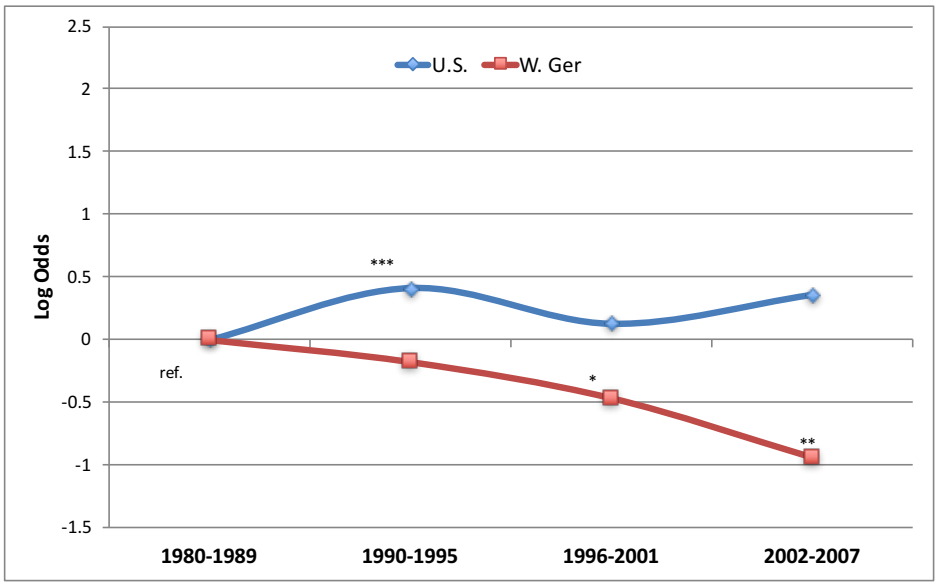
The significant and large occupational tenure does temper the dead-end jobs conclusion for West Germany. It is possible that some workers are using low-end service occupations as a

stepping-stone. After moving to a new occupation, these workers could be staying in this new occupation because they are receiving greater returns to their skills, including the task-specific skills obtained in the initial low-end service occupation. Further analysis using a measure of skill similarity between occupations is needed to understand whether these workers transferring accumulated task-specific human capital across occupations. It could also be that the barriers to occupational mobility inhibit workers from moving occupations again. In descriptive characteristics like age and gender, workers who move occupation look much the same as who do not move occupation (not shown). However, workers who move occupations are more likely to move occupations again in both countries.

Women and workers continuing to work part-time are less likely to move out of the bottom to quintiles. The part-time effect is in the expected direction, but insignificant in the W. German model. What isn't clear is to what extent the lower odds of mobility for women and part-time workers is a reflection of choice. I find a positive effect for having children in the household in West Germany and a negative effect for single workers in the U.S. (relative to married workers). I don't have strong theories to explain these effects.

There is some variation between the 7 occupations in my study in terms of probability for upward mobility. In the U.S., personal and home care aides, childcare workers, and cleaners have significantly lower probabilities of upward mobility than retail salespersons. In W. Germany, only cleaners have a significantly lower probability. These occupations can be characterized as the most dead-end of the low-end service occupations in this study. In W. Germany, General Office Clerks have greater log odds of upward mobility, potentially as a result of being in an office context.

Figure 6: Cohort coefficients from discrete-time event history analysis, mobility out of the bottom two quintiles of the hourly wage distribution, full model, log odds



*** p<0.001, ** p<0.01, * p<0.05

In Figure 6, I show the cohort effect from the event history analysis of mobility out of the bottom two quintiles of the wage distribution. The story is one of relatively stable probability of upward mobility for low-end service workers in the U.S. Upward mobility was higher for workers entering these occupations in the booming economy of the early 1990s in the U.S. In contrast, the trend for W. Germany is one of decreasing log odds of mobility with each successive cohort entering these occupations. This finding fits with a story of growing low-wage work and labor market dualization over time as low-wage work has grown in Germany (Gautié and Schmitt 2010; Palier 2010; Thelen 2014).

Conclusion

I find significant differences in occupational tenure for low-end service workers in the U.S. and W. Germany. This fits the theory that the stronger vocational training system in Germany limits occupational mobility through credentialing (Protsch and Solga 2015). Longer

occupational tenure is probably not explained by better job match for workers in low-end service occupations in W. Germany. I find that the slope of wage growth for workers staying in low-end service occupations is similarly low in both countries. The low rate of wage growth in both countries suggests that low-end service occupations are equally low-skill. The evidence presented suggests that the skill levels of low-end service occupations are not being increased by the strong vocational training system in Germany.

The workers with the lowest wages (25th percentile) in these low-end service occupations in W. Germany experience a much greater rate of growth than their counterparts in the U.S. This finding suggests a higher wage floor, possibly as a result of collective bargaining agreements, raises the wages of the lowest paid workers as the gain occupational tenure. The strongest evidence for the impact of collective bargaining agreements is that on average workers in low-end service occupations in Germany start at higher normalized hourly wages than their U.S. counterparts.

Higher starting wages, combined with higher occupational tenure, allow a number of workers in W. Germany to slowly climb into the 3rd quintile from the bottom quintiles of the hourly wage distribution through long occupational tenures. The higher wages combined with health insurance coverage and other work benefits probably makes low-end service occupations better jobs in Germany. However, these jobs are dead-end jobs for most workers in both countries. The event history analysis confirms that workers who move occupations in both countries have higher probabilities of upward mobility out of the bottom two quintiles. My findings indicate that the vocational training system in Germany likely traps workers in low-end service occupations by increasing barriers to moving occupations. So the vocational training system may be contributing to dualization in Germany by creating barriers to occupational

mobility. I suggest that the longer occupational tenure in of low-end service occupations in W. Germany explains the lower rate of upward mobility between the U.S. and W. Germany.

Moving occupations does not appear to be the result of a stepping stone process where workers accrue skill and move to a related occupation. Rather, the strong effects of workers who increase their education, workers with college degrees who are likely using the jobs as a transition to the labor market, and workers who move occupations quickly for unobserved reasons point to low-end service occupations being dead-end jobs. I do find evidence that some W. German workers may be using these occupations as stepping-stones. Further analysis could test this conclusion by controlling for the skill similarity of origin and destination occupations.

APPENDIX A: OCCUPATIONAL HARMONIZATION

The Bureau of Labor Statistics data on the occupations in Table 1 uses the Standard Occupational Classification system used be federal agencies in the U.S. The data I use in my analysis for the U.S. comes from the PSID. The PSID uses a similar, but less detailed occupational classification system developed by the Census. In my analysis I use data from 1985 to 2007. The PSID uses two variations of the Census Occupational codes over this period, the 1970 codes through 2001 and the 2000 codes afterwards. I match the 1970 occupational categories with 2000 categories using available crosswalks. I combined occupational codes to create harmonized occupations with the best fit between 1970 and 2000 systems.

To make an accurate as possible comparison of the same work between the U.S. and Germany, I matched the harmonized Census occupations to the German Klassifikation der Berufe 1992 (KldB 1992) codes available in the SOEP. I use the International Labor Organization's International Classification of Occupations 1988 (ISCO-88) crosswalks as a guide to match occupations. ISCO-88 codes are available in the SOEP, but I choose to use the more detailed KldB 1992 codes because the ISCO-88 categories are broader. This results in a better match between the U.S. and German occupational codes used in my analysis.

APPENDIX B: MODEL RESULT TABLES

Table 4: Quantile model results for workers while in a low-end service occupation

	Growth Curve (Average)		Quantile p50		Quantile p75		Quantile p25	
	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.
SLOPES								
Initial Occupation								
Retail Salesperson	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Personal and Home Care Aides	0.0113	-0.0106	-0.00550	-0.00804	0.0155	-0.00637	-0.000691	-0.0176*
	(0.0124)	(0.00982)	(0.0119)	(0.00686)	(0.0122)	(0.0112)	(0.0109)	(0.00810)
Childcare Workers	0.0190	-0.00232	0.0118	-0.00301	0.0222	-0.00324	0.0714**	0.00586
	(0.0138)	(0.00883)	(0.0159)	(0.00550)	(0.0136)	(0.00792)	(0.0158)	(0.00765)
Cleaners	-0.0169	-0.00478	-0.0110	0.000487	0.00117	-0.000791	-0.00812	0.00390
	(0.0109)	(0.00491)	(0.00949)	(0.00470)	(0.0111)	(0.00920)	(0.00866)	(0.00521)
Waiters and waitresses	-0.0265	-8.61e-05	-0.0333*	-0.0201**	-0.0214	-0.0234**	-0.0638**	-0.0186*
	(0.0141)	(0.00859)	(0.0158)	(0.00554)	(0.0109)	(0.00895)	(0.0137)	(0.00802)
Hairstylists and Barbers	0.00615	0.0365**	-0.0209	0.0274**	-0.00255	0.0149*	-0.0215	0.0244**
	(0.0213)	(0.00650)	(0.0242)	(0.00894)	(0.0233)	(0.00716)	(0.0908)	(0.00641)
General Office Clerks	-0.0173	0.00830	-0.0380	0.00915	-0.0921*	0.0139**	-0.0691	0.00431
	(0.0715)	(0.00479)	(0.0361)	(0.00737)	(0.0399)	(0.00465)	(0.0467)	(0.00508)
Time Since Starting LW Service Occ..	0.0563**	0.0281**	0.0853**	0.0163	0.0649**	0.00420	0.0689**	0.0511**
	(0.0169)	(0.00808)	(0.0203)	(0.0102)	(0.0146)	(0.00768)	(0.0180)	(0.0117)
Time Since Starting Squared	-0.00117*	-0.000867**	-0.000895	-0.000578	-0.00136**	0.000185	-0.000738	-0.00159**
	(0.000503)	(0.000225)	(0.000647)	(0.000333)	(0.000520)	(0.000257)	(0.000694)	(0.000367)
Education Credential								
Secondary School or Less	0.0151*	-0.00178	0.00337	-0.00959*	0.0117	-0.00174	0.00130	-0.0172**
	(0.00749)	(0.00366)	(0.0100)	(0.00486)	(0.00909)	(0.00709)	(0.00832)	(0.00506)
Secondary School & Voc. Training	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
College or University Degree	-0.0269	-0.00531	-0.0214	-0.000303	-0.0179	0.00128	-0.0302	-0.00112
	(0.0159)	(0.00560)	(0.0263)	(0.00676)	(0.0126)	(0.00567)	(0.0169)	(0.00777)
Increased Education in Previous 2 Years	0.00961	-0.0104	0.00751	-0.0102	-0.0124	-0.0132	0.0139	-0.0109
	(0.0311)	(0.00875)	(0.0175)	(0.0175)	(0.0197)	(0.0144)	(0.0205)	(0.0356)
Currently Working Part-Time	0.0126*	0.00604*	0.000851	0.00276	0.00485	-0.00176	-0.00688	0.00387
	(0.00524)	(0.00253)	(0.00839)	(0.00462)	(0.00631)	(0.00540)	(0.00597)	(0.00435)
Not Employed 2 years ago	0.00637	-0.00222	0.00986	-0.00478	0.00794	-0.000952	0.0419	-0.0146
	(0.0184)	(0.00392)	(0.0130)	(0.0107)	(0.00651)	(0.00561)	(0.0225)	(0.00966)
Female	-0.0428**	-0.00106	-0.0275**	0.00387	-0.0388**	0.00123	-0.0327**	0.00537
	(0.00822)	(0.00484)	(0.00680)	(0.00618)	(0.0105)	(0.00628)	(0.00762)	(0.00639)
Age Started in Iniital Occupation								
17 to 25	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
26 to 45	-0.00292	-0.0118**	-0.0198	-0.00486	-0.0151*	-0.00247	-0.00359	-0.0148*
	(0.00906)	(0.00410)	(0.0119)	(0.00478)	(0.00732)	(0.00498)	(0.0137)	(0.00587)
46 to 65	-0.0108	-0.00637	-0.0398*	-0.00630	-0.0293**	0.00378	-0.0139	-0.0179*
	(0.0113)	(0.00742)	(0.0157)	(0.00777)	(0.0110)	(0.00938)	(0.0147)	(0.00798)
66 and older	-0.0209	-0.612**	-0.0464*	-0.616**	-0.0231	-0.726**	-0.0160	-0.598**
	(0.0284)	(0.179)	(0.0231)	(0.0645)	(0.0241)	(0.0632)	(0.0204)	(0.0981)
Not White (U.S.)	-0.00160	--	-0.00306	--	-0.00270	--	-0.0112	--
	(0.00694)	--	(0.00966)	--	(0.00750)	--	(0.0120)	--
Non-western European (Ger.)	--	0.00843*	--	0.00991*	--	0.00998	--	0.0119*
	--	(0.00453)	--	(0.00486)	--	(0.00611)	--	(0.00503)
Marital Status								
Married	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Single	0.00509	0.0316**	-0.0233*	0.0217**	-0.0142	0.0183**	-0.0126	0.0355**
	(0.0103)	(0.00535)	(0.0115)	(0.00693)	(0.0104)	(0.00575)	(0.0151)	(0.00618)
Seperated or Divorced	0.0123	-1.83e-05	0.00110	0.00381	0.00709	-0.00155	0.00796	0.00328
	(0.00799)	(0.00403)	(0.00762)	(0.00494)	(0.0115)	(0.00404)	(0.00991)	(0.00491)
Not Married with Children	-0.00757	0.00621	0.000172	0.00712	-0.00209	0.00445	0.00408	-0.00190
	(0.0106)	(0.00627)	(0.0118)	(0.00862)	(0.0122)	(0.00706)	(0.0115)	(0.00974)
Child(ren) in the Household	0.00337	0.00264	0.00539	0.00411	0.00882	0.00618	0.00104	0.00360
	(0.00696)	(0.00331)	(0.00986)	(0.00560)	(0.00980)	(0.00443)	(0.00928)	(0.00388)

	Growth Curve (Average)		Quantile p50		Quantile p75		Quantile p25	
	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.
LEVELS								
Cohort (Year Started Initial Occupation)								
1980-1989	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
1990-1995	-0.00516	-0.00757	-0.00454	-0.00833*	-0.00590	-0.00464	0.00583	-0.00979
	(0.00729)	(0.00418)	(0.00743)	(0.00403)	(0.00796)	(0.00713)	(0.0108)	(0.00544)
1996-2001	-0.00794	-0.0106	-0.00685	-0.0120*	-0.00905	-0.00321	0.00460	-0.0153
	(0.00925)	(0.00568)	(0.00957)	(0.00590)	(0.0126)	(0.00710)	(0.00876)	(0.00854)
2002-2007	-0.0115	-0.0225	-0.0181	-0.00756	-0.00578	-0.00699	-0.0142	-0.0422*
	(0.0151)	(0.0127)	(0.0141)	(0.0173)	(0.0225)	(0.0130)	(0.0135)	(0.0170)
Voluntary Firm Change Last 4 Years	0.0213	-0.0190**	0.0167	-0.00421	0.0218	-0.00272	0.0102	-0.0160
	(0.0131)	(0.00537)	(0.0463)	(0.00990)	(0.0164)	(0.00891)	(0.0128)	(0.0277)
Involuntary Firm Change Last 4 Years	-0.00461	0.0164*	0.00219	-0.0147	0.00902	-0.0126	-0.0102	-0.00294
	(0.0150)	(0.00770)	(0.0121)	(0.0107)	(0.0109)	(0.0135)	(0.0143)	(0.0255)
Initial Occupation								
Retail Salesperson	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Personal and Home Care Aides	-0.0480	0.0932	0.0613**	0.117**	0.0184	0.0577	0.0597**	0.153*
	(0.0273)	(0.0571)	(0.0200)	(0.0429)	(0.0299)	(0.0455)	(0.0158)	(0.0637)
Childcare Workers	-0.465**	0.0502	-0.172**	0.118**	-0.114**	0.0615	-0.779**	-0.000415
	(0.0291)	(0.0477)	(0.0277)	(0.0422)	(0.0358)	(0.0317)	(0.102)	(0.0840)
Cleaners	-0.0631*	-0.0486	0.0168	-0.0459	0.0100	-0.0219	-0.000954	-0.0816*
	(0.0255)	(0.0278)	(0.0182)	(0.0285)	(0.0307)	(0.0312)	(0.0167)	(0.0416)
Waiters and waitresses	-0.193**	-0.0663	-0.0777**	-0.0804*	0.00448	-0.0557	-0.120**	-0.0239
	(0.0288)	(0.0361)	(0.0201)	(0.0334)	(0.0497)	(0.0366)	(0.0253)	(0.0510)
Hairstylists and Barbers	0.199**	-0.536**	0.137	-0.511**	0.436**	-0.314**	-0.00200	-0.582**
	(0.0697)	(0.0388)	(0.116)	(0.0778)	(0.0893)	(0.0648)	(0.107)	(0.0762)
General Office Clerks	0.156**	0.0323	0.230**	0.0496	0.291**	0.0517*	0.215**	0.00826
	(0.0444)	(0.0252)	(0.0337)	(0.0339)	(0.0411)	(0.0250)	(0.0337)	(0.0388)
Education Credential								
Secondary School or Less	-0.0646**	0.114**	-0.0323	0.0580*	-0.0690**	-0.00117	-0.0357*	0.118**
	(0.0236)	(0.0232)	(0.0197)	(0.0274)	(0.0257)	(0.0230)	(0.0168)	(0.0417)
Secondary School & Voc. Training	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
College or University Degree	0.168**	0.147**	0.124**	0.0700	0.132**	0.113**	0.112**	0.0982
	(0.0379)	(0.0302)	(0.0337)	(0.0370)	(0.0413)	(0.0362)	(0.0297)	(0.0508)
Increased Education in Previous 2 Years	-0.0546	0.0652	0.0359	0.0646	0.150	0.0350	0.000492	0.104
	(0.149)	(0.0818)	(0.0980)	(0.103)	(0.169)	(0.129)	(0.0909)	(0.227)
Currently Working Part-Time	-0.126**	-0.109**	-0.112**	-0.166**	-0.162**	-0.100**	-0.0716**	-0.186**
	(0.0165)	(0.0174)	(0.0139)	(0.0267)	(0.0200)	(0.0214)	(0.0126)	(0.0301)
Not Employed 2 years ago	-0.0381	-0.0598**	-0.0474**	-0.0604*	-0.0453	-0.0837**	-0.0571**	-0.0243
	(0.0209)	(0.0219)	(0.0148)	(0.0249)	(0.0243)	(0.0203)	(0.0163)	(0.0389)
Female	-0.0984**	-0.211**	-0.103**	-0.223**	-0.103**	-0.198**	-0.0781**	-0.253**
	(0.0226)	(0.0258)	(0.0179)	(0.0274)	(0.0276)	(0.0266)	(0.0162)	(0.0510)
Age Started in Iniital Occupation								
17 to 25	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
26 to 45	0.0250	0.199**	0.0220	0.118**	0.0268	0.115**	0.00174	0.217**
	(0.0214)	(0.0281)	(0.0145)	(0.0326)	(0.0269)	(0.0285)	(0.0162)	(0.0522)
46 to 65	0.00435	0.119**	0.0293	0.102**	0.0317	0.0463	0.00700	0.222**
	(0.0292)	(0.0385)	(0.0201)	(0.0380)	(0.0369)	(0.0323)	(0.0219)	(0.0594)
66 and older	-0.226**	-0.166	-0.0507	-0.259*	-0.0685	-0.212**	-0.120	-0.0662
	(0.0689)	(0.242)	(0.0613)	(0.130)	(0.0602)	(0.0643)	(0.0639)	(0.0855)
Not White (U.S.)	-0.0356	--	-0.0480**	--	-0.0744**	--	-0.0230	--
	(0.0192)	--	(0.0138)	--	(0.0228)	--	(0.0162)	--
Non-western European (Ger.)	--	-0.0606*	--	-0.0626*	--	-0.0489*	--	-0.0465
	--	(0.0259)	--	(0.0311)	--	(0.0232)	--	(0.0307)
Marital Status								
Married	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Single	-0.0273	-0.154**	-0.00812	-0.140**	0.00738	-0.103**	-0.0327	-0.184**
	(0.0296)	(0.0310)	(0.0233)	(0.0318)	(0.0391)	(0.0335)	(0.0219)	(0.0533)
Seperated or Divorced	-0.0501	0.0670*	-0.0260	0.0504	-0.00189	0.0738*	-0.0421	0.0778
	(0.0306)	(0.0342)	(0.0228)	(0.0395)	(0.0433)	(0.0302)	(0.0240)	(0.0448)
Not Married with Children	0.0248	-0.118**	-0.0130	-0.121*	-0.0673	-0.0920*	0.0104	-0.124
	(0.0343)	(0.0362)	(0.0255)	(0.0507)	(0.0412)	(0.0377)	(0.0253)	(0.0648)

Child(ren) in the Household	0.0117	-0.0178	0.0230	0.0200	0.0267	0.0340	0.00575	0.00291
	(0.0246)	(0.0263)	(0.0192)	(0.0277)	(0.0305)	(0.0261)	(0.0190)	(0.0377)
Cohort (Year Started Initial Occupation)								
1980-1989	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
1990-1995	0.0727**	-0.0301	0.0788**	-0.0216	0.0796**	0.0151	0.0508**	2.94e-05
	(0.0227)	(0.0264)	(0.0191)	(0.0298)	(0.0305)	(0.0253)	(0.0176)	(0.0438)
1996-2001	0.0703**	0.00560	0.0983**	-0.00635	0.0654*	-0.00862	0.102**	0.0461
	(0.0252)	(0.0277)	(0.0198)	(0.0319)	(0.0273)	(0.0270)	(0.0170)	(0.0448)
2002-2007	0.0700**	0.0512	0.0962**	0.0102	0.0614*	0.0196	0.0967**	0.0817
	(0.0244)	(0.0299)	(0.0180)	(0.0327)	(0.0270)	(0.0271)	(0.0168)	(0.0548)
Voluntary Firm Change Last 4 Years	0.0283	0.294**	-0.0376	0.0983	-0.0766	0.0579	0.0130	0.203
	(0.0764)	(0.0493)	(0.155)	(0.0771)	(0.0909)	(0.0611)	(0.0633)	(0.157)
Involuntary Firm Change Last 4 Years	-0.220**	-0.365**	-0.180**	-0.0252	-0.257**	0.0108	-0.0894	-0.184
	(0.0785)	(0.0705)	(0.0558)	(0.143)	(0.0620)	(0.105)	(0.0492)	(0.175)
Constant	4.187**	4.192**	4.042**	4.355**	4.345**	4.480**	3.881**	3.996**
	(0.0412)	(0.0447)	(0.0329)	(0.0468)	(0.0507)	(0.0395)	(0.0301)	(0.0858)

	Growth Curve (Average)		**Quantile p50**		**Quantile p75**		**Quantile p25**	
	U.S.	**W. Ger.**	**U.S.**	**W. Ger.**	**U.S.**	**W. Ger.**	**U.S.**	**W. Ger.**
Number Persons	3,150	1,816	3,150	1,816	3,150	1,816	3,150	1,816
Number of Observations	4,981	4,067	4,981	4,067	4,981	4,067	4,981	4,067
Avg. Observations per Person	1.6	2.2	1.6	2.2	1.6	2.2	1.6	2.2
R-squared	--	--	15.8	27.7	13.9	26.2	14.9	28.1
sd(Time since moving from initial occ.)	0.0162	0.0168						
sd(Constant)	0.353	0.317						
sd(Residual)	0.366	0.266						

Standard errors in parentheses ** p<0.01, * p<0.05

Table 5: Quantile model results for workers after they move from a low-end service occupation

	Growth Curve (Average)		**Quantile p50**		**Quantile p75**		**Quantile p25**	
	U.S.	**W. Ger.**	**U.S.**	**W. Ger.**	**U.S.**	**W. Ger.**	**U.S.**	**W. Ger.**
SLOPES								
Initial Occupation								
Retail Salesperson	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Personal and Home Care Aides	0.00142	0.00318	-0.00717	-0.0185	-0.00259	0.000927	-0.00559	-0.0131
	(0.00462)	(0.0102)	(0.00554)	(0.0123)	(0.00700)	(0.0144)	(0.00519)	(0.00980)
Childcare Workers	0.00674	0.0115	0.00111	-0.000365	0.00654	-0.00399	0.00527	-0.0199**
	(0.00424)	(0.0139)	(0.00476)	(0.0102)	(0.00499)	(0.0119)	(0.00433)	(0.00783)
Cleaners	-0.00673	0.000402	0.00177	-0.00502	0.00282	0.00211	-0.00406	-0.000891
	(0.00391)	(0.00620)	(0.00470)	(0.00909)	(0.00441)	(0.00860)	(0.00437)	(0.00663)
Waiters and waitresses	0.000615	0.00714	-0.00284	0.0125	-0.00244	0.0130	-0.00184	0.00838
	(0.00436)	(0.00730)	(0.00525)	(0.0154)	(0.00598)	(0.0129)	(0.00425)	(0.0143)
Hairstylists and Barbers	0.0188*	-0.0120	0.0464**	0.00391	0.0563**	-0.00873	0.0119	-0.00375
	(0.00949)	(0.0105)	(0.0105)	(0.00885)	(0.0164)	(0.00823)	(0.0149)	(0.00989)
General Office Clerks	-0.00434	-0.00523	0.00496	0.000356	-0.000798	0.00130	0.00787	-0.00201
	(0.00660)	(0.00477)	(0.00599)	(0.00700)	(0.0103)	(0.00678)	(0.0110)	(0.00550)
Time Since Moving from Initial Occ.	0.0344**	0.0196	0.0143	0.00969	0.0316*	0.0201	0.0123	0.0216
	(0.00705)	(0.0104)	(0.0119)	(0.0172)	(0.0128)	(0.0155)	(0.0107)	(0.0170)
Time Since Moving Squared	-0.000640*	0.000578	-0.000358	-0.000425	-0.000479	-0.000178	-0.000475	-0.000284
	(0.000259)	(0.000486)	(0.000455)	(0.000902)	(0.000488)	(0.000800)	(0.000462)	(0.000885)
Tenure in Iniital Occupation	0.00100	-0.00262*	-1.97e-05	-0.000898	-0.00202	-0.00207	0.00116	-0.00170
	(0.000848)	(0.00110)	(0.000917)	(0.00158)	(0.00130)	(0.00180)	(0.00101)	(0.00158)
Occupation Tenure	-0.000107	-0.00180*	-0.00193*	-7.74e-05	-0.00157	-0.000444	-5.33e-05	-0.000992
	(0.000535)	(0.000714)	(0.000815)	(0.00110)	(0.00112)	(0.00102)	(0.000822)	(0.00119)
Education Credential								
Secondary School or Less	0.00629*	0.00485	0.00768*	-0.00108	0.00496	0.00332	0.00747*	0.000672
	(0.00315)	(0.00446)	(0.00417)	(0.00648)	(0.00438)	(0.00751)	(0.00411)	(0.00714)
Secondary School & Voc. Training	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
College or University Degree	0.00142	0.00243	0.00619	-0.00418	0.0122	-0.00252	0.00468	0.00393
	(0.00420)	(0.00513)	(0.00593)	(0.00750)	(0.00868)	(0.0129)	(0.00605)	(0.00613)

	Growth Curve (Average)		Quantile p50		Quantile p75		Quantile p25	
	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.
SLOPES (continued)								
Increased Education in Previous 2 Years	-0.000937	0.00212	0.00922	0.00343	-0.00192	0.0101	0.00133	0.00460
	(0.00649)	(0.00960)	(0.0119)	(0.00983)	(0.00811)	(0.0198)	(0.00645)	(0.0107)
Currently Working Part-Time	0.00118	0.00654*	0.00299	-0.00253	-0.000592	-0.00517	-0.000904	0.00324
	(0.00190)	(0.00314)	(0.00280)	(0.00613)	(0.00301)	(0.00692)	(0.00287)	(0.00523)
Not Employed 2 years ago	0.00285	0.0148	-0.00390	0.0272*	-0.00421	0.00826	-0.00557	-0.000835
	(0.00555)	(0.00887)	(0.00885)	(0.0108)	(0.0120)	(0.0133)	(0.00616)	(0.0102)
Female	-0.0111**	-0.00436	0.000548	0.00725	-0.00470	0.00630	-0.00166	0.00126
	(0.00329)	(0.00471)	(0.00466)	(0.00744)	(0.00474)	(0.00846)	(0.00415)	(0.00612)
Age Started in Iniital Occupation								
17 to 25	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
26 to 45	-0.0133**	-0.0107*	-0.00843	-0.00994	-0.0145*	-0.00614	-0.00838	-0.0150*
	(0.00374)	(0.00483)	(0.00435)	(0.00681)	(0.00603)	(0.00595)	(0.00496)	(0.00610)
46 to 65	-0.0306**	-0.0267**	-0.0234**	-0.0118	-0.0197*	-0.000141	-0.0189**	-0.0399*
	(0.00527)	(0.00787)	(0.00704)	(0.0121)	(0.00796)	(0.0176)	(0.00574)	(0.0165)
66 and older	-0.0163	--	-0.0230*	--	-0.0335**	--	0.0302*	--
	(0.0186)	--	(0.0116)	--	(0.0112)	--	(0.0136)	--
Not White (U.S.)	0.000500	--	0.00144	--	0.00210	--	-0.00116	--
	(0.00292)	--	(0.00374)	--	(0.00303)	--	(0.00384)	--
Non-western European (Ger.)	--	-0.00496	--	0.00642	--	-0.00127	--	-0.00173
	--	(0.00526)	--	(0.00636)	--	(0.00778)	--	(0.00707)
Marital Status								
Married	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Single	0.0102*	0.00558	0.000683	0.00622	0.00524	0.00569	0.00144	0.00709
	(0.00446)	(0.00520)	(0.00665)	(0.00979)	(0.00877)	(0.00701)	(0.00579)	(0.00979)
Seperated or Divorced	0.00399	-0.00269	0.00489	-0.00128	0.00350	-0.0118	0.00451	0.00545
	(0.00334)	(0.00504)	(0.00487)	(0.00783)	(0.00648)	(0.00834)	(0.00445)	(0.00691)
Not Married with Children	-0.00764	0.00302	-0.00121	-0.0134	0.00130	-0.00375	-0.00254	-0.00604
	(0.00412)	(0.00659)	(0.00609)	(0.0114)	(0.00705)	(0.0108)	(0.00598)	(0.0111)
Child(ren) in the Household	0.00111	-0.00678*	0.00826**	0.00815	0.00296	0.00332	0.00534	-0.00173
	(0.00260)	(0.00405)	(0.00408)	(0.00874)	(0.00421)	(0.00735)	(0.00440)	(0.00850)
Cohort (Year Started Initial Occupation)								
1980-1989	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
1990-1995	-0.000402	0.00245	0.0709**	-0.0820*	0.0561	-0.0401	0.0692**	-0.0596
	(0.00316)	(0.00438)	(0.0248)	(0.0324)	(0.0290)	(0.0317)	(0.0245)	(0.0406)
1996-2001	-0.00295	0.00232	0.0796**	-0.105**	0.0569	-0.0725*	0.0820**	-0.0877
	(0.00472)	(0.00674)	(0.0251)	(0.0324)	(0.0312)	(0.0346)	(0.0255)	(0.0453)
2002-2007	0.0146	-0.0399	0.102**	-0.116**	0.125**	-0.0357	0.0853**	-0.0956
	(0.0168)	(0.0214)	(0.0314)	(0.0341)	(0.0416)	(0.0551)	(0.0284)	(0.0601)
Voluntary Firm Change Last 4 Years	0.00634	-0.0205**	0.00523	-0.00521	0.0137	-0.00539	0.0117	-0.0114
	(0.00485)	(0.00710)	(0.00610)	(0.0113)	(0.00904)	(0.0123)	(0.00839)	(0.0145)
Voluntary Occ. Change Last 4 Years	0.00176	-0.00932*	-0.00105	-0.00130	-0.00562	-0.0104	0.00708	-0.00747
	(0.00235)	(0.00380)	(0.00422)	(0.00714)	(0.00421)	(0.00819)	(0.00431)	(0.00561)
Voluntary Firm & Occ. Change Last 4 Years	-0.00926	-0.000353	-0.0108	-0.00154	-0.0240*	-0.00909	-0.0194*	-0.00353
	(0.00553)	(0.00837)	(0.00746)	(0.0118)	(0.0105)	(0.0161)	(0.00933)	(0.0194)
Involuntary Firm Change Last 4 Years	-0.00933	0.0112	-0.0133	-0.00711	-0.0161**	-0.0129	-0.00136	0.00453
	(0.00568)	(0.00963)	(0.00845)	(0.0116)	(0.00614)	(0.0110)	(0.00562)	(0.0311)
Involuntary Occ. Change Last 4 Years	0.00868**	0.00997*	0.00609	0.00434	0.00505	0.00730	0.00695	0.00509
	(0.00265)	(0.00420)	(0.00486)	(0.00721)	(0.00499)	(0.00698)	(0.00439)	(0.00548)
Involuntary Firm & Occ. Change Last 4 Years	0.0181**	0.00457	0.00890	0.0190	0.0170*	0.0274	0.00748	0.0110
	(0.00632)	(0.0107)	(0.0100)	(0.0166)	(0.00705)	(0.0141)	(0.00671)	(0.0290)
LEVELS								
Initial Occupation								
Retail Salesperson	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Personal and Home Care Aides	-0.136**	0.0410	-0.0239	0.105	-0.0662	0.0300	-0.0341	0.0964
	(0.0354)	(0.0675)	(0.0318)	(0.0560)	(0.0422)	(0.0598)	(0.0312)	(0.0748)
Childcare Workers	-0.166**	-0.0647	-0.0817*	-0.182**	-0.122**	-0.0766	-0.111**	-0.0142
	(0.0343)	(0.0831)	(0.0336)	(0.0578)	(0.0384)	(0.0550)	(0.0296)	(0.0657)
Cleaners	-0.196**	-0.0892*	-0.130**	-0.0468	-0.199**	-0.0602	-0.106**	-0.111*
	(0.0306)	(0.0408)	(0.0304)	(0.0387)	(0.0331)	(0.0452)	(0.0265)	(0.0533)
Waiters and waitresses	-0.162**	-0.119*	-0.0936**	-0.158**	-0.130**	-0.0973	-0.105**	-0.126*
	(0.0340)	(0.0476)	(0.0340)	(0.0577)	(0.0357)	(0.0497)	(0.0297)	(0.0615)

	Growth Curve (Average)		Quantile p50		Quantile p75		Quantile p25	
	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.	U.S.	W. Ger.
LEVELS (continued)								
Initial Occupation (continued)								
Retail Salesperson	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Hairstylists and Barbers	-0.308**	0.0828	-0.161**	0.0333	-0.203**	0.0228	-0.110	0.0397
	(0.0682)	(0.0679)	(0.0567)	(0.0622)	(0.0709)	(0.0661)	(0.0685)	(0.0730)
General Office Clerks	0.122*	0.162**	0.117*	0.0852**	0.0990*	0.0938*	0.112*	0.127**
	(0.0495)	(0.0327)	(0.0461)	(0.0311)	(0.0483)	(0.0393)	(0.0453)	(0.0356)
Tenure in Iniital Occupation	0.00544	0.00191	0.00557	-0.00516	0.0160*	-0.00345	0.00533	0.00305
	(0.00579)	(0.00616)	(0.00579)	(0.00480)	(0.00833)	(0.00768)	(0.00565)	(0.00602)
Occupation Tenure	0.0135*	0.0264**	0.0395**	0.0147	0.0268*	0.0130	0.0244*	0.0315**
	(0.00623)	(0.00809)	(0.00983)	(0.0128)	(0.0121)	(0.0133)	(0.0104)	(0.0147)
Education Credential								
Secondary School or Less	-0.0776**	-0.0136	-0.0881**	-0.0543*	-0.0696*	-0.0792*	-0.0685**	-0.0446
	(0.0246)	(0.0287)	(0.0278)	(0.0275)	(0.0303)	(0.0327)	(0.0211)	(0.0332)
Secondary School & Voc. Training	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
College or University Degree	0.140**	0.118**	0.172**	0.180**	0.205**	0.210**	0.122*	0.118*
	(0.0354)	(0.0353)	(0.0393)	(0.0377)	(0.0477)	(0.0518)	(0.0491)	(0.0552)
Increased Education in Previous 2 Years	0.00707	-0.0146	-0.0774	-0.131	-0.00978	-0.185	0.0285	-0.0767
	(0.0553)	(0.0696)	(0.119)	(0.0684)	(0.0646)	(0.109)	(0.0485)	(0.0860)
Currently Working Part-Time	-0.0754**	-0.0124	-0.156**	-0.0623*	-0.139**	-0.0252	-0.142**	-0.0847*
	(0.0140)	(0.0195)	(0.0192)	(0.0250)	(0.0227)	(0.0301)	(0.0174)	(0.0345)
Not Employed 2 years ago	-0.0799	-0.146*	-0.0328	-0.206*	-0.0549	-0.0747	-0.0513	-0.0157
	(0.0501)	(0.0651)	(0.0679)	(0.0874)	(0.103)	(0.115)	(0.0543)	(0.0925)
Female	-0.242**	-0.226**	-0.209**	-0.183**	-0.273**	-0.237**	-0.172**	-0.180**
	(0.0254)	(0.0319)	(0.0256)	(0.0275)	(0.0300)	(0.0389)	(0.0271)	(0.0405)
Age Started in Iniital Occupation								
17 to 25	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
26 to 45	0.0361	0.108**	0.00833	0.109**	0.0380	0.0795*	-0.000214	0.128*
	(0.0293)	(0.0370)	(0.0292)	(0.0335)	(0.0355)	(0.0326)	(0.0255)	(0.0521)
46 to 65	0.0134	0.112*	-0.0506	0.0781	-0.0553	0.0452	-0.0231	0.0967
	(0.0382)	(0.0482)	(0.0378)	(0.0443)	(0.0422)	(0.0627)	(0.0324)	(0.0660)
66 and older	-0.330**	--	-0.177*	--	-0.186	--	-0.297**	--
	(0.0887)	--	(0.0828)	--	(0.0985)	--	(0.102)	--
Not White (U.S.)	-0.0631**	--	-0.0785**	--	-0.0963**	--	-0.0471*	--
	(0.0222)	--	(0.0206)	--	(0.0247)	--	(0.0203)	--
Non-western European (Ger.)	--	0.0169	--	-0.00569	--	-0.00894	--	0.0764*
	--	(0.0345)	--	(0.0340)	--	(0.0383)	--	(0.0380)
Marital Status								
Married	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Single	-0.100**	-0.0469	-0.0722*	-0.000741	-0.0713	-0.0196	-0.0463	0.0360
	(0.0294)	(0.0315)	(0.0359)	(0.0375)	(0.0389)	(0.0400)	(0.0344)	(0.0519)
Seperated or Divorced	-0.0599*	0.0851*	-0.0996**	0.107*	-0.0766	0.113*	-0.0722*	0.122*
	(0.0278)	(0.0366)	(0.0349)	(0.0474)	(0.0391)	(0.0489)	(0.0308)	(0.0617)
Not Married with Children	0.0722*	-0.0121	0.0445	0.0404	0.0177	-0.00746	0.0425	-0.0344
	(0.0316)	(0.0416)	(0.0393)	(0.0511)	(0.0456)	(0.0540)	(0.0368)	(0.0723)
Child(ren) in the Household	-0.0112	0.0629*	-0.0449	0.0373	-0.0232	0.0459	-0.0158	0.103*
	(0.0211)	(0.0274)	(0.0273)	(0.0344)	(0.0322)	(0.0403)	(0.0264)	(0.0489)
Cohort (Year Started Initial Occupation)								
1980-1989	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
1990-1995	0.0528	-0.0804*	-0.00150	0.00515	-0.00179	0.00203	-0.00137	-0.000687
	(0.0270)	(0.0339)	(0.00382)	(0.00652)	(0.00503)	(0.00544)	(0.00426)	(0.00783)
1996-2001	0.0711*	-0.105**	-0.0135*	0.00758	-0.0153*	-0.00456	-0.0109*	0.0108
	(0.0285)	(0.0359)	(0.00603)	(0.00893)	(0.00700)	(0.00959)	(0.00551)	(0.0118)
2002-2007	0.120**	-0.0709	0.0170	-0.0213	0.00421	-0.0903*	-0.00389	0.0247
	(0.0328)	(0.0445)	(0.0210)	(0.0207)	(0.0234)	(0.0380)	(0.0219)	(0.0317)
Voluntary Firm Change Last 4 Years	0.0997*	0.286**	0.126*	0.0962	0.0358	0.0699	0.0666	0.115
	(0.0420)	(0.0511)	(0.0533)	(0.0669)	(0.0575)	(0.0688)	(0.0609)	(0.0794)
Voluntary Occ. Change Last 4 Years	0.134**	0.207**	0.148**	0.144**	0.177**	0.174**	0.110**	0.191**
	(0.0207)	(0.0303)	(0.0325)	(0.0499)	(0.0381)	(0.0491)	(0.0331)	(0.0485)
Involuntary Firm Change Last 4 Years	0.108*	0.0419	-0.0204	0.0237	0.0960	0.0351	0.0951	0.0470
	(0.0472)	(0.0635)	(0.0609)	(0.0830)	(0.0733)	(0.0881)	(0.0679)	(0.105)
Involuntary Occ. Change Last 4 Years	-0.0566	-0.245**	0.0159	0.0503	0.0210	-0.00630	-0.0340	-0.0765
	(0.0521)	(0.0751)	(0.0985)	(0.0784)	(0.0732)	(0.0820)	(0.0578)	(0.279)

Voluntary Firm & Occ. Change Last 4 Years	-0.184**	-0.172**	-0.0890*	-0.0838	-0.0612	-0.100*	-0.106**	-0.0521
	(0.0240)	(0.0353)	(0.0428)	(0.0506)	(0.0440)	(0.0464)	(0.0367)	(0.0496)
Involuntary Firm & Occ. Change Last 4 Years	-0.235**	-0.0506	-0.163	-0.326**	-0.232**	-0.317**	-0.134*	-0.227
	(0.0581)	(0.0853)	(0.107)	(0.0941)	(0.0779)	(0.113)	(0.0665)	(0.279)
Constant	4.482**	4.270**	4.492**	4.355**	4.766**	4.555**	4.208**	4.062**
	(0.0466)	(0.0557)	(0.0462)	(0.0553)	(0.0601)	(0.0583)	(0.0454)	(0.0793)

	Growth Curve (Average)		**Quantile p50**		**Quantile p75**		**Quantile p25**	
	U.S.	**W. Ger.**	**U.S.**	**W. Ger.**	**U.S.**	**W. Ger.**	**U.S.**	**W. Ger.**
Number Persons	2,201	886	2,201	886	2,201	886	2,201	886
Number of Observations	7,291	2,614	7,291	2,614	7,291	2,614	7,291	2,614
Avg. Observations per Person	3.3	3.0	3.3	3.0	3.3	3.0	3.3	3.0
R-squared			24.7	26.1	24.4	25.1	24.7	25.9
sd(Time since moving from initial occ.)	0.0315	0.025						
sd(Constant)	0.406	0.32						
sd(Residual)	0.262	0.201						

Standard errors in parentheses ** p<0.01, * p<0.05

Table 6: Discrete-time event history analysis results, mobility out of the bottom two quintiles of the full-time hourly wage distribution

	West Germany							United States						
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Initial Occupation														
Retail Salesperson	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*	*ref.*
Personal and Home Care Aides	0.179	0.0936	-0.00967	0.193	0.0431	0.122	0.0344	-0.701***	-0.631***	-0.586***	-0.328*	-0.319*	-0.272	-0.316*
	(0.281)	(0.286)	(0.294)	(0.305)	(0.337)	(0.339)	(0.341)	(0.128)	(0.129)	(0.130)	(0.145)	(0.155)	(0.157)	(0.158)
Childcare Workers	-0.0314	0.0804	-0.263	-0.232	-0.180	-0.129	-0.131	-0.700***	-0.746***	-0.737***	-0.435**	-0.512**	-0.508**	-0.554***
	(0.280)	(0.283)	(0.327)	(0.345)	(0.350)	(0.350)	(0.353)	(0.128)	(0.129)	(0.130)	(0.145)	(0.162)	(0.165)	(0.166)
Cleaners	-0.627***	-0.683***	-0.753***	-0.597**	-0.606**	-0.613**	-0.658**	-0.828***	-0.798***	-0.825***	-0.751***	-0.809***	-0.838***	-0.838***
	(0.177)	(0.178)	(0.184)	(0.208)	(0.219)	(0.219)	(0.221)	(0.118)	(0.118)	(0.121)	(0.134)	(0.146)	(0.148)	(0.148)
Waiters and waitresses	-0.487*	-0.567*	-0.500*	-0.575*	-0.464	-0.421	-0.397	-0.307*	-0.283*	-0.297*	-0.212	-0.114	-0.0621	-0.0589
	(0.238)	(0.241)	(0.247)	(0.258)	(0.263)	(0.264)	(0.265)	(0.122)	(0.123)	(0.125)	(0.134)	(0.143)	(0.146)	(0.146)
Hairstylists and Barbers	-0.746**	-0.707*	-0.665*	-0.599*	-0.495	-0.431	-0.448	0.409*	0.317	0.333	0.620**	0.114	0.215	0.183
	(0.276)	(0.279)	(0.283)	(0.302)	(0.319)	(0.324)	(0.325)	(0.197)	(0.200)	(0.200)	(0.224)	(0.295)	(0.297)	(0.298)
General Office Clerks	0.281*	0.244	0.237	0.236	0.291	0.393*	0.341*	-0.201	-0.209	-0.259	0.133	0.0141	0.00153	0.0141
	(0.136)	(0.138)	(0.141)	(0.146)	(0.154)	(0.157)	(0.158)	(0.188)	(0.190)	(0.192)	(0.206)	(0.223)	(0.229)	(0.230)
Tenure in Iniital Occupation	-0.0315**	0.00685	-0.143***	-0.140***	-0.153***	-0.162***	-0.175***	-0.0754***	-0.00536	-0.0194	0.00752	-0.00348	-0.00611	0.00474
	(0.0113)	(0.0125)	(0.0222)	(0.0235)	(0.0246)	(0.0253)	(0.0255)	(0.0180)	(0.0179)	(0.0198)	(0.0211)	(0.0257)	(0.0261)	(0.0266)
Moved from Initial Occupation		0.862***	1.115***	1.134***	0.954***	0.972***	0.941***		1.636***	1.758***	1.815***	1.948***	1.922***	1.957***
		(0.150)	(0.161)	(0.167)	(0.186)	(0.189)	(0.191)		(0.126)	(0.131)	(0.139)	(0.165)	(0.167)	(0.168)
Time Since Moving from Initial Occ.		0.0794***	-0.0289	-0.0387	-0.0387	-0.0511*	-0.0616**		-0.0254**	-0.0402***	-0.0315**	-0.0458**	-0.0496**	-0.0427**
		(0.0155)	(0.0203)	(0.0214)	(0.0226)	(0.0232)	(0.0235)		(0.00957)	(0.0105)	(0.0109)	(0.0149)	(0.0152)	(0.0158)
Occupation Tenure			0.255***	0.271***	0.262***	0.275***	0.276***			0.0684**	0.0807***	0.0569*	0.0587*	0.0627*
			(0.0266)	(0.0283)	(0.0308)	(0.0315)	(0.0312)			(0.0214)	(0.0228)	(0.0261)	(0.0265)	(0.0265)
Female				-0.826***	-0.890***	-0.976***	-0.960***				-1.130***	-1.006***	-1.051***	-1.048***
				(0.140)	(0.156)	(0.161)	(0.163)				(0.0982)	(0.112)	(0.117)	(0.117)
Age Started in Iniital Occupation				-0.00582	-0.00922	-0.0142	-0.00759				-0.0270***	-0.0297***	-0.0331***	-0.0347***
				(0.00645)	(0.00715)	(0.00840)	(0.00862)				(0.00462)	(0.00527)	(0.00569)	(0.00576)
Not White (U.S.)				--	--	--	--				-0.219*	-0.243*	-0.157	-0.151
				--	--	--	--				(0.0927)	(0.101)	(0.105)	(0.106)
Non-western European (Ger.)				0.0379	0.0498	0.0742	0.0168				--	--	--	--
				(0.168)	(0.175)	(0.177)	(0.178)				--	--	--	--
Education Credential														
Secondary School or Less				-0.171	-0.117	-0.168	-0.169				-0.281*	-0.243	-0.211	-0.210
				(0.167)	(0.173)	(0.174)	(0.175)				(0.113)	(0.125)	(0.127)	(0.128)
Secondary School & Voc. Training				*ref.*	*ref.*	*ref.*	*ref.*				*ref.*	*ref.*	*ref.*	*ref.*
College or University Degree				0.779***	0.787***	0.782***	0.829***				0.868***	0.929***	0.953***	0.983***
				(0.161)	(0.173)	(0.174)	(0.177)				(0.147)	(0.161)	(0.166)	(0.167)
Increased Education in Previous 2 Years				0.871**	1.021**	1.036**	1.052**				1.151***	1.038***	1.035***	1.031***
				(0.297)	(0.316)	(0.318)	(0.320)				(0.209)	(0.240)	(0.242)	(0.244)
Not Employed 2 years ago					-0.162	-0.207	-0.181					0.385*	0.381	0.363
					(0.246)	(0.246)	(0.247)					(0.196)	(0.199)	(0.199)
Started Initial Occ Working Part-Time					0.0270	0.0378	0.0585					-0.158	-0.144	-0.135
					(0.166)	(0.168)	(0.169)					(0.113)	(0.114)	(0.115)
Currently Working Part-Time					-0.129	-0.285	-0.221					-0.535***	-0.532***	-0.531***
					(0.173)	(0.176)	(0.178)					(0.128)	(0.130)	(0.130)
Count of Obs. Working Part-Time					-0.00542	0.00690	-0.0131					0.00867	0.0112	0.0141
					(0.0570)	(0.0586)	(0.0589)					(0.0473)	(0.0478)	(0.0478)

	West Germany							United States						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES (continued)														
Firm Tenure					0.278	0.297*	0.285					0.0220	0.0201	0.0199
					(0.148)	(0.150)	(0.150)					(0.0153)	(0.0156)	(0.0157)
Firm Change in Previous 2 Years					0.319	0.379	0.380					-0.118	-0.0881	-0.0779
					(0.256)	(0.257)	(0.258)					(0.127)	(0.129)	(0.129)
Marital Status														
Married						*ref.*	*ref.*							
Single						-0.0954	-0.0707						-0.601***	-0.633***
						(0.214)	(0.217)						(0.176)	(0.177)
Seperated or Divorced						0.439	0.458*						-0.207	-0.214
						(0.230)	(0.230)						(0.173)	(0.173)
Not Married with Children						-0.398	-0.424						0.148	0.123
						(0.276)	(0.276)						(0.208)	(0.209)
Child(ren) in the Household						0.687***	0.710***						-0.0245	-0.00761
						(0.181)	(0.182)						(0.128)	(0.128)
Cohort (Year Started Initial Occupation)														
1980-1989							ref.							
1990-1995							-0.178							0.406***
							(0.154)							(0.118)
1996-2001							-0.469*							0.127
							(0.186)							(0.138)
2002-2007							-0.947**							0.353
							(0.297)							(0.184)
Constant	-2.470***	-3.164***	-3.247***	-2.624***	-3.040***	-3.167***	-3.020***	-2.283***	-3.526***	-3.596***	-2.037***	-1.952***	-1.734***	-1.937***
	(0.111)	(0.147)	(0.152)	(0.258)	(0.526)	(0.604)	(0.611)	(0.0728)	(0.131)	(0.135)	(0.234)	(0.285)	(0.319)	(0.329)
Number Persons	2,189	2,189	2,131	2,011	1,680	1,679	1,679	4,196	4,196	4,075	3,750	3,356	3,329	3,329
Number of Observations	5,824	5,824	5,709	5,365	4,654	4,653	4,653	12,489	12,489	12,106	11,231	10,334	10,066	10,066
Avg. Observations per Person	2.7	2.7	2.7	2.7	2.8	2.8	2.8	3.0	3.0	3.0	3.0	3.1	3.0	3.0
Pseudo R-squared	3.9	8.69	9.76	14.10	16.05	17.65	22.18	2.42	8.78	9.7	18.01	20.79	22.27	25.68
Standard errors in parentheses	*** p<0.001, ** p<0.01, * p<0.05													

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