

# **Stepping Stones, Dead Ends and Paths of Dualization: Non-Standard Employment and Low Income at Labor Market Entry in Germany**

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## **Abstract**

As part of an on-going process of labor market deregulation, the Hartz IV reforms have contributed to the growth of so-called non-standard employment in Germany, especially amongst labor market entrants. Although Germany is typically characterized by a smooth transition into the labor market, the prevalence of non-standard employment is extremely likely to increase insecurity experienced during this period. From this perspective, Germany is a particularly interesting case for investigating how non-standard employment impacts economic independence during the early career. Subsequently, this study pools longitudinal data from the German Socio-Economic Panel in order to estimate the effect of different types of non-standard employment on low income after accounting for the allocation of non-standard employment amongst labor market entrants. Individuals are followed for a period of five years after leaving education for the last time. Using a combination of matching and linear regression methods, preliminary results indicate that the risk of low income amongst individuals entering the labor market through non-standard employment is largely transient. Although a greater risk of low income is attached to their non-standard employment position, there does not appear to be a scarring effect of remaining in low income in later years. Moreover, the selection into non-standard employment is highly conditional on gender, skill level and occupation, although this does not seem to influence the relationship between non-standard employment and low income during the early career – which has substantial implications for the strengthening of existing socio-economic cleavages amongst the working population.

## **1. Introduction**

From the post-war period up until the 1990s, West Germany was characterized as a country with high shares industrial employment, relatively strong labor market regulation, standardized working conditions and access to generous social protection that was based on an individual's employment position (Baglioni and Crouch 1990; Esping-Andersen and Regini 2000). As part of an on-going process of labor market deregulation, the Hartz IV reforms have more recently contributed to the growth of so-called non-standard employment, especially amongst labor market entrants. Although Germany is typically characterized by smooth transitions into the labor market, the prevalence of non-standard employment is extremely likely to increase insecurity experienced during this period.

From this perspective, Germany is a particularly interesting case for investigating how non-standard employment has impacted employment stability and low income during the early career. Amongst the numerous potential socio-economic consequences of non-standard employment, including effects on health and life satisfaction, I chose these two outcomes as indicators not only for their potential implications for labor market integration, but also economic well-being and independence, the latter having been identified in life course research as one of the key stages of young persons entering adulthood (Buchmann 1989; Groh-Samberg and Voges 2014). From this perspective, these outcomes have arguably the most far-reaching consequences, both being crucial factors for the transition to adulthood (Buchmann 1989).

Bridging life course and labor market sociology, I aim to contribute to the literature in three ways. First, I focus singularly on labor market entrants, a group that is particularly at-risk for both non-standard employment and low income. In doing so, I aim to disentangle the consequences of non-standard employment from the job position itself and the position of the individual in the labor market, i.e. with regards to bargaining power for employment. Second, I give full consideration for the disparity between different forms of non-standard employment, instead of focusing on the socio-economic consequences of a single type of non-standard employment. By empirically differentiating between different forms of flexibilization, I am able to identify which forms of non-standard employment pose the greatest consequences for labor market entrants with regard to low income and employment security. Finally, I take into account the role of individual level characteristics and labor market segmentation in the allocation of these positions as well as the unequal distribution of risks amongst labor market entrants.

## **2. Conceptualizing Non-Standard Employment**

Following Keller & Seifert (2013), I take a nominal definition of atypical employment referring to any employment relationship that does not fully exhibit qualities of the so-called standard employment relationship (SER). Characterized as employment that is full-time, continuous, takes place usually within one firm, provides sufficient income and gives full access to social security, the term non-standard employment

has been more generally used to refer to a variety of work arrangements that differ at least in one respect to these characteristics (Keller and Seifert 2013; Marx 2011; Oschmiansky and Oschmiansky 2003; Rodgers and Rodgers 1989). At the same time, it is possible that work arrangements differ in multiple regards, especially with regards to the socio-economic dimension of non-standard employment.

In this study, I consider four types of atypical employment. First, part-time employment is any employment that carries less than 35 hours per week. A further distinction is made here between (1) regular part-time employment and (2) marginal employment, which by definition receives insufficient pay for economic independence. Examples of such positions in Germany are mini- or midi-jobs, which are particularly overrepresented amongst married women who are not the primary sources of household income (Giesselmann and Lohmann 2008). A third type of atypical employment considered here is (3) temporary employment, or fixed-term contracts that by definition have an absolute termination date.<sup>1</sup> Finally, (4) self-employment is included here as an alternative form of employment to standard employment.<sup>2</sup>

SER was the predominant type of employment relationship held from the 1950s to 1970s, i.e. the period associated with the development of

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<sup>1</sup> A further distinction could be made between temporary employment and temporary agency work, which was introduced in Germany in 2001. It is characterized by a tripartite employment relationship between employee, employer and a third party responsible for hiring the employee. Although it may arguably have different implications for low income, temporary agency work accounts for 2.2% of the observations in this sample (2.7% of all employment observations and 23% of all temporary employment observations,  $n=358$ ).

<sup>2</sup> Similarly, a further distinction could be made between self-employment and solo self-employment, which accounts for 1.2% of the observations in this sample (1.8% of all employment observations and 19.5% of all self-employment observations,  $n=358$ ).

the German welfare system. Consequently, most discussions of non-standard employment have emphasized an increased insecurity and vulnerability experienced amongst the working population, as much of social protection policies are based on the SER. Consequently, much of the literature has emphasized the extent of precariousness associated with non-standard employment; however, the two are not analogous. To the contrary, non-standard employment constitutes a heterogeneous group that demonstrates various types and degrees of precariousness (Blossfeld and Hakim 1997; Eichhorst and Tobsch 2013; Giesecke 2009; Kalleberg 2000). As each work arrangement represents a different variation on the SER, each type of atypical employment is argued here to have different implications for the type of socio-economic risk experienced as well as the distribution of these risks amongst labor market entrants.

Although some forms of atypical employment are more associated with precariousness, atypical employment constitutes a heterogeneous group that demonstrates various types and degrees of precariousness (Blossfeld and Hakim 1997; Eichhorst and Tobsch 2013; Giesecke 2009; Kalleberg 2000). As each work arrangement represents a different variation on the SER, each type of atypical employment is argued here to have different implications for the type of socio-economic risk experienced as well as the distribution of these risks amongst labor market entrants. Based on this assumption, not all forms of atypical employment necessarily contribute to low income, which is defined here as a relatively low monthly net income, i.e. below the 60% threshold of the national median for the working population. As an individual measure, low income may have consequences for economic well-being; however, this measure

does not take into account household members that contribute to the resources or needs associated with a pooled income. Rather, the implications for low income at the start of the career is associated here with the concepts of labor market integration and economic independence, which is identified in life course research as one of the key stages of young persons entering adulthood (Buchmann 1989; Groh-Samberg and Voges 2014).

Previous studies further suggest that there is an unequal distribution of atypical employment between specific groups in the labor market (Blossfeld and Hakim 1997; Buchholz and Kurz 2009; Bukodi et al. 2009). For example, persons with weaker labor market positions, including labor market entrants, are assumed to face an increased risk of being employed in atypical employment positions. Amongst this demographic, this is particularly true for women and low-skilled individuals. Therefore, in order to estimate the effect of different forms of atypical employment on low income, I account for two selection processes that structure the allocation of atypical employment, on the one hand, and the likelihood of contributing to low income, on the other.

### **3. Theoretical Considerations**

While most studies ascribe to either an integrative or entrapment perspective of non-standard employment (i.e. bridge or trap), these views do not fully capture the range of outcomes, given the heterogeneous nature of non-standard employment. Moreover, outcomes are further conditional

on the structure of the labor market, individual preferences and job matching processes, which in turn shapes pattern of labor market entry and the extent as well as duration of socio-economic risks experienced. Consequently, I take up the dualization framework, which emphasizes socio-institutional processes contributing to social inequality and is rooted in (1) critical welfare state theory, (2) labor market segmentation theory and (3) insider-outsider theory.

Following Emmenegger et al. (2012), I ask whether non-standard employment at the start of the career reinforces structural dualization of German labor markets either in terms of the strengthening of existing institutional dualisms (i.e. the differential treatment of insiders and outsiders) *or* the widening of existing institutional dualisms (i.e. groups that have been previously treated like insiders are increasingly treated like outsiders). These macro-level influences are expected to impact the prevalence of non-standard employment in Germany and to what extent early career patterns have become more differentiated. At the same time, they are expected to influence micro-level processes that shape the allocation of non-standard employment and the distribution of socio-economic risks.

### *3.1. Labor Market Segmentation Theory*

Although early theories of *labor market segmentation* were developed in reference to the US labor market, subsequent theories were developed to describe the structure of the German labor market (see Lutz



and Sengenberger 1974). In short, the labor market can be divided into two segments: a primary labor market and a secondary labor market (also referred to as internal and external labor markets, see Doeringer and Piore 1971). For the German labor market, Lutz and Sengenberger (1974) describes the secondary labor market (i.e. *Jedermanns-arbeitsmarkt*) as primarily governed by labor supply and demand, whereas the primary labor market is structured by institutional rules that operate either via specific occupational skills and credentialism (i.e. occupational labor markets, OLMs) or intra-firm hierarchical career ladders designed to reduce worker opportunism and engender greater employer-employee loyalty (i.e. internal labor markets, ILMs) (see also Eyraud, Marsden, and Silvestre 1990; Sengenberger 1987). These rules are viewed as substitutes for market processes, not only protecting employees situated in primarily labor market segments from external wage pressures, but also securing them greater promotion opportunities, better working conditions and higher wages (Marsden 2010).

Entry into the labor market through one of these segments is expected to impact the likelihood of holding non-standard employment and the socio-economic risks associated with that position; however, dualization theory further suggests that social divides amongst the working population are no longer as clearly drawn (Emmenegger et al. 2012). Therefore, the present study of socio-economic risks attached to labor market position accounts for additional aspects of the employment relationship to understand how these risks are distributed.

### 3.2. *Critical Welfare State Theory*

One of the key indicators of dualization from a *welfare state* perspective is increased flexibilization. Primarily, this is discussed as a process of on-going deregulation of the German employment protection legislation, which refers to the degree of “strictness” associated with the regulation of contractual arrangements that increases the transaction costs of firms to hire and fire employees (Esping-Andersen and Regini 2000). Such regulation protects employees from being let go during economic turnovers or unfair dismissal and is often reinforced by collective bargaining institutions (Lindbeck and Snower 1988). At the same time, strong employment protection may also reduce the ability of firms to adjust to economic uncertainty or respond to structural change (Blossfeld et al. 2008; Kitschelt et al. 1999; Saint-Paul, Bean, and Bertola 1996).

From what we know about these flexibilization in Germany, it is clear that most processes of flexibilization has occurred primarily at the margins of the labor market, particularly impacting individuals with little bargaining power (Barbieri and Scherer 2009; Eichhorst, Marx, and Tobsch 2015; Esping-Andersen and Regini 2000; Mills and Blossfeld 2003). However, flexibilization is not only reflected in formal rules and regulation, although they certainly provide the legal framework that is responsible for shaping this process. Rather, flexibilization can also be viewed as a process that is increasingly implemented *within* firms. Moreover, the type of flexibilization is highly differentiated.

Following Atkinson (1985), I make a distinction between internal and external flexibility to hypothesize to what extent non-standard

employment is associated with low income (for further discussion, see also Esping-Andersen and Regini 2000; Giesecke 2009). Generally speaking, internal flexibility primarily refers to ways in which firms use internal resources for enhancing flexibility (e.g. adjusting work hours and schedules). In contrast, external flexibility refers to a firm strategy for utilizing labor supply and is particularly characterized by a lack of employment continuity (Giesecke 2009). Thus, temporary employment and marginal employment are characterized here as forms of external flexibility, whereas part-time employment is characterized as forms of internal flexibility.

As previously discussed, strict employment protection is likely to increase the use of temporary employment by employers in order to reduce the transaction costs associated with hiring and firing employees. However, this type of flexibility may incur additional sunk costs, especially if extensive training is required (Barbieri 2009).

### *3.3. Insider-Outsider Theory*

With regards to the allocation of non-standard employment, *insider-outsider theory* also provides a theoretical framework for understanding labor market bargaining power dynamics (Berger and Piore 1980; Humphries and Rubery 1984; Peck 1996). That is, social divisions are not only mirrored in the dichotomy of whether individuals are employed or not, but also amongst the working population. These divisions are likely the result of how the labor market is structured, how

individuals are positioned within this structure and the means by which individuals form protective coalitions (e.g. collective bargaining and corporatist regulation, see Craig et al. 1982). In this way, an institutionalized, “core” workforce benefits from greater employment protection – often at the expense of “periphery” workers left to their own means of bargaining. Paradoxically, these individuals typically have less bargaining power in the labor market, at least in the traditional sense of human capital.

In addition to human capital, the concept can also be transferred to other aspects affecting the bargaining process, such as gender. According to job matching and job search theories, gender may also influence the selection process into non-standard employment. For the case of Germany, which has a strong and persistent tradition of the male breadwinner model, there is a strong selection of women into part-time employment. This is likely strongly associated with individual preferences, especially amongst married women with children. Indeed, female labor supply and the decision of whether to work and for how much time is more strongly associated with partners’ earnings than female human capital (Kollmeyer 2013).

In relation to non-standard employment, insider-outsider theory also provides a framework for understanding the association between employment relationships and low income. More specifically, strong employment protection and collective bargaining measures increase the transaction costs for replacing incumbent employees, which in turn provide higher market power to increase wages above the market-clearing equilibrium (Doeringer and Piore 1971). Higher wages amongst insiders

can therefore be viewed as a positional rent that individuals in non-standard employment are unable to possess (Giesecke 2009). That is, non-standard employment is expected on average to receive lower wages, as transaction costs associated with these positions are lower.<sup>3</sup>

However, labor market entrants have already been identified as a group that is particularly at-risk for low wages and frequent periods of inactivity in comparison to the mid-career working population because of their position in the labor market as *outsiders* (Blossfeld et al. 2008; Buchmann 1989; Gangl 2002; Giesecke and Groß 2004; Pavlopoulos and Fouarge 2010; Scherer 2005). As young workers gain experience and cultivate interdependent relationships with employers, they are expected to improve bargaining power and position in the labor market as *insiders*. At the same time, this process is also expected, at least theoretically, to improve the likelihood of being employed and having a sufficient hourly wage to be economically independent. Therefore, any understanding of the consequences of non-standard employment must first differentiate the job position itself from the position of the individual in the labor market.

## 4. Data and Methods

This study pools longitudinal data from the German Socio-Economic Panel (1984-2013, v30) in order to estimate the effect of

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<sup>3</sup> Other have argued that in some instances, employers actually pay above the market wage for highly skilled temporary workers in order to offset the employee costs associated with the limited duration and potential employment insecurity (Kalleberg 2000).

different types of non-standard employment on low income after accounting for the allocation of atypical employment amongst labor market entrants. The population of interest are school-leavers, i.e. individuals that were in education or training the previous year, but not the year of observation and did not return to school thereafter for additional educational qualifications. Therefore, it does not include further education or on-the-job training.

Of the 5,406 individuals identified as leaving education, 40% did not attend post-secondary education, whereas the majority of the sample holds an additional vocational education and training degree (43%, three-fourths of whom having completed an apprenticeship). A modest 17% hold a tertiary education degree. These individuals are followed for a period of four years after entering the labor, where time  $t$  is in education and  $t + 1$  indicates first significant job market after all educational credentials have been obtained. Thus, a gap of up to four years between leaving education and finding employment is accounted for in further analyses. Because this study only compares the working population, all individuals who do not find employment after a period of five years are included for matching estimations for balancing treatment and control groups but not for estimating the effect of non-standard employment on low income.

#### *4.1. Operationalization*

In this study, I take an individual measure of low income, i.e. below the 66% threshold of the national median of individual net monthly income. Although this measure is not necessarily a high-risk factor for poverty and therefore has only partial implications for economic well-being (Giesselmann and Lohmann 2008:97), low income as an individual measure is used here as a measure of economic independence, irrespective of household resources or welfare support. As such, it has far-reaching implications concerning the transition to adulthood.

In addition, the association between this measure and the employment relationship held is likely to be stronger and less confounded by additional factors that relate to other measures of poverty. That is, the concept of low income is more closely related to the individual's position in the labor market, whereas a household measure of poverty reflects the individual's position in the overall income distribution. With regards to the aims of this dissertation, few studies have linked low income with the type of employment relationship held, outside of the discussion of marginal employment, which per definition is low-income employment. Therefore, the results of this study may also be interesting for further research on the non-standard employment and poverty dynamics.

As this chapter focuses on different forms of non-standard employment relationships (NSER), I explicitly model one aspect of deviation from characteristics defining the Standard Employment Relationship (SER) for each treatment group as dichotomous variables. As discussed earlier, such deviations may relate to hours worked, duration of

contract, organizational aspects or relating to integration into social security systems and having sufficient income. As the focus of this paper is on the socio-economic dimension of sufficient income, I focus primarily on work time and duration of contract.<sup>4</sup> As these dimensions may also overlap or carry further distinctions, additional aspects of the employment relationship are also controlled via the inclusion a dummy in further analyses (e.g. a dummy for mini jobs with part-time employment or temporary work agency for temporary employment).

Subsequently, two treatment groups are defined. The first consists of part-time employment, defined as less than 35 contractual hours worked per week. This includes regular part-time (consisting of 88% of the treatment group) as well as marginal part-time (e.g. mini jobs, 12%). As the factors contributing to the selection of individuals into part-time and temporary employment are considered here as fundamentally different, however, fixed-term, part-time employment is excluded. The control group thus consists of individuals employed in regular, full-time employment (i.e. SER).

The second treatment group includes individuals in a fixed-term position. Similarly, individuals in fixed-term positions may work for a temporary work agency (TWA, 16%) rather than having a single employer (84%). The effect of the separate treatment groups is estimated in comparison with a control group (i.e. individuals employed in SERs) on the outcome low income. The control group again consists of individuals employed in regular, full-time employment (i.e. SER).

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<sup>4</sup> A third treatment group may be added later that includes the self-employed and can be further distinguished between those with or without employees (i.e. solo self-employment).



For estimation of effects of treatment groups on low income, I include a number of controls that are likely to influence the dependent variable as well as the selection into NSER. These include metric variables (e.g. survey year, age, age-squared, work experience in years and log hourly wage), as well as categorical variables: educational degree (i.e. 1=no post-secondary education, 2=VET and 3=higher education), industry (i.e. 1=manufacturing, 2=construction, 3=services and 4=public administration) and firm size (i.e. 1=less than 20 employees, 2=20-200 employees, 3=200-2000 employees and 4=more than 2000 employees). In addition, a number of dummies to control for East Germany, gender, young children in the household (under three years of age) and if there was a delayed entry into the labor market (i.e. inactivity gap between leaving education and entering employment). For part-time employment models, gender-specific interactions with children and partner's earnings are also included.

#### *4.2. Matching and Linear Probability Models*

As shown in the previous chapter, labor market entrants are particularly at risk for non-standard employment, although within this demographic there are further selection effects with regard to gender, skill level and occupation. As a result, individuals with weaker labor market positions face an increased likelihood of holding NSERs as well as a greater probability of low income. To ensure that the estimated effect of the treatment is not a reflection of social composition effects, I apply

Coarsened Exact Matching (CEM) to match individuals in the control group to each of the treatment units<sup>5</sup> in combination with linear probability models in order to compare coefficients across models at each year in the labor market (for further discussion, see Mood 2010).

Statistical matching is a common approach used in social science research to isolate the treatment effect on an outcome (i.e. NSER on low income) (Morgan and Winship 2007). Hypothetically, if one could observe both the outcome of the same individual receiving and not receiving the treatment, then the ATT would be the difference between these outcomes. In reality, however, the counterfactual outcome cannot be observed. Statistical matching therefore provides an alternative approach that attempts to pair individuals in the sample based on relevant, observable characteristics in order to make them virtually similar in order to estimate the average treatment effect of the treated (ATT) and the average treatment effect of the untreated (ATU). Formally, the ATT is defined as the difference between the expected outcomes with and without participation in treatment group (i.e.  $D=1$ ):

$$ATT = E(Y_{1t} - Y_{0t} | D = 1) \quad (1).$$

By statistically matching individuals in both treatment and control groups, identification is then considered to achieve the conditional independence assumption that the treatment group in the absence of the treatment would experience the same outcome as the control group, after accounting for observable characteristics. Hence, statistical matching is one approach to reduce potential bias by reducing model dependence and approximating

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<sup>5</sup> Results are compared also with results derived from PSM. Although they do not substantially differ, CEM performs better in terms of balancing treatment and control groups, especially for temporary employment.

the nearly random allocation of the treatment (Caliendo and Kopeinig 2008).

Within this approach, there are a number of techniques available for rendering treatment and control groups similar. The most common approach, propensity score matching (PSM), achieves this by estimating the probability of receiving treatment given the set of covariates used in the model. However, this approach is disconnected from a second and necessary step of checking the balance of treatment and control groups, which can lead to numerous iterations before deriving an adequate control group. In addition, Iacus, King, and Porro (2012) argue that the reduction of data to a single propensity score is not sufficient for balancing groups, given the multi-dimensional distribution of a set of covariates.

To address this shortcoming, the authors recommend CEM, an approach that derives exact matches in the control group based on the combination of a set of covariates and the decisions concerning along what values covariates are coarsened. For example, if individuals of certain age groups are regarded as similar, the metric variable is coarsened so that individuals within a specific age range are matched. As individuals are always matched with others who share the same combination of characteristics identified in the set of covariates, a number of “strata” of matched individuals are identified and weights are assigned to the control group in each stratum so that their number equals that of the treated and is then multiplied by the original proportion of control and treatment cases.

Observations that are not matched are not incorporated in the construction of the weight and are dropped from further analyses. Unlike PSM, CEM automatically restricts matching estimations to common

support so that the ATT estimates the local effect of treated that have a corresponding match in the control group. However, Iacus, King, and Porro (2012) argues that CEM outperforms other matching methods with regards to generating balance between groups because of the multi-dimensionality of strata, which are further reflective of theoretical considerations concerning the combination of specified covariates and their values.

Subsequently, the assignment of covariates and their values included in the matching estimation is of great importance and relies on the researcher's knowledge of the processes influencing the selection into the treatment group. As discussed in the theoretical section, selection into part-time employment is more closely associated with demographic and household factors, whereas selection into temporary employment is more closely associated with employment factors (e.g. firm size). Table XX provides an overview of covariates coarsened and their summarized means for both groups for each of the treatments assigned (i.e. part-time and temporary employment).

**Table XX. Covariate Coarsening and Summarized Means, by Treatment and Control Groups**

Covariate	Coarsening	Mean of T (pt)	Mean of C (pt)	Mean of Unmatched Sample	Mean of T (temp)	Mean of C (temp)	Mean of Unmatched Sample
Year of Entry	'84-'90, '91-'97, '98-'02, '03-'07, 0'8-'13	2002	2002	2000	2004	2004	2000
Delayed Entry	1=yes/0=no	0.99	2.099	1.49	0.98	0.98	1.49
Age	17-21, 22-25, 26-29, 30-35	27.96	27.81	26.14	26.68	26.90	26.14
Education	no post-secondary education, VET, HE	1.86	1.86	1.69	1.78	1.78	1.69
East German	1=yes/0=no	0.19	0.19	0.19	0.22	0.22	0.19
Migrant	1=yes/0=no	0.26	0.26	0.28	0.24	0.22	0.28
Woman	1=yes/0=no	0.78	0.78	0.49	0.49	0.49	0.49
Child (under 3) *	1=yes/0=no	0.13	0.13	0.17	0.11	0.09	0.17
Log Partner Earnings*	0-3, 4-7, 8-10	2.99	3.01	1.07	1.79	1.91	1.07
Industry**	1=manufacturing, 2=construction, 3=services, 4=public administration	3.80	3.79	3.41	3.60	3.60	3.41
Firm Size**	1=LT 20, 2=20-200, 3=200-2000, 4=GT 2000	2.34	2.41	2.66	2.63	2.63	2.66
Log Hourly Wage***	–	2.47	2.52	1.44	2.46	2.54	1.44
Work Experience***	–	4.93	5.06	4.13	3.86	4.56	4.13
	<i>N</i>	753	4,615	35,637	1,588	6,731	35,637

*Source: Own calculation. GSOEP (1984-2013, w30).*

\* Covariates are used only in the treatment of part-time employment.

\*\* Covariates are used only in the treatment of temporary employment, although a dummy for the service industry is included in the treatment of part-time employment as an alternative to categorically defined industry.

\*\*\* Covariates are not used in the matching of treatment and control groups but used in further empirical analyses.

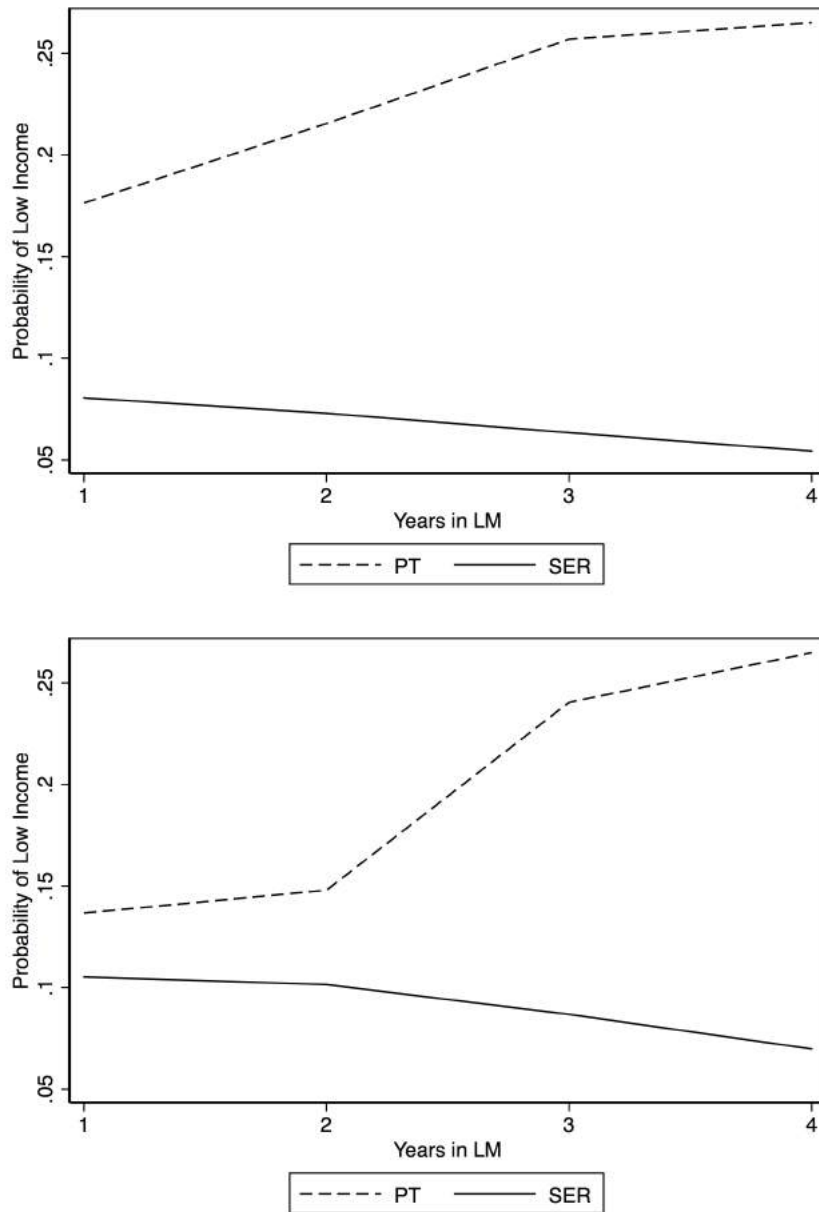
## 5. Results

### *5.1. Part-Time Employment and Low Income*

Figures 1 and 2 graphically illustrate the outcome effect of the treatment and control groups for part-time employment (with estimates from regression results reported in Tables 1 and 2 in the Appendix). Results indicate that the effect of part-time employment on low-income is likely to remain, even after accounting for the unequal distribution of NSER amongst labor market entrants. Interestingly, this effect is not substantially different from the estimates derived from regression analysis before matching and after including a number of controls. Only does the estimate appear to be reduced in the first two years in the labor market after matching (i.e. from 17 to 14 percentage points). The probability of low income increases, however, in years three and four to roughly 25 percentage points, which is nearly five times greater than individuals in SERs.

Whereas this risk increases with years in the labor market for part-time employed persons, it decreases for individuals in SERs. This reflects more or less the expectation that labor market entrants may have a transient risk of low income at the start of the career, although this risk decreases with years in employment. In contrast, this is not the overall finding for individuals in part-time employment – who have a persistently higher and increasing probability of also having low income compared to individuals employed in SER position.

**Figure 1. Low Income Risk of Part-Time Employment**



Source: Own calculation. GSOEP (1984-2013, w30); Top figure depicts estimates without matching; Bottom figure depicts estimates with matching.

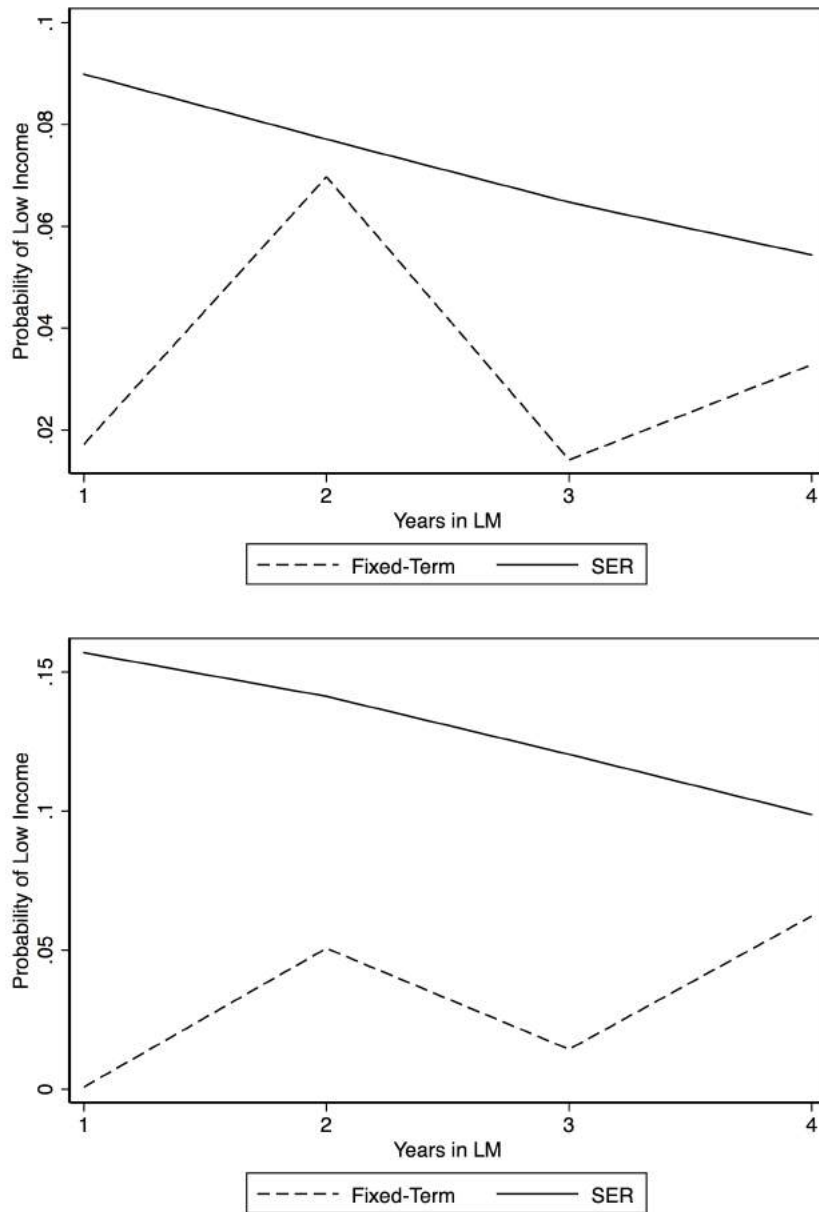
Comparing regression results, other factors may decrease the risk of low income during the early career, regardless of first employment position. These include East Germans as well as individuals with VET and those employed in public administration. In addition, women with children have a substantially higher risk of low income, which reiterates other findings that these women are supplementary household earners (Daly and Scheiwe 2010; Hofmeister et al. 2006; Levy, Felix, and Widmer 2007).

### *5.2. Temporary Employment and Low Income*

Compared to part-time employment, a completely different narrative on the outcome effect of temporary employment is depicted in Figure 2 (with complete regression tables provided in the Appendix, see Tables 3 and 4). What is most striking is individuals in temporary employment have only a marginal risk of low income, one that is lower even to that of individuals in SERs. This supports the notion that employers may pay workers more in order to offset individual costs associated with the employment instability attached to fixed-term contracts.



**Figure 2. Low Income Risk of Temporary Employment**



Source: Own calculation. GSOEP (1984-2013, w30) ; Top figure depicts estimates without matching; Bottom figure depicts estimates with matching.

The estimates before matching are not statistically significant, which makes further comparison difficult; however, one interesting aspect is the similar trend of decreasing low-income risks for individuals in SERs with every year in the labor market. This is not the case for individuals in temporary employment. On the contrary, the risk of low income is nearly three times lower in the first year of labor market entry for individuals in temporary employment compared to SER (i.e. a differences of 15 percentage points). For later years, the risk remains constant at roughly 5 percentage points and appears to converge that of SER towards the end of the observation period.

Similarly to the discussion of part-time employment, regression analyses low-income risks during the early career with regards to temporary employment are decreased for East Germans as well as individuals with VET or employed in the public sector, regardless of employment position. In addition, there is a substantial risk of low income for individuals employed in small-to-medium sized firms, although this risk disappears when including CEM weights.

## **6. Discussion**

These results suggest that employment relationship is an important factor for understanding low income during the early career. Indeed, different patterns are drawn from the analyses conducted here with regards to part-time and temporary employment. Whereas the risk of low income

is higher for part-time employees than SER, the opposite is true for individuals with fixed-term contracts.

Another important difference identified here relates to dynamics over time. First, it does not appear that working part-time at the start of the career has an impact on labor market integration – at least with regards to economic independence. More specifically, the risk of low income only increases with time in the labor market for part-time employees, even after including CEM weights. In comparison, the risk of low income for individuals with fixed-term contracts is low at each year in the labor market, but eventually converges with that of individuals in SERs. This may indicate that employers are more frequently using fixed-term contracts as a screening mechanism for potential employees.

These results have further implications for social stratification, as a clear selection bias is observable in the allocation of non-standard employment. Accounting for this bias through statistical matching, however, does not appear to impact the individual effect of non-standard employment on low income. While further sensitivity tests are still required, these early findings suggests that non-standard employment is likely to increase the risk of low income for individuals, especially during later years in the labor market. As the allocation into non-standard employment is unequally distributed amongst the working population, we can further conclude that non-standard employment further contributes to greater dualization in the labor market.

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## **Appendix**

**Table 1. Regression Results for Part-Time Employment (without Matching)**

	(pooled)	(t + 2)	(t + 2)	(t + 3)	(t + 4)
T(Part-Time)	0.22*** (0.02)	0.18*** (0.02)	0.22*** (0.02)	0.26*** (0.02)	0.27*** (0.03)
Survey Year	-0.00 (0.00)	0.00* (0.00)	0.00 (0.00)	-0.00** (0.00)	-0.00** (0.00)
Delayed Entry	0.03* (0.02)	0.06* (0.03)	0.05 (0.04)	-0.00 (0.03)	0.01 (0.04)
Age	-0.02 (0.01)	-0.02 (0.02)	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.03)
Age <sup>2</sup>	0.00** (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
VET	(ref. no post-sec. edu.) -0.03*** (0.01)	-0.03** (0.01)	-0.03** (0.01)	-0.04*** (0.01)	-0.02 (0.02)
HE	0.03** (0.01)	0.06*** (0.02)	0.02 (0.02)	-0.00 (0.02)	0.03 (0.02)
East German	-0.08*** (0.01)	-0.09*** (0.02)	-0.07*** (0.02)	-0.08*** (0.02)	-0.07*** (0.02)
Migrant	0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Female	-0.00 (0.01)	-0.02 (0.01)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.02)
Kids	0.01* (0.01)	0.03 (0.02)	0.01 (0.02)	0.00 (0.02)	0.03 (0.02)
fem##kids	0.13*** (0.03)	0.17*** (0.05)	0.14*** (0.05)	0.10** (0.04)	0.07* (0.04)
Log Partner's Earnings	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
fem##lpearn	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01*** (0.00)
Construction	(ref. manufacturing) 0.04*** (0.01)	0.04 (0.02)	0.05** (0.02)	0.04 (0.02)	0.03 (0.03)
Service	-0.01* (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.01 (0.01)	0.01 (0.01)
Public Administration	-0.05*** (0.01)	-0.08*** (0.02)	-0.01 (0.02)	-0.06*** (0.02)	-0.05** (0.02)
20-200	(ref. LT 20 employees) -0.00 (0.01)	0.01 (0.01)	0.02 (0.02)	-0.02 (0.02)	-0.03 (0.02)
200-2000	0.00 (0.01)	0.00 (0.02)	0.01 (0.02)	-0.02 (0.02)	0.02 (0.02)
GT 2000 Employees	0.01 (0.01)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)
Log Hourly Wage	-0.31*** (0.01)	-0.36*** (0.01)	-0.28*** (0.01)	-0.31*** (0.01)	-0.27*** (0.02)
Work Experience	0.00 (0.00)	-0.00 (0.01)	0.01 (0.01)	0.00 (0.01)	-0.00 (0.01)
Work Experience <sup>2</sup>	-0.00 (0.00)	-0.00 (0.00)	-0.00* (0.00)	-0.00 (0.00)	0.00 (0.00)
Mini Job	0.32*** (0.05)	0.27*** (0.05)	0.27*** (0.07)	0.46*** (0.07)	0.36*** (0.08)
Observations	9,662	2,870	2,599	2,259	1,934
R-squared	0.26	0.27	0.24	0.31	0.28

\*Note: Robust standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table 2. Regression Results for Part-Time Employment (with Matching)**

	(pooled)	(t + 2)	(t + 2)	(t + 3)	(t + 4)
T(Part-Time)	0.183*** (0.0256)	0.137*** (0.0249)	0.148*** (0.0283)	0.240*** (0.0298)	0.265*** (0.0317)
Survey Year	-0.00234 (0.00196)	-0.00197 (0.00136)	0.00123 (0.00151)	-0.00528*** (0.00160)	-0.00112 (0.00181)
Delayed Entry	0.0803 (0.0653)	0.148 (0.0980)	0.149 (0.119)	0.0636 (0.105)	-0.0317 (0.106)
Age	0.0231 (0.0407)	-0.0224 (0.0313)	0.112*** (0.0409)	-0.0657 (0.0451)	0.0128 (0.0548)
Age <sup>2</sup>	-0.000203 (0.000745)	0.000746 (0.000584)	-0.00194*** (0.000746)	0.00139* (0.000799)	-2.60e-05 (0.000942)
VET	(ref. no post-sec. edu.) -0.0384 (0.0254)	-0.0725*** (0.0235)	0.000852 (0.0256)	-0.0658*** (0.0238)	0.00450 (0.0263)
HE	0.0328 (0.0414)	0.0130 (0.0308)	0.103*** (0.0330)	-0.0370 (0.0305)	0.00759 (0.0357)
East German	-0.153*** (0.0245)	-0.172*** (0.0244)	-0.106*** (0.0263)	-0.148*** (0.0264)	-0.213*** (0.0276)
Migrant	0.0216 (0.0307)	-0.0245 (0.0232)	0.0628*** (0.0238)	0.0110 (0.0247)	-0.0160 (0.0270)
Female	-0.00730 (0.0167)	0.0206 (0.0236)	-0.0319 (0.0270)	0.00510 (0.0278)	-0.00772 (0.0307)
Kids	0.145 (0.0953)	0.144* (0.0758)	0.190*** (0.0709)	-0.0286 (0.0813)	0.142 (0.106)
fem##kids	0.106 (0.127)	0.312*** (0.0949)	0.216*** (0.0817)	0.234*** (0.0882)	-0.0732 (0.111)
Log Partner's Earnings	-0.000261 (0.00520)	0.00915 (0.00777)	-0.0101 (0.00658)	0.00300 (0.0102)	-0.00497 (0.0101)
fem##lpearn	0.0132** (0.00631)	-0.00163 (0.00828)	0.0269*** (0.00708)	0.0100 (0.0106)	0.0152 (0.0105)
Construction	(ref. manufacturing) 0.0489 (0.0473)	0.0278 (0.0830)	0.0479 (0.104)	0.127 (0.114)	0.00840 (0.0902)
Service	-0.00524 (0.0203)	-0.0342 (0.0288)	-0.00345 (0.0311)	0.0244 (0.0311)	-0.0125 (0.0324)
Public Administration	0.0608 (0.0847)	-0.124** (0.0562)	0.227*** (0.0488)	-0.0687 (0.0605)	-0.0619 (0.0567)
20-200	(ref. LT 20 employees) 0.0481* (0.0268)	0.0311 (0.0230)	0.0456* (0.0259)	0.0905*** (0.0266)	0.0194 (0.0291)
200-2000	0.00801 (0.0257)	0.0560** (0.0280)	-0.0616** (0.0293)	0.00568 (0.0295)	0.0168 (0.0311)
GT 2000 Employees	-0.00770 (0.0279)	0.00700 (0.0263)	-0.00561 (0.0286)	-0.00191 (0.0288)	0.0107 (0.0316)
Log Hourly Wage	-0.330*** (0.0275)	-0.442*** (0.0241)	-0.244*** (0.0214)	-0.321*** (0.0222)	-0.328*** (0.0247)
Work Experience	-0.00921 (0.0136)	-0.0170 (0.0106)	-0.0105 (0.0111)	0.0225** (0.0105)	0.00498 (0.0154)
Work Experience <sup>2</sup>	1.39e-05 (0.000803)	0.000270 (0.000770)	0.000525 (0.000735)	-0.00184*** (0.000604)	-0.000214 (0.000963)
Mini Job	0.321*** (0.0702)	0.278*** (0.0673)	0.206** (0.0909)	0.470*** (0.101)	0.426*** (0.124)
Observations	4,411	1,278	1,232	1,054	847
R-squared	0.282	0.368	0.312	0.307	0.317

**Table 3. Regression Results for Temporary Employment (without Matching)**

	(pooled)	(t + 2)	(t + 2)	(t + 3)	(t + 4)
T(Temporary)	0.03*** (0.01)	0.02 (0.01)	0.07*** (0.02)	0.01 (0.02)	0.03 (0.02)
Survey Year	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Delayed Entry	0.02 (0.02)	0.07** (0.03)	0.04 (0.03)	-0.03 (0.03)	-0.01 (0.04)
Age	-0.01 (0.01)	-0.03* (0.02)	0.00 (0.02)	0.00 (0.02)	0.01 (0.03)
Age <sup>2</sup>	0.00* (0.00)	0.00** (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
VET <i>(ref. no post-sec. edu.)</i>	-0.03*** (0.01)	-0.02* (0.01)	-0.03** (0.01)	-0.04*** (0.01)	-0.02 (0.01)
HE	0.05*** (0.01)	0.07*** (0.02)	0.03 (0.02)	0.03 (0.02)	0.06*** (0.02)
East German	-0.06*** (0.01)	-0.07*** (0.01)	-0.06*** (0.02)	-0.06*** (0.01)	-0.05*** (0.02)
Migrant	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)
Female	0.03*** (0.01)	0.01 (0.01)	0.02* (0.01)	0.03*** (0.01)	0.04*** (0.01)
Kids	0.03*** (0.01)	0.03 (0.02)	0.02 (0.02)	0.03 (0.02)	0.04** (0.02)
fem##kids	0.04*** (0.01)	0.04* (0.02)	0.06*** (0.02)	0.02 (0.02)	0.03 (0.03)
Log Partner's Earnings	-0.01 (0.01)	-0.02 (0.01)	-0.01 (0.01)	-0.01 (0.01)	0.01 (0.01)
fem##lpearn	-0.05*** (0.01)	-0.06*** (0.02)	-0.03 (0.02)	-0.06*** (0.02)	-0.04* (0.02)
Construction <i>(ref. manufacturing)</i>	0.00 (0.01)	0.02 (0.01)	0.02 (0.02)	-0.02 (0.01)	-0.03 (0.02)
Service	0.00 (0.01)	0.00 (0.02)	0.01 (0.02)	-0.02 (0.02)	0.02 (0.02)
Public Administration	0.01 (0.01)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.03 (0.02)
20-200 <i>(ref. LT 20 employees)</i>	-0.30*** (0.01)	-0.35*** (0.01)	-0.26*** (0.01)	-0.28*** (0.01)	-0.28*** (0.02)
200-2000	0.00 (0.00)	0.00 (0.01)	0.01* (0.01)	0.01 (0.01)	-0.00 (0.01)
GT 2000 Employees	-0.00** (0.00)	-0.00 (0.00)	-0.00** (0.00)	-0.00 (0.00)	0.00 (0.00)
Log Hourly Wage	0.01 (0.03)	-0.04 (0.04)	0.00 (0.04)	0.06 (0.04)	0.05 (0.05)
Work Experience	0.03*** (0.01)	0.02 (0.01)	0.07*** (0.02)	0.01 (0.02)	0.03 (0.02)
Work Experience <sup>2</sup>	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Temporary Work Agency	0.02 (0.02)	0.07** (0.03)	0.04 (0.03)	-0.03 (0.03)	-0.01 (0.04)
Observations	10,197	3,204	2,748	2,307	1,938
R-squared	0.17	0.20	0.15	0.17	0.17

**Table 4. Regression Results Temporary Employment (with Matching)**

	(pooled)	(t + 2)	(t + 2)	(t + 3)	(t + 4)
T(Temporary)	0.0234** (0.0119)	0.000720 (0.0159)	0.0506** (0.0198)	0.0143 (0.0190)	0.0622*** (0.0231)
Survey Year	1.93e-05 (0.000938)	0.000403 (0.00113)	0.000582 (0.00129)	0.000821 (0.00113)	-0.00207 (0.00133)
Delayed Entry	0.0473* (0.0285)	0.117** (0.0597)	0.0594 (0.0547)	-0.0315 (0.0474)	0.0120 (0.0567)
Age	-0.0193 (0.0252)	-0.0315 (0.0250)	-0.0107 (0.0302)	0.0212 (0.0284)	0.0584 (0.0381)
Age <sup>2</sup>	0.000465 (0.000452)	0.000711 (0.000478)	0.000274 (0.000568)	-0.000266 (0.000513)	-0.000858 (0.000664)
VET	(ref. no post-sec. edu.) -0.0226* (0.0135)	-0.0419** (0.0170)	0.00828 (0.0180)	-0.0184 (0.0157)	-0.0366** (0.0182)
HE	0.0633*** (0.0217)	0.0980*** (0.0255)	0.0967*** (0.0273)	0.0410* (0.0228)	-0.0264 (0.0259)
East German	-0.0515*** (0.0169)	-0.0535*** (0.0171)	-0.0451** (0.0188)	-0.0558*** (0.0152)	-0.0400** (0.0175)
Migrant	-0.000474 (0.0138)	-0.00949 (0.0163)	0.0238 (0.0170)	-0.00426 (0.0145)	0.0172 (0.0176)
Female	0.0235* (0.0125)	0.0273* (0.0143)	0.0278* (0.0155)	-0.00426 (0.0129)	0.0337** (0.0149)
Kids	0.0150 (0.0344)	0.0324 (0.0392)	0.0148 (0.0371)	0.0385 (0.0332)	-0.0136 (0.0391)
fem##kids	-0.0133 (0.0149)	-0.0425*** (0.0164)	0.0231 (0.0179)	-0.0373** (0.0152)	0.0319* (0.0182)
Log Partner's Earnings	-0.0564*** (0.0205)	-0.0947*** (0.0247)	0.0259 (0.0265)	-0.0699*** (0.0228)	-0.0681*** (0.0250)
fem##lpearn	0.000693 (0.0171)	0.0590*** (0.0207)	0.0147 (0.0222)	-0.0635*** (0.0197)	-0.0545** (0.0228)
Construction	(ref. manufacturing) 0.0149 (0.0209)	0.0714*** (0.0212)	-0.00366 (0.0228)	-0.0449** (0.0195)	-0.00346 (0.0225)
Service	0.0259 (0.0191)	0.0513** (0.0222)	0.0212 (0.0238)	-0.0292 (0.0207)	0.0290 (0.0238)
Public Administration	-0.318*** (0.0281)	-0.412*** (0.0174)	-0.282*** (0.0179)	-0.277*** (0.0167)	-0.227*** (0.0184)
20-200	(ref. LT 20 employees) 0.00317 (0.00551)	0.0140* (0.00756)	0.00364 (0.00793)	0.00585 (0.00682)	0.00102 (0.00836)
200-2000	-0.000371 (0.000350)	-0.00127** (0.000592)	-0.000582 (0.000559)	-0.000441 (0.000455)	0.000105 (0.000528)
GT 2000 Employees	0.000319 (0.0305)	-0.0506 (0.0411)	0.00917 (0.0427)	0.0626 (0.0432)	-0.0136 (0.0521)
Log Hourly Wage	0.0234** (0.0119)	0.000720 (0.0159)	0.0506** (0.0198)	0.0143 (0.0190)	0.0622*** (0.0231)
Work Experience	1.93e-05 (0.000938)	0.000403 (0.00113)	0.000582 (0.00129)	0.000821 (0.00113)	-0.00207 (0.00133)
Work Experience <sup>2</sup>	0.0473* (0.0285)	0.117** (0.0597)	0.0594 (0.0547)	-0.0315 (0.0474)	0.0120 (0.0567)
Temporary Work Agency	-0.0193 (0.0252)	-0.0315 (0.0250)	-0.0107 (0.0302)	0.0212 (0.0284)	0.0584 (0.0381)
Observations	6,549	1,987	1,788	1,524	1,250
R-squared	0.188	0.261	0.159	0.197	0.160