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How Important is the Type of Working Contract for Job Satisfaction of Agency Workers?

René Petilliot*

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Abstract

Previous research has found that agency workers are less satisfied with their job than regular workers on a permanent contract. All these studies have in common that they treat agency workers as a homogeneous group; that is, they did not consider the contract type agency workers hold. This paper analyzes whether differences in job satisfaction can be explained by the contract type using data from the German Socio-Economic Panel. The analysis leads to three main results. First, differences in job satisfaction cannot be explained by the contract type. Second, agency workers on a permanent contract are significantly less satisfied with their job than regular workers on the same contract. Third, agency workers on a fixed-term contract do not differ in reported job satisfaction from regular workers on both fixed-term and permanent contracts. These findings give rise to the hypothesis that as a policy instrument agency employment appears to be well-suited for short-term periods, but it should be prevented that workers are persistently employed in such a work arrangement.

Keywords: Job satisfaction, Temporary agency employment, Fixed-term contracts, Permanent contracts

JEL-Classification: C23, I31, J28, J41

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1. Introduction

Between 1995 and 2014 the number of agency workers in Germany has increased rapidly from 103,300 to 823,800. Consequently, agency workers represented around 2.5% of the total German labor force in 2014 (BA, 2015).[1] Typically, employees are directly employed on either a fixed-term or a permanent working contract with their employer.[2] Agency employment, in contrast, is a triangular employment relationship where workers are legally employed by their employment agency but "with a view to making them available to a third party, who may be a natural or legal person […] which assigns their tasks and supervises the execution of these tasks" (ILO, 1997, No. 181, Article 1.1.b). Agency workers function as a useful supplement to regular employees as they allow firms to better balance business cycle fluctuations and to reduce costs (Matusik and Hill, 1998). The increased use of agency workers is, however, critically observed by researchers and politicians, because agency contracts are typically considered to be less favorable than regular permanent contracts (De Cuyper et al., 2008).

On the one hand, researchers have indeed found that agency workers face poorer working conditions than regular employees, such as lower remuneration (Booth et al., 2002) and fewer training opportunities provided by the employer (Arulampalam and Booth, 1998). Furthermore, workers on agency contracts are found to have a higher risk of social exclusion (D'Addio and Rosholm, 2005) and of becoming unemployed, which previous studies have identified to substantially reduce welfare (Clark and Oswald, 1994; Kassenboehmer and Haisken-DeNew, 2009; Winkelmann and Winkelmann, 1998). On the other hand, agency contracts may function as stepping stones into permanent employment (Addison and Surfield, 2006; Green and Leeves, 2004) and provide a way for workers to better balance work and family life (Morris and Vekker, 2001).[3] Hence, there are several arguments for as well as against agency contracts, which makes it a priori difficult to judge whether such contracts are in sum less favorable than regular permanent contracts.

To assess whether agency contracts are less favorable than permanent working contracts, researchers compare the utility identical workers – who only differ in their working contract – derive from their job. Traditionally, the utility derived from a job has been approximated by the

[1] Similar results are found for other Western countries in 2013, such as the United Kingdom (3.9%), the Netherlands (2.5%), France (2.0%), the United States (2.0%), or Japan (2.0%) (CIETT, 2015).
[2] Such a "standard" employee-employer relationship is henceforth referred to as "regular".
[3] Note, however, that evidence on agency contracts as a stepping stone into permanent employment is quite mixed. Autor and Houseman (2008), for example, find that agency work does not have such a function.

earned wage. Yet, over the past two decades, researchers have increasingly started to use workers' reported job satisfaction as an alternative and more direct measure of the utility derived from a job (see, for example, Clark, 2001; Hamermesh, 2001). In a literature review on the relationship between different work arrangements and job satisfaction, De Cuyper et al. (2008) find that workers who are employed on flexible contracts, such as fixed-term contracts, agency contracts, and seasonal contracts, as a group report lower levels of job satisfaction, on average, than workers who are employed on a permanent contract. However in a meta-analysis, Wilkin (2013) stresses that workers on flexible contracts do not form a homogeneous group and that it is necessary to distinguish between those different types. Empirical evidence on the relationship between job satisfaction and fixed-term contracts is mixed. Chadi and Hetschko (2016), for example, provide evidence that relative to workers on a permanent contract, workers on a fixed-term contract are significantly less satisfied with their job.[4] In contrast, Green and Heywood (2011) and D'Addio et al. (2007) find no such difference in reported job satisfaction. Empirical research on the relationship between agency employment and job satisfaction is more clear-cut: In general, agency workers are found to be significantly less satisfied with their job than regular workers on a permanent working contract.[5] Using data from the first wave of the Household, Income and Labour Dynamics in Australia (HILDA) Survey, Wooden and Warren (2004) show that male agency (casual) workers report significantly lower levels of job satisfaction than regular male workers who hold a permanent contract. Applying panel estimation techniques to subsequent waves of HILDA, Buddelmeyer et al. (2014) find that the difference remains when controlling for unobserved heterogeneity. The negative relationship between agency contract and job satisfaction has further been established by De Graaf-Zijl (2012) and Jahn (2015) in the Netherlands and Germany, respectively.

A potential shortcoming of these studies is that they treat agency workers as a homogeneous group. In other words, they consistently neglect that agency workers are either employed on a fixed-term or on a permanent contract with their employment agency. However, this may result in biased estimates if agency workers on a fixed-term contract systematically differ from agency workers on a permanent contract. The first contribution to the literature of this paper, therefore, is to account for this potential source of bias by controlling for the contract type agency

[4] This finding is also supported by Clark and Oswald (1996).

[5] One exception is Green and Heywood (2011) who find no difference in reported job satisfaction between agency workers and workers on a permanent contract. However, their analysis is based on a much smaller sample size than used in the present paper and thus, results in larger standard errors.

workers hold. Secondly, by comparing agency workers on a permanent contract with regular workers on the same contract, the present paper provides a more thorough analysis of the difference in job satisfaction that is solely attributed to the status of being an agency worker.

Using data from the German Socio-Economic Panel, I find that controlling for the contract type of agency workers does not alter previous results; agency workers are on average still significantly less satisfied with their job than regular workers on the same contract. The difference in job satisfaction, however, is entirely driven by agency workers on a permanent contract, who are significantly less satisfied with their job than regular workers on a permanent contract. In contrast, agency workers on a fixed-term contract do not differ in reported job satisfaction from regular workers on both fixed-term and permanent contracts. Hence, a permanent contract per se is not automatically associated with high levels of job satisfaction. In the course of this paper, I perform several robustness checks to validate my results. Yet, they only indicate that the estimates derived so far are not sensitive to the modifications made.

The remainder of this paper is organized as follows: Section 2 describes the dataset and provides summary statistics. In section 3, the empirical identification strategy is outlined. Results are reported in section 4. Section 5 concludes and discusses the main findings.

2. Data and Summary Statistics

The data used in the present study are drawn from the German Socio-Economic Panel (SOEP).[6] The SOEP is a representative household panel which interviews approximately 20,000 individuals on a yearly basis. In this way it contains variables providing detailed information on respondents' personal and job characteristics. For the subsequent analysis, I use waves 2001 to 2013, as earlier waves did not contain information on whether individuals have a temporary agency contract.[7] I restrict the sample to the occupied labor force belonging to the typical German working-age population (20-65 for both men and women). In addition, I remove the self-employed and those currently in (occupational) education or retraining. The various reduction steps result in an unbalanced panel of 92,607 observations from 20,014 respondents.[8]

[6] Socio-Economic Panel (SOEP), data for years 1984-2013, version 30, SOEP, 2015, doi: 10.5684/soep.v30. Further details on the SOEP are provided in Wagner et al. (2007).
[7] Prior to 2001, workers on temporary agency contracts and those on fixed-term contracts were grouped together.
[8] The reduction steps are similar to those made in previous studies, such as Green and Heywood (2011) or Jahn (2015).

Following previous research, individuals' reported job satisfaction is used as a proxy for individual utility (see, for example, Clark, 2001; Green and Heywood, 2011; Jahn, 2015). In each year, respondents were asked "How satisfied are you with your job *(if employed)*?" on a 0 to 10 scale, where 0 is "completely dissatisfied" and 10 is "completely satisfied". Agency workers are identified by means of the question: "Is this work through a temporary employment agency?" Independent of whether they are employed at a temporary employment agency, in the next question respondents are asked "Do you have a fixed-term or permanent employment contract?" Perceived job security is captured by: "How concerned are you about the following issues: Your job security *(if you are employed)*?" Respondents can either check "very concerned", "somewhat concerned", or "not concerned at all". Following Jahn (2015), I consider respondents to perceive their job as insecure if they check "very concerned" or "somewhat concerned", whereas respondents perceive their jobs as secure if they responded "not at all concerned". The subjective measure of perceived job insecurity is used as a robustness check, since previous studies stress that perceived rather than formal job insecurity matters for workers' job satisfaction (see, for example, Origo and Pagani, 2009; Green and Heywood, 2011; Jahn, 2015).

Table 1 shows summary statistics of the variables used in the analysis. Briefly, male workers are as satisfied with their job as female workers. The vast majority of both male and female workers is employed on a permanent working contract (91.3% and 89.5%, respectively), followed by those who are employed on a fixed-term contract (6.3% and 8.6%, respectively). The remaining 2.4% of male and 1.9% of female workers are employed at a temporary agency. Of those 2.4% male agency workers, 62.9% have a permanent contract and 37.1% have a fixed-term contract. In the female subsample, 49.1% of all agency workers have a permanent working contract while 50.9% have a fixed-term contract. Female workers earn around 0.5 log points less than male workers, but with respect to perceived job insecurity, years of unemployment experience, and whether workers were unemployed in the previous period, no gender differences exist.

Table 2 provides summary statistics distinguished by contract type. Independent of gender, regular workers on a permanent contract and those on a fixed-term contract report similar levels of job satisfaction. In general, agency workers are less satisfied with their job than regular workers. Surprisingly, agency workers on a fixed-term contract report higher levels of job satisfaction than agency workers on a permanent contract. Male agency workers on a permanent

Table 1: Summary Statistics

	Male		Female	
	Mean	Std. Dev.	Mean	Std. Dev.
Job satisfaction	7.013	1.935	7.036	1.971
Permanent	0.913	0.282	0.895	0.307
Fixed-term	0.063	0.243	0.086	0.280
Agency (permanent)	0.015	0.122	0.009	0.096
Agency (fixed-term)	0.010	0.097	0.010	0.099
Unemployment exp (yrs)	0.475	1.266	0.580	1.466
Unemployed in *t-1*	0.024	0.153	0.027	0.161
Isced 1	0.010	0.098	0.008	0.088
Isced 2	0.085	0.278	0.086	0.280
Isced 3	0.493	0.500	0.491	0.500
Isced 4	0.060	0.238	0.092	0.289
Isced 5	0.096	0.295	0.074	0.261
Isced 6	0.257	0.437	0.250	0.433
Age 20-29	0.122	0.327	0.135	0.342
Age 30-39	0.262	0.440	0.232	0.422
Age 40-49	0.312	0.463	0.331	0.471
Age 50-65	0.304	0.460	0.301	0.459
Married	0.675	0.468	0.628	0.483
Single	0.248	0.432	0.237	0.425
Divorced	0.072	0.258	0.110	0.313
Widowed	0.005	0.072	0.025	0.156
Dependent child	0.392	0.488	0.331	0.471
Good health	0.591	0.492	0.568	0.495
Fair health	0.313	0.464	0.319	0.466
Bad health	0.097	0.296	0.113	0.317
Log net income (mth)	7.514	0.458	6.957	0.586
Job insecurity	0.146	0.353	0.132	0.338
Tenure	12.382	10.504	10.635	9.510
Actual working hours	43.500	8.139	33.457	11.687
Work hour mismatch	0.729	0.444	0.720	0.449
Deg. of work autonomy	2.824	1.142	2.705	0.972
Hours overtime	12.047	17.184	7.214	12.282
Hours overtime (paid)	3.274	10.272	1.337	6.088
Supervisor/Manager	0.025	0.156	0.008	0.091
Firm size 0-19	0.174	0.379	0.261	0.439
Firm size 20-199	0.299	0.458	0.305	0.460
Firm size 200-1999	0.247	0.431	0.217	0.412
Firm size 2000+	0.280	0.449	0.217	0.413
N	*48,075*		*44,532*	

Source: SOEP (2001-2013), data are unweighted.

contract report the lowest levels of job satisfaction (6.134 points) followed by female agency workers on a permanent contract (6.431 points). Both male and female agency workers on a fixed-term contract report job satisfaction levels of around 6.7 points, on average.

There are no notable differences between contract types with respect to the other dimensions, except for tenure, perceived job insecurity, wages, and unemployment spells. Both, regular and agency workers on a fixed-term contract have lower tenure than workers on a permanent contract.[9] Regular workers on a permanent contract have twice as long tenure as agency workers on the same contract. In general, regular workers on a fixed-term contract and agency workers as a group earn significantly less than regular workers on a permanent contract. On average, male agency workers on a permanent contract receive a higher remuneration than agency workers on a fixed-term contract while no such difference exists for female agency workers. With regard to job insecurity, regular workers on a permanent contract are the least concerned, followed by regular workers on a fixed-term contract. Agency workers on a permanent contract are less concerned about their job than agency workers on a fixed-term contract. If job security is the main driver of the differences in job satisfaction, then this somewhat stands in contrast to the above finding that agency workers on a fixed-term contract report higher levels of job satisfaction than agency workers on a permanent contract. Hence, the descriptive results suggest that perceived job insecurity is not as important for job satisfaction of agency workers as the formal contract type.[10] Regular workers on a permanent contract have the lowest amount of experienced years of unemployment, followed by regular workers on a fixed-term contract. Concerning agency workers, those who hold a permanent contract spend fewer years in unemployment than those who hold a fixed-term contract. A similar pattern is found with respect to whether workers were unemployed in the previous period: Almost 20% of agency workers on a fixed-term contract were unemployed in the year before getting a fixed-term agency contract, which lends support to the conclusion that these workers use their agency contract either as a stepping stone into regular employment or to avoid longer unemployment spells.

[9] Yet, this does not come as a surprise given the fixed and short-term duration of the working contract.

[10] With regard to selection issues, another interpretation would be that workers select into fixed-term agency contracts to avoid unemployment spells. Hence, given the fixed-term contract, they have a higher perceived job insecurity but derive a higher utility, because their outside option would be becoming unemployed.

Table 2: Mean Summary Statistics by Contract Type

	Permanent		**Fixed-term**		**Agency (permanent)**		**Agency (fixed-term)**	
	Male	Female	Male	Female	Male	Female	Male	Female
Job satisfaction	7.033	7.040	6.969	7.086	6.134	6.431	6.731	6.757
Unemployment exp (yrs)	0.411	0.514	1.049	1.085	1.270	1.310	1.561	1.536
Unemployed in *t-1*	0.014	0.016	0.122	0.117	0.116	0.084	0.188	0.166
Isced 1	0.009	0.007	0.016	0.012	0.023	0.019	0.033	0.007
Isced 2	0.085	0.085	0.075	0.081	0.066	0.130	0.129	0.100
Isced 3	0.490	0.494	0.481	0.450	0.657	0.557	0.575	0.532
Isced 4	0.060	0.091	0.062	0.100	0.047	0.075	0.055	0.082
Isced 5	0.099	0.076	0.071	0.054	0.068	0.068	0.046	0.039
Isced 6	0.257	0.247	0.295	0.303	0.139	0.152	0.162	0.241
Age 20-29	0.098	0.112	0.389	0.355	0.210	0.205	0.453	0.311
Age 30-39	0.261	0.229	0.293	0.269	0.233	0.181	0.232	0.230
Age 40-49	0.324	0.342	0.166	0.230	0.283	0.289	0.168	0.275
Age 50-65	0.317	0.317	0.153	0.146	0.274	0.325	0.147	0.184
Married	0.696	0.648	0.436	0.450	0.561	0.583	0.409	0.452
Single	0.225	0.216	0.516	0.436	0.324	0.275	0.519	0.389
Divorced	0.073	0.110	0.045	0.098	0.102	0.113	0.072	0.148
Widowed	0.005	0.026	0.004	0.015	0.012	0.029	0.000	0.011
Dependent child	0.399	0.329	0.307	0.355	0.316	0.282	0.319	0.370
Good health	0.588	0.565	0.644	0.612	0.510	0.453	0.632	0.555
Fair health	0.315	0.320	0.279	0.291	0.343	0.390	0.300	0.320
Bad health	0.098	0.114	0.076	0.097	0.146	0.157	0.068	0.125
Log net income (mth)	7.547	6.979	7.177	6.793	7.210	6.701	7.037	6.658
Job insecurity	0.135	0.115	0.232	0.263	0.314	0.260	0.398	0.359
Tenure	13.217	11.535	3.294	2.645	6.296	7.106	1.936	1.863
Actual work hours	43.686	33.517	41.610	33.199	42.219	32.202	40.247	31.409
Work hour mismatch	0.732	0.714	0.702	0.774	0.686	0.725	0.689	0.766
Deg. of work autonomy	2.857	2.726	2.623	2.603	2.090	2.058	2.105	2.259
Overtime	12.094	7.127	12.096	8.171	10.441	6.169	9.790	7.791
Overtime paid	3.240	1.289	3.486	1.603	4.450	2.125	3.335	2.632
Supervisor/Manager	0.027	0.009	0.012	0.005	0.006	0.000	0.002	0.002
Firm size 0-19	0.176	0.267	0.160	0.214	0.116	0.193	0.123	0.182
Firm size 20-199	0.297	0.302	0.311	0.321	0.375	0.352	0.359	0.345
Firm size 200-1999	0.247	0.214	0.250	0.243	0.261	0.229	0.225	0.255
Firm size 2000+	0.280	0.217	0.279	0.221	0.248	0.227	0.293	0.218
N	*43,872*	*39,853*	*3,021*	*3,824*	*725*	*415*	*457*	*440*

Source: SOEP (2001-2013), data are unweighted.

3. Empirical Methodology

The point of departure for the empirical analysis is the following regression specification typically used in the literature on the relationship between type of working contract and job satisfaction (see, for example, Green and Heywood, 2011; De Graaf-Zijl, 2012; Jahn, 2015):

$$jsat_{it} = \alpha + \beta_1 F_{it} + \beta_2 A_{it} + \gamma' X_{it} + \delta' Z_{it} + \lambda_t + \zeta_i + \varepsilon_{it}\,, \qquad (1)$$

where $jsat_{it}$ corresponds to reported job satisfaction for worker *i* in year *t*. F_{it} is a binary variable which equals one if worker *i* is employed on a fixed-term contract in year *t* and zero otherwise. Similar, A_{it} is a binary measure which equals one if worker *i* is an agency worker in year *t* and zero otherwise. X_{it} is a vector of observed personal characteristics of worker *i* in year *t* including education, age, marital status, whether there is a dependent child in the household (defined as children below age 16), a measure for individuals' health status as well as their years of unemployment experience and whether they were unemployed in the year before they took on their current job. Z_{it} is a vector of job characteristics including actual work hours, tenure, degree of work autonomy (measured from lowest (1) to highest (5) degree), monthly net income (in logs), firm size, hours of overtime, hours of overtime paid, whether the individual has a supervisor/manager position, and whether the workers' desired work hours are equal to their actual work hours.[11] λ_t and ζ_i are time fixed effects and individual fixed effects, respectively. ε_{it} represents the individual stochastic error term with mean zero and constant variance.

Previous studies treat agency workers as a homogeneous group (see, for example, Green and Heywood, 2011; Jahn, 2015); that is, workers are either employed on a permanent, fixed-term or agency contract. In terms of equation (1), this means that F_{it} and A_{it} are defined as being mutually exclusive in those studies. Yet, this is likely to result in biased estimates. For instance, if agency workers on a permanent contract are as satisfied with their job as regular workers on a permanent contract but agency workers on a fixed-term contract are substantially less satisfied than regular workers on a permanent contract. Then, the estimated difference in job satisfaction is entirely driven by the discrepancy in job satisfaction between agency workers on a fixed-term contract and regular workers on a permanent contract; or, in other words, by

[11] Controlling for these characteristics is standard practice in empirical work on the relationship between flexible contracts and job satisfaction (see, for example, Green and Heywood, 2011; Jahn, 2015; Chadi and Hetschko, 2016), except for individuals' unemployment history. Yet, as already set out in section 2, taking into account the unemployment history of individuals is crucial to avoid a potential selection bias.

the type of working contract.[12] In a first step, the present paper aims to account for this source of bias by controlling for the contract type agency workers hold. Therefore, agency workers are not treated as homogeneous in the subsequent analysis, which requires that F_{it} and A_{it} are not mutually exclusive in equation (1).[13] Hence, if worker *i* is an agency worker employed on a fixed-term contract in year *t*, then both F_{it} and A_{it} are equal to one. Yet, if worker *i* is a regular worker on a fixed-term contract in year *t*, then F_{it} equals one but A_{it} equals zero. Regular workers on a permanent act as reference group. The estimated agency coefficient, β_2, thus reflects the average difference in job satisfaction between agency workers and regular workers with the same contract and other identical characteristics. If the job satisfaction penalty of agency workers can be explained by spuriously treating them as a homogeneous group, then the penalty is expected to vanish once their contract type is controlled for: $\beta_2 = 0$ (ceteris paribus).

When agency workers' contract type is controlled for, the estimated agency coefficient, β_2, measures the average difference in job satisfaction between agency workers and regular workers with the same working contract and other comparable characteristics. The descriptive statistics in Table 2, however, highlight that agency workers on a permanent contract report substantially lower levels of job satisfaction than regular workers on the same contract, while the difference between agency and regular workers on a fixed-term contract appears to be rather small. In a second step, the present paper therefore examines whether these differences remain in a regression analysis by adding an interaction term between contract type, F_{it}, and agency status, A_{it}, to equation (1). Due to the inclusion of the interaction term, the difference in job satisfaction between agency and regular workers on a permanent contract is simply reflected by the agency main effect. Whether agency workers and regular workers on a fixed-term contract differ in reported job satisfaction can be tested from the sum of agency main effect and interaction effect. In a last step, the present paper examines whether agency workers on a fixed-term contract and regular workers on a permanent contract differ in job satisfaction by testing whether the sum of the agency coefficient and the interaction term coefficient is significantly different from zero. The interaction coefficient itself measures whether a fixed-term contract has a differential impact on job satisfaction between regular and agency workers.

[12] Note, however, that the descriptive results rather suggest that agency workers on a fixed-term contract are more satisfied with their job than agency workers on a permanent contract. But nevertheless, considering the contract type in a regression estimation appears to be the more thoroughly approach.

[13] To assess whether the following estimates are not the result of a selected sample, I replicate all estimations not differentiating agency workers according to their contract type. The results are reported in Table 4 of the Appendix.

Given that the dependent variable, job satisfaction, has a natural ordering, estimating equation (1) by means of an ordered logit or probit model seems to be more appropriate than Ordinary Least Squares (OLS).[14] However, research by Ferrer-i-Carbonell and Frijters (2004) as well as Van Praag and Ferrer-i-Carbonell (2006) shows that both methods result in similar estimates and that it is far more important to control for time-invariant unobserved heterogeneity. For the sake of a better interpretation of the results, I estimate equation (1) in the following analysis using OLS with individual fixed effects but re-estimate equation (1) with a fixed effects ordered logit model as a robustness check.[15] Estimation results of equation (1) are reported separately for male and female workers for the following reasons. First, research has shown that men and women have different job satisfaction regimes (Clark, 1997; Green and Heywood, 2011; Jahn, 2015; Sousa-Poza and Sousa-Poza, 2003). Second, tests within my own sample reject the hypothesis of a common set of coefficients.

4. Results

Table 3 displays the estimation results of equation (1). The dependent variable in each column is workers' reported job satisfaction. Each regression controls for workers' personal and job characteristics and, in addition, includes federal state and year dummies. For brevity, estimates of the control variables are not reported but are available upon request.[16]

At first, columns (1) and (2) present naïve estimation results when equation (1) is estimated using pooled OLS.[17] According to column (1), male agency workers are on average 0.42 points less satisfied with their job than male regular workers on the same contract, holding everything else constant. Similar, column (2) shows that female agency workers are on average 0.26 points less satisfied with their job than female regular workers on the same contract. In both estimations, the agency coefficient is statistically significant at the 1% significance level. Regarding fixed-term contracts, the coefficient of male workers on a fixed-term contract is statistically

[14] In economic theory, utility is typically assumed to be ordinal. In such a case, an ordered logit or probit model would best fit the theoretical foundations. In contrast, applying OLS means that utility is treated as cardinal concept.

[15] The fixed effects model is preferred to the random effects model as the Hausman test rejects the null hypothesis that the independent variables and the error term are uncorrelated.

[16] Note that in each column, the estimated coefficients are similar to those measured in previous studies (see, for example, Green and Heywood, 2011; Jahn, 2015).

[17] Table 4 of the Appendix replicates the results in columns (1) to (4) of Table 3 when permanent, fixed-term, and agency contracts are mutually exclusive as in previous studies. Note that columns (5) and (6) cannot be replicated under this assumption, because by definition it is not possible to form an interaction term.

indistinguishable from zero at least at the 10% level, while female workers report significantly (albeit weak) higher levels of job satisfaction than their female counterparts on a permanent contract.

Identification of the pooled OLS estimates in columns (1) and (2) rests on variation across observations. However, workers are likely to systematically select into working contracts based on unobservable characteristics, such as ability, motivation, et cetera. In such a case, the pooled OLS estimates derived so far suffer from an omitted variable bias if those unobserved characteristics are correlated with both contract type and job satisfaction. To account for this potential source of bias, columns (3) and (4) show estimation results of equation (1) when identification is based on workers' within variation across years by means of the fixed effects model.[18] The estimates suggest that a notable part of the job satisfaction penalty of agency workers can be explained by unobserved heterogeneity. The job satisfaction penalty drops to 0.2 points and 0.23 points in case of male and female workers, respectively, but is statistically different from zero at the 5% level in both subsamples. Similar to the pooled OLS results in the first two columns, still no difference in job satisfaction exists between male workers on a fixed-term contract and on a permanent contract, while female workers on a fixed-term contract remain more satisfied with their job than those on a permanent contract.

Finally, the last two columns of Table 3 provide evidence that agency workers on a permanent contract and regular workers on the same contract differ with respect to job satisfaction, as described by the agency main effect. More precisely, both male and female agency workers on a permanent contract are on average 0.31 points less satisfied with their job than regular workers on the same contract and with other comparable characteristics. Since this difference is even larger than the combined average difference in the previous two columns, it implies that the gap in job satisfaction between agency and regular workers on a fixed-term contract needs to be smaller. Indeed, the difference in job satisfaction between agency and regular workers on a fixed-term contract amounts to -0.04 points and -0.13 points in the male and female subsample, respectively, and is indistinguishable from zero at conventional levels in both cases.[19] In

[18] As already noted in footnote 15, the Hausman test rejects the null hypothesis that the regressors are uncorrelated with the error term. Exploiting workers' within variation also has the advantage to account for the issue that different workers have different baseline levels of job satisfaction.

[19] This difference is calculated as the coefficient sum of agency measure and interaction term. The calculated *F* statistics of 0.08 and 1.06 reject the null hypothesis that the sum is significantly different from zero at conventional levels in the male and female subsample, respectively. For completeness, the coefficient of the interaction term gives the differential effect of a fixed-term contract on job satisfaction between agency and regular workers. Hence, the positive and (weak) significant coefficient in column (5) suggests that a fixed-term contract has a more

addition, the null hypothesis that the coefficient sum of fixed-term, agency measure and interaction term is different from zero cannot be rejected using the *F* statistic, which implies that agency workers on a fixed-term contract do not differ in reported job satisfaction from regular workers on a permanent contract.[20] Lastly, regular workers on a fixed-term contract are significantly more satisfied with their job than agency workers on a permanent contract.[21]

Table 3: Job Satisfaction Effects of Different Contract Types

	Pooled OLS		Fixed Effects			
	(1)	(2)	(3)	(4)	(5)	(6)
	Male (I)	Female (I)	Male (II)	Female (II)	Male (III)	Female (III)
Fixed-term	0.00507	0.0850**	-0.0113	0.0992**	-0.0361	0.0874*
	(0.0453)	(0.0416)	(0.0504)	(0.0470)	(0.0514)	(0.0472)
Agency	-0.421***	-0.260***	-0.204**	-0.225**	-0.306***	-0.315***
	(0.0833)	(0.0851)	(0.0796)	(0.0885)	(0.0960)	(0.116)
Agency x Fixed-term					0.270*	0.182
					(0.149)	(0.169)
H_{01}: $\beta_2 + \beta_3 = 0$					0.08	1.06
H_{02}: $\beta_1 + \beta_2 + \beta_3 = 0$					0.33	0.12
H_{03}: $\beta_1 = \beta_2$					6.60**	10.69***
Observations	48,075	44,532	48,075	44,532	48,075	44,532
Number of *i*	10,101	9,913	10,101	9,913	10,101	9,913
R-squared (adj.)	0.129	0.105				
R-squared (within)			0.054	0.048	0.054	0.048

Source: SOEP (2001-2013), data are unweighted.

Notes: Robust standard errors clustered at the individual level in parentheses. *** p<0.01, ** p<0.05, and * p<0.1 denote significance at the 1%, 5%, and 10% level, respectively. The dependent variable in each regression is respondents' reported job satisfaction. Personal and job characteristics as well as year and region fixed effects are included in each regression but are not reported. Individual fixed effects are additionally added in columns (3) to (6). Summary statistics of the variables can be found in section 2. The identification strategy is described in section 3. Columns (1) and (2) estimate equation (1) using pooled OLS. Columns (3) to (6) are estimated with the fixed effects model. The last two columns report estimation results when an interaction term between agency status and contract type is included into equation (1). β_1 and β_2 are the coefficients of the binary measures for contract type and agency status in equation (1) as defined in section 3, while β_3 is the coefficient of the interaction term between agency status and contract type.

I perform several robustness checks to validate my results. First, Table 5 of the Appendix shows that the estimation results are based on over 5,000 individual observations that move between contracts, which alleviates concerns that identification rests on a small number of movers between contract types and thus, in imprecise estimates and large standard errors. Between 2001 and 2003, respondents to the SOEP questionnaire were asked whether they are employed at a temporary employment agency. As a result, not only agency workers but also

positive impact on job satisfaction for agency workers than for regular workers. No such effect is found for female workers, as indicated by the insignificant coefficient in column (6).

[20] Note that this provides indirect evidence that agency workers differ in job satisfaction according to their contract type.

[21] This result has been obtained by testing whether the sum of fixed-term effect and agency main effect are significantly different from zero. The null hypothesis can be rejected at the 5% and 1% level in the male and female subsample, respectively, using the *F* statistic.

the staff of temporary employment agencies were coded as being an agency worker in these two waves (Jahn, 2015). Columns (1) and (2) in Table 6 of the Appendix show that the results do not alter if these two years are excluded; except for the coefficient of the interaction term in the male subsample, which becomes insignificant. The third robustness check picks up recent findings that workers' perceived job security rather than the formal security provided by the contract type matters for job satisfaction (Origo and Pagani, 2009; Jahn, 2015). But columns (3) and (4) in the same table display that the results are not sensitive to controlling for workers' perceived job insecurity. The next check tests whether agency workers may be compensated for the undesirable characteristics associated with such a contract by so called equalizing differences in terms of hedonic labor market theory (see, for example, Rosen, 1974).[22] Since such equalizing differences were controlled for in the above estimations, the agency coefficient is expected to become more positive or even zero when job characteristics are not included as controls (Green and Heywood, 2011). Columns (5) and (6) show that equalizing differences play no role, since the results prove robust to this modification. Lastly, I check whether the results alter when ordinality rather than cardinality of the dependent variable is assumed. Yet, columns (7) and (8) provide evidence that the results are also not sensitive to this change.[23]

5. Conclusion and Discussion

In this paper, I analyze the relationship between agency status and job satisfaction on basis of the German Socio-Economic Panel. In contrast to previous research, I consider the contract type of agency workers in a regression of job satisfaction on agency status. I find that agency workers are on average significantly less satisfied with their job than regular workers on the same contract and with other comparable characteristics. In a more detailed analysis, I provide evidence that agency workers on a permanent contract are less satisfied with their job than regular workers on the same contract; while on the other hand, agency workers on a fixed-term contract do not differ in job satisfaction from both regular workers on the same contract and those on a permanent contract.

[22] For example, Blanchard and Landier (2002) show that flexible contracts exhibit greater job insecurity. But according to Abowd and Ashenfelter (1981) higher job insecurity is compensated by higher wages.

[23] Reported estimates are calculated by means of the blow-up and cluster fixed effects ordered logit estimator derived in Baetschmann et al. (2015). The only difference occurs with regard to regular female workers on a fixed-term contract. While this group has been found to report higher levels of job satisfaction than regular female workers on a permanent contract in Table 3 no significant difference in job satisfaction is found in Table 6.

Does this imply that agency workers should be employed on a fixed-term contract rather than on a permanent with their temporary employment agency? From my viewpoint, the finding that agency workers on a fixed-term contract are as satisfied with their job as regular workers on a permanent contract rather lends support to the hypothesis that agency workers on a fixed-term contract view their agency employment as either a stepping stone back into regular employment or as a mean to avoid longer unemployment spells. Since in parallel agency workers on a permanent contract are significantly less satisfied with their job than regular workers on the same contract, it seems that those agency workers are somehow trapped in agency employment and this persistent situation cannot be alleviated by being employed on a permanent contract either. This last point is further supported by the finding that regular workers on a fixed-term contract are significantly more satisfied with their job than agency workers on a permanent contract. Hence, the findings suggest that, from workers' perspective, the policy instrument temporary agency work seems to be well-suited for brief periods to enhance chances of getting a regular job or to cope with unemployment spells. However, agency work is detrimental for workers' welfare when it becomes a persistent situation.

The results prove robust to a number of modifications. Moreover, they are derived by controlling for a wide variety of workers' personal and job characteristics, unemployment history, perceived job insecurity and, in addition, time-invariant unobserved heterogeneity. This suggests that selection issues are a minor problem and that the estimated relationship between contract type and job satisfaction is indeed causal. Yet critically, there may as well be unobserved factors that vary across both individuals and time and thus, are not eliminated when applying panel techniques. Ideally, we would like to have an exogenous source of variation, such as policy changes. Indeed, there had been several law changes regarding agency employment in Germany. However, all of them were implemented at the federal level, which means that it is not possible to exploit variation across states, for instance by means of a difference-in-difference approach. Another possible way to tackle selection issues would be to instrument agency status. This way of identification has not been used in the literature so far and hence, provides an avenue for further research.

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Appendix

Table 4: Agency Workers as a Homogeneous Group

	Pooled OLS		Fixed Effects	
	(1) Male (I)	(2) Female (I)	(3) Male (II)	(4) Female (II)
Fixed-term	-0.0439	0.0766*	-0.0430	0.0819*
	(0.0466)	(0.0424)	(0.0510)	(0.0468)
Agency	-0.428***	-0.218**	-0.216***	-0.180**
	(0.0842)	(0.0855)	(0.0811)	(0.0906)
Observations	48,075	44,532	48,075	44,532
Number of *i*	10,101	9,913	10,101	9,913
R-squared (adjusted)	0.129	0.105		
R-squared (within)			0.054	0.048

Source: SOEP (2001-2013), data are unweighted.
Notes: Robust standard errors clustered at the individual level in parentheses. *** p<0.01, ** p<0.05, and * p<0.1 denote significance at the 1%, 5%, and 10% level, respectively. The dependent variable in each regression is respondents' reported job satisfaction. Personal and job characteristics as well as year and region fixed effects are included in each regression but are not reported. Individual fixed effects are additionally added in columns (3) and (4). Summary statistics of the variables can be found in section 2. The identification strategy is described in section 3. Columns (1) and (2) estimate equation (1) using pooled OLS. Columns (3) and (4) are estimated with the fixed effects model. β_1 and β_2 are the coefficients of the binary measures for contract type and agency status in equation (1) as defined in section 3.

Table 5: Yearly Transitions In and Out of Permanent Employment

	Year of Transition												
	2001-2002	**2002-2003**	**2003-2004**	**2004-2005**	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**	**2009-2010**	**2010-2011**	**2011-2012**	**2012-2013**	**Total**
Fixed-term to Permanent	173	183	164	186	153	195	185	212	170	205	215	230	2271
Permanent to Fixed-term	89	106	145	102	125	143	125	147	128	149	109	155	1523
Agency (permanent) to Permanent	26	35	40	32	36	49	40	28	31	29	31	48	425
Permanent to Agency (permanent)	28	41	37	51	40	42	29	34	35	32	38	16	423
Agency (fixed-term) to Permanent	5	7	15	24	25	20	27	21	16	21	18	17	216
Permanent to Agency (fixed-term)	2	16	22	18	14	23	13	14	13	19	11	10	175
													5033

Source: SOEP (2001-2013), data are unweighted.

Table 6: Robustness Checks

	Fixed Effects						FE Ordered Logit	
	(1) Male (I)	(2) Female (I)	(3) Male (II)	(4) Female (II)	(5) Male (III)	(6) Female (III)	(7) Male (IV)	(8) Female (IV)
Fixed-term	0.0424	0.113**	0.0144	0.160***	-0.0151	0.148***	-0.0816	0.0722
	(0.0567)	(0.0530)	(0.0509)	(0.0471)	(0.0525)	(0.0480)	(0.0638)	(0.0568)
Agency	-0.348***	-0.300**	-0.278***	-0.266**	-0.324***	-0.304**	-0.369***	-0.372***
	(0.111)	(0.125)	(0.0944)	(0.115)	(0.0985)	(0.119)	(0.110)	(0.137)
Agency x Fixed-term	0.249	0.155	0.295**	0.162	0.264*	0.142	0.326*	0.258
	(0.162)	(0.183)	(0.148)	(0.168)	(0.152)	(0.172)	(0.170)	(0.189)
Job insecurity			-0.596***	-0.634***				
			(0.0327)	(0.0364)				
H_{01}: $\beta_2 + \beta_3 = 0$	0.56	1.12	0.02	0.66	0.23	1.59	0.09	0.70
H_{02}: $\beta_1 + \beta_2 + \beta_3 = 0$	0.18	0.06	0.06	0.18	0.35	0.01	0.77	0.09
H_{03}: $\beta_1 = \beta_2$	10.40***	9.71***	8.03***	12.41***	8.19***	12.93***	5.76**	9.64***
Observations	39,574	37,520	48,075	44,532	48,075	44,532	48,075	44,532
Number of *i*	9,034	9,025	10,101	9,913	10,101	9,913	7,067	6,855
R-squared (within)	0.050	0.043	0.067	0.061	0.035	0.032		
Log pseudolikelihood							-55134.25	-52934.24

Source: SOEP (2001-2013), data are unweighted.

Notes: Robust standard errors clustered at the individual level in parentheses. *** p<0.01, ** p<0.05, and * p<0.1 denote significance at the 1%, 5%, and 10% level, respectively. The dependent variable in each regression is respondents' reported job satisfaction. Personal and job characteristics as well as individual, year and region fixed effects are included in each regression but are not reported. Summary statistics of the variables can be found in section 2. The identification strategy is described in section 3. In columns (1) to (6), equation (1) is estimated by means of the fixed effects model. The sample period is restricted to waves 2003 to 2013 in columns (1) and (2) to account for different wording in the questionnaire. Columns (3) and (4) show estimates of equation (1) when workers' perceived job insecurity is added as additional control variable. In columns (5) and (6) workers' job characteristics are not controlled for to allow for potential equalizing differences. The last two columns report results of equation (1) when it is estimated by means of the blow-up and cluster (BUC) fixed effects ordered logit estimator derived in Baetschmann et al. (2015). The number of individuals is lower, because some of them have no time variation in job satisfaction. BUC is implemented by using conditional maximum likelihood estimation. Every observation is replaced by *K*-1 (*K* refers to the number of cut-offs) copies of itself ("blow-up"), which are finally dichotomized at a different cut-off point. The copies sum to 152,397 and 146,297 in the male and female subsample, respectively. β_1 and β_2 are the coefficients of the binary measures for contract type and agency status in equation (1) as defined in section 3, while β_3 is the coefficient of the interaction term between agency status and contract type.