Online Appendix of "Are temporary jobs stepping stones or dead ends? A systematic review of the literature"

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Abstract

This online Appendix contains additional descriptive statistics, comments and results of the article "Are temporary jobs stepping stones or dead ends? A systematic review of the literature".

Keywords: Dead end, labour market, stepping stone, systematic review, temporary job.

JEL classification codes: J08, J41, J42, J81

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Appendix A. Meta-sample

Table A.1 presents the full list of articles included in the meta-analysis with their main characteristics, i.e. journal, average number of citations per year, country(ies), database used, time span covered, sample size, study result and econometric method applied. The different identification strategies used in the studies in our sample can be distinguished in two broad categories: methods based on *selection on observables* and those based on *selection on unobservables*. In what follows, we list and comment on a set of methodological identification strategies, among which the first two belong to the selection on observables approach and the others to the selection on unobservables:

1. *Control Function approach (CF)* introduces into the regression model all the observables that could possibly be correlated with the treatment variable and explain the outcome. We adopt this definition for those studies that introduce a considerable number of controls into their regression analysis. The main limit of such an approach is that there might always be further time-constant and time-varying heterogeneity across individuals that the researchers cannot control for and leading to an omitted variables bias. In our sample, 6 studies apply this method in order to estimate the causal effect of temporary jobs on subsequent position, of which 3 support the dead end hypothesis.
2. *Propensity Score Matching (PSM)* reduces the differences between the treated and the control groups using the propensity score, an estimate of the probability of receiving the treatment (Rosenbaum and Rubin, 1983) based on a large set of individual characteristics. Similarly to the previous approach, the underlying main assumption to identify the causal effect of the treatment is that there should not be systematic differences between the two groups in unobserved characteristics determining the outcome and all the variables affecting simultaneously the outcome and the treatment are observed. From the operational viewpoint this approach is semiparametric: the researcher first estimates the propensity score of each individual receiving the treatment using standard binary index models; the propensity score is

then exploited to compare the outcome variable of each treated individual with the outcome variable of control units who are similar in terms of propensity score and who are used therefore as counterfactuals. 11 articles in our sample apply this method, and 5 of them find evidence supporting the stepping stone hypothesis.

3. *Instrumental Variables (IV)* rely on finding (at least) an additional variable, the instrumental variable, which is correlated to the treatment variable but orthogonal to the outcome. This procedure allows researchers to isolate the exogenous variation in the treatment to get unbiased estimates of the causal relationship between the outcome and the predictor. In practice, the treatment effect is usually estimated by the two-stage least squares (2SLS) estimator. The first stage consists in regressing the treatment variable on the instrument(s) and the other controls which are regressors in the main equation. In the second stage, the main equation is estimated by ordinary least squares after replacing the original treatment variable with the treatment prediction estimated in the first stage. Exogenous sources of variation meeting the assumptions for the IV validity are very difficult to find. Indeed, only 1 article in our sample uses IV as identification strategy and finds that temporary jobs are dead ends.
4. *Difference-in-Differences (DiD)* is used to estimate the effect of a specific intervention by comparing the changes in outcomes over time between treated and untreated units. If one group is exogenously exposed to a treatment or policy shift and the other is not, then the effect of the treatment can be easily measured taking the differences between the average results for the two groups, before and after the intervention. Subsequently, the impact or causal effect of the treatment is calculated as the difference between those two differences. The key assumption required to identify the effect of the treatment is that the trends in the outcome variable must be identical in both groups in the absence of the treatment. In several studies, the availability of longitudinal data on those who have not experienced an interruption in their job career allows to construct a control group and to estimate the effect for those who suffered it, against the control group (Arulampalam et al., 2001). This estimation is the *within-group*

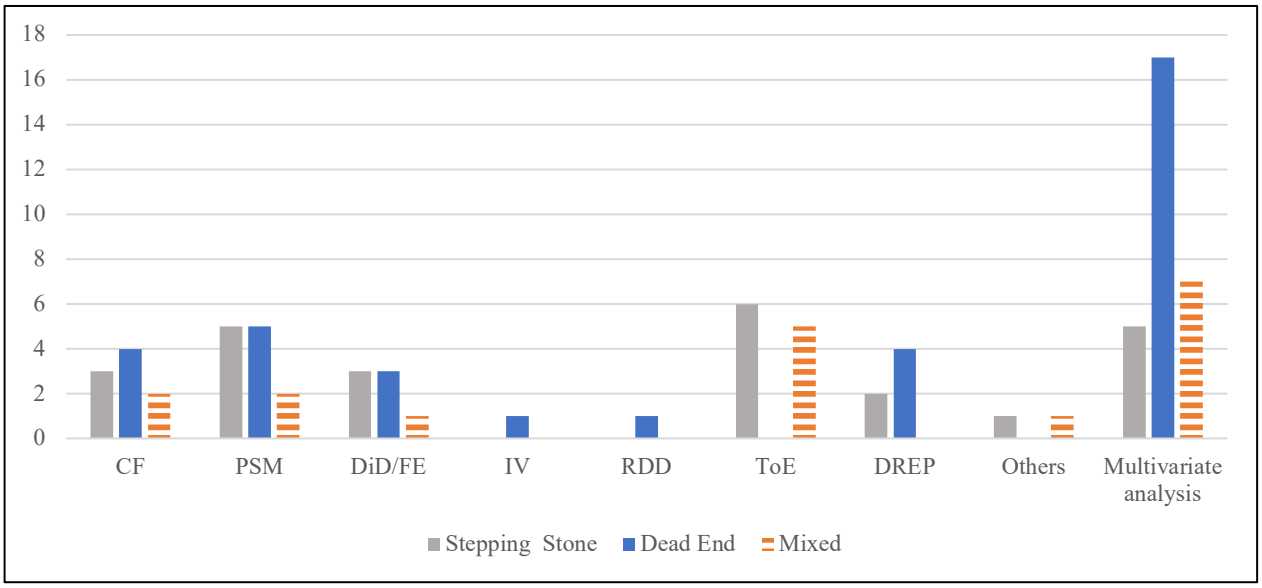
estimation in fixed-effects panel regressions (FE), where the individual time-constant effect captures the unobserved heterogeneity that is possibly correlated with the treatment and the outcome and is removed by subtracting the within-individual time-averaged model from the original one. In our framework, the main limit of this identification strategy is that, albeit it controls for individual fixed effects, selection into treatment could be still endogenously induced by time-varying unobserved heterogeneity. We count 5 selected articles which adopt this identification strategy, of which only 1 supports the stepping stone hypothesis.

5. *Regression Discontinuity Design (RDD)* can be applied in specific settings when the probability of treatment participation changes discontinuously when a certain cut-off of a running (or forcing) variable is reached. The discontinuity in the outcome that is eventually observed at the cut-off can then be interpreted as the causal effect of the treatment in the neighbourhood of the cut-off of the running variable. The most common problem of RDD is that the treatment effect is identified only locally, and it is not easily generalizable to the full sample (Cameron and Trivedi, 2005; Lee and Lemieux, 2010). In our sample, only García-Pérez et al. (2019) uses RDD and find evidence in favour of the dead end hypothesis.
6. *Timing of Events (ToE)* aims to assess how the instantaneous probability of finding a stable job is affected by starting a treatment spell. In this approach it is possible to remove from the estimated treatment effect the spurious component due to endogenous selection into treatment without using exclusion restrictions, as instead it is done in IV approaches. The extra information in duration data that allows the identification of the treatment effect is the timing of events (Abbring and Van den Berg, 2003), which allows to identify the unobserved heterogeneity distribution. However, ToE has the drawback that treatment effect identification is based on a particular parametric specification of the hazard rates towards the treatment and towards the outcome state (mixed proportional hazard). This strategy is one of the most used in our sample: we count 11 articles, 6 of which support the stepping stone hypothesis.

7. *Dynamic Random Effects Probit models (DREP)***.** In these models, being non-linear, the fixed effects cannot be easily eliminated because of the incidental parameters problem. Hence, the the unobserved heterogeneity is treated as randomly distributed in the population and parametric approximations are used to take into account the correlation between the random term and the covariates (Mundlak, 1978; Chamberlain, 1984; Wooldridge, 2005). Among 6 articles which use this approach, 4 provide evidence in favour of the dead end hypothesis.
8. *Other methods.* Possible further approaches are based on: *cohort differences* under the assumption that the unobserved heterogeneity is constant across a number of cohorts; *structural dynamic models* which rely on models where the structure of decision making is fully incorporated in the specification of the model, describing the preferences and constraints of the process in order to identify the structural parameters; *hierarchical models* which take into account the nested nature of the data and thus control for the correlation between outcomes within each cluster structure. We assign 2 studies out of 64 to this category.

There are some studies with lack of focus on the issue of identification of the causal effect, i.e. multivariate descriptive analysis or traditional regression models (linear models, proportional hazard models, multinomial logit models) with a reduced number of controls. They apply none of the previous methods and no other methodology credibly designed to identify a causal effect in a non-randomized framework. Although we consider their results as weak in terms of causal interpretation, we keep them in our meta-analytic sample. By doing so, we can investigate in more detail the importance of credibly dealing with causality for the kind of research findings. In our sample, there are 29 observations from 21 articles weakly addressing causality. Among them, only 5 support the stepping stone hypothesis, 7 provide mixed results, and 17 find evidence in favor of the dead end hypothesis. Figure A.1 displays the absolute frequency of observations by research outcome and by the methodology used for the identification of the causal effect.

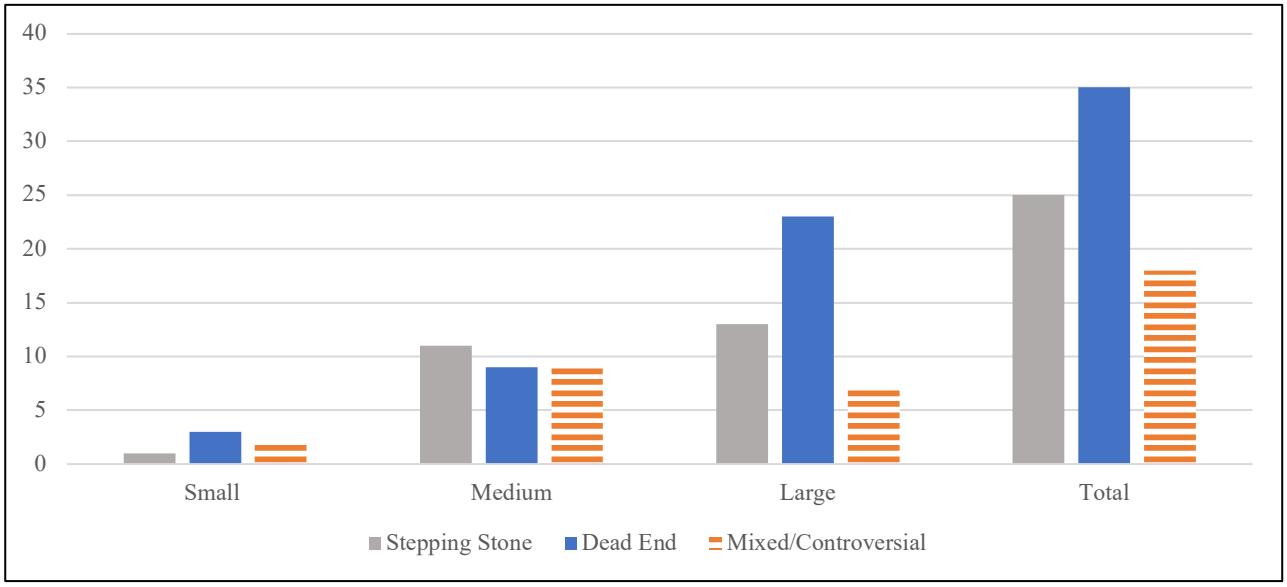
Figure A.1: Research outcomes by identification strategy



Notes: CF = Control Function; PSM = Propensity Score Matching; DiD = Difference-in-Differences; FE = Fixed-Effects ; IV = Instrumental Variables; RDD = Regression Discontinuity Design; ToE = Timing of Events; DREP = Dynamic Random Effects; Others = Other methods to credibly identify the causal effect; Multivariate analysis = multivariate descriptive analysis or traditional regression models with a reduced number of controls.

Figure A.2 reports the research outcomes by sample size. We split articles in three groups: i) small sample size, i.e. less than 1,000 observations ($N < 1{,}000$); ii) medium sample size, i.e. between 1,000 and 10,000 observations ($1{,}000 \leq N < 10{,}000$); iii) large sample size, i.e. larger than 10,000 observations ($N \geq 10{,}000$). In our sample, less than 10% are small sample studies, 37% are medium sample studies and 55% have large samples. Results from studies with larger samples are more likely to be in favour of the dead end hypothesis (23 studies out of 43), while the stepping stone hypothesis is relatively more likely to be supported in empirical analyses with medium sample sizes.

Figure A.2: Research outcomes by sample size



Notes: Small means $N < 1,000$. Medium means $1,000 \leq N < 10,000$. Large means $N \geq 10,000$.

Appendix B. Further descriptive statistics and regression results.

Table A.2 reports the average number of citations per year according to Google scholar (retrieved on 08/03/2021) and the SJR indicator at the time of publication by research outcome, both in the overall sample and distinguishing between single-country and multi-country studies. At the time of publication, some journals did not have the SJR index yet, either because they were published in too recent years or because the journal was not indexed yet in Scimago. In these cases, we assign to the journal the first available SJR index.

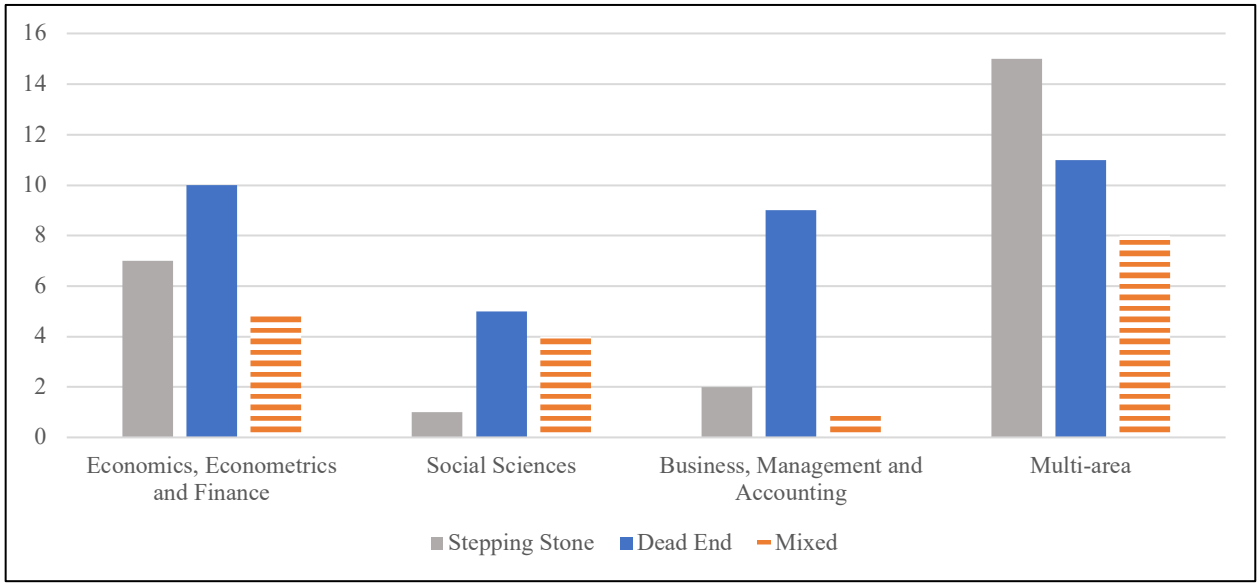
Although the dead end hypothesis is supported by the largest number of empirical analyses, the average number of yearly citations received by articles in favor of the stepping stone hypothesis (12.2) is 26% larger than the number of citations obtained by articles finding that temporary jobs are dead ends (9.7). The number of citations of articles reporting mixed or controversial results is even lower (8.85). These important differences in citations do not seem to justify the systematic differences in the scientific influence and prestige of the journals of publication, which could be an approximative measure of the scientific reliability of study results. The average value of the SJR indicator is indeed

very similar across the three groups of research outcome, with the only difference that the SJR indicator of articles finding that temporary jobs are dead ends displays a larger standard deviation.

However, if we split the sample between single-country and multi-country studies we note that the first ones are more homogeneous in term of study-quality measures among the three research outcomes. For instance, the average SJR is close to 1 for all outcomes. Otherwise, multi-country studies present a different picture: the average SJR for studies supporting the stepping stone hypothesis is more than twice lower than the one for studies with null outcome. About citations, while studies highlighting the dead end scenario or null effects show an average number of yearly Google Scholar citations of 10.5 and 17, respectively, articles supporting the stepping stone effect are cited, on average, only 4.8 in a year, with a maximum value of 7.6.

Figure A.3 reports the research outcomes by 4 journal subject areas according to the SCImago classification: i) Economics, Econometrics and Finance; ii) Social sciences; iii) Business, Management and Accounting; iv) a residual category containing journals belonging to multiple subject areas. Although the journal Social Forces is classified in Scimago in two subject areas, i.e. Social sciences and Art, and since Art is quite distant from the socio-economic issue analysed in this meta-analysis, we included Social Forces into the subject area Social sciences, as if it were classified in only one subject area in Scimago. Figure A.3 shows that almost all the observations with findings supporting the stepping stone hypothesis come from journals in Economics, Econometrics, and Finance and from journals in multiple subject areas. At a first descriptive level, we can speculate that the journal subject area could be a relevant determinant in explaining different research outcomes.

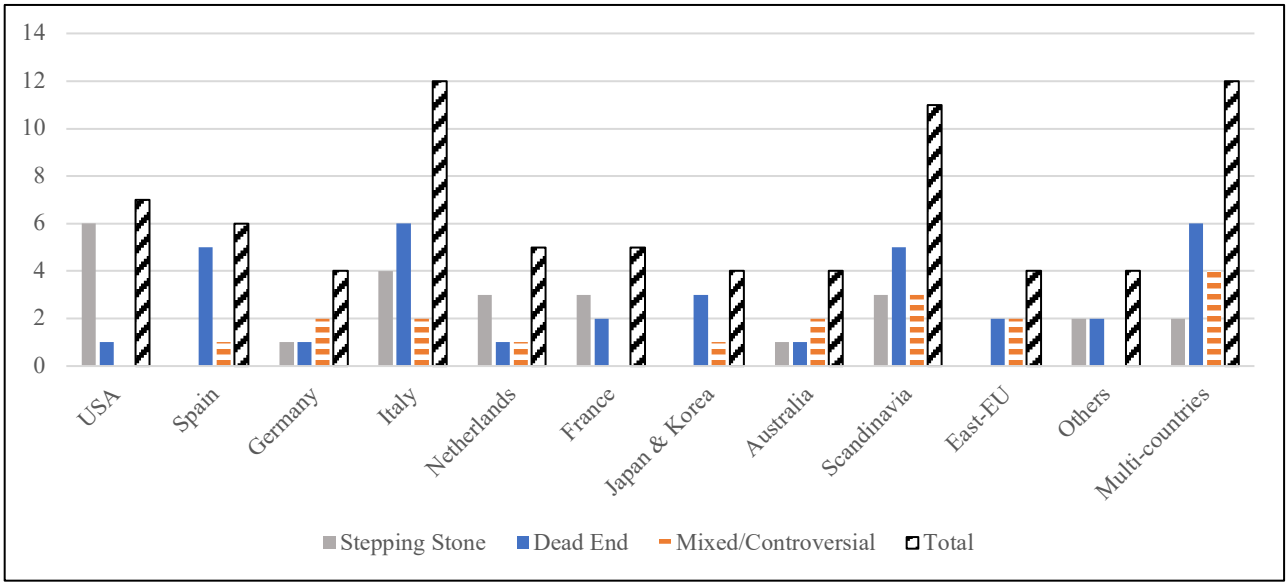
Figure A.3: Research outcomes by journal Scimago subject area



Notes: "Multi-area" comprises journals included in more than one Scimago subject area.

Figure A.4 displays the absolute frequency of studies by countries and research outcome. Most of the articles focus on Italy and Spain, two countries where in the last three decades the introduction of temporary employment has been very important and created a strong labour market duality. The case of Spain is interesting as 5 out of 6 articles found support for the dead end hypothesis and none found evidence of the stepping stone effect. Also for Japan and South Korea there is no evidence for the stepping stone effect. On the opposite side, for the US 86% of the studies revealed that temporary jobs acted as port of entry into employment. The findings for the Netherlands are similar. In Italy, Germany, France, Australia, and the Scandinavian countries the results are more balanced and there is no clear evidence for a dominant research outcome.

Figure A.4: Research outcomes by country



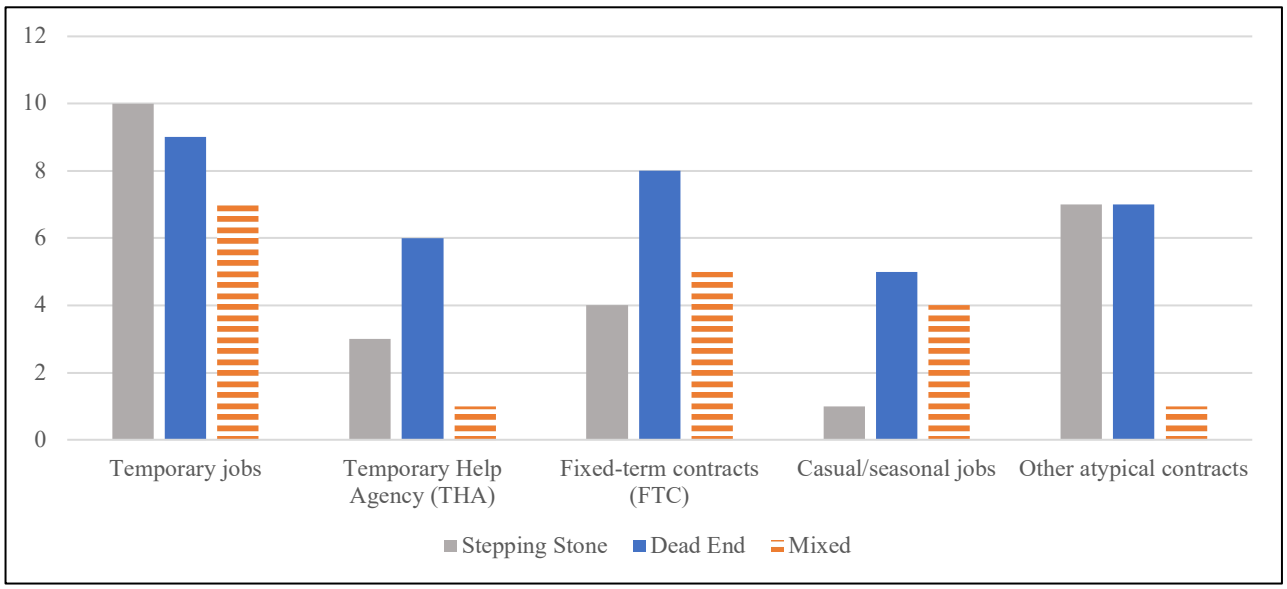
Notes: Scandinavia includes Denmark (2 articles) and Sweden (3 articles). East-EU includes Poland (2 articles) and Slovakia (1 article).

Table A.3 reports descriptive statistics of the EPL index of permanent employment, the EPL gap between temporary and permanent contracts, the unemployment rate, and the GDP growth rate by research outcome. These aggregate measures refer to the country studied in each article and to the year (or the midpoint of the time window) of the dataset used for the empirical analysis. The number of observations is now reduced to 66 from 54 articles, since we excluded 10 articles using multiple countries.

Figure A.5 illustrates the research outcomes among 5 categories: temporary jobs, fixed-term contracts (FTCs), temporary help agencies (THA), casual/seasonal contracts and a residual category of all other contractual forms. In our sample, there are 8 articles which report results and conclusions on multiple contractual arrangements. Booth et al. (2002) report findings on fixed-term contracts (FTCs) and seasonal/casual jobs; Scherer (2004) uses both FTCs and very short employment episodes; Addison and Surfield (2009) find support for the stepping stone hypothesis for temporary, on-call and contracting jobs. Nunziata and Staffolani (2007) and Givord and Wilner (2015) provide evidence that FTCs are stepping stones but temporary help agencies jobs are dead ends. Berglund et

al. (2017) distinguish among 7 contract types (substitute, probationary contracts, temporary jobs, seasonal, summer work, project and on-call jobs). Finally, Bosco and Valeriani (2018) and Kiersztyn (2020) find support for the dead end hypothesis for both FTCs and "parasubordinate" contracts and FTCs and irregular works, respectively.

Figure A.5: Research outcomes by contract type



Notes: The category "Temporary jobs" includes those studies which do not distinguish among different forms of temporary contracts and studies which have "temporary job" as a separate category from other temporary arrangements. It also includes those studies using the definition of "atypical" or "non-standard work". The category "Casual/seasonal jobs" refers to seasonal contracts and all atypical contracts that are contingent, casual, or marginal. The category "Other atypical contracts" refers to those studies which explicitly use a particular type of temporary contract different from THA jobs and FTCs.

Table A.4 reports the full set of estimation results of the ordered probit model with three different sets of control variables. Specification (1) is the most parsimonious one: we include only two dummies for the identification strategy (selection on observables and selection on unobservables, with studies controlling only for a small set of covariates as the reference) and dummy variables for the type of contractual arrangements. We do not use the variables capturing the macroeconomic condition and the institutional context. In specification (2) we include a richer set of dummies for the

identification strategy used to estimate the causal effect of temporary employment. Finally, in specification (3) we augment the baseline specification with the variables for the macroeconomic condition and the institutional context.

Tables from A.5 to A.7 are robustness checks. For the sake of brevity, we only report the average partial effects.

Given the categorical effect with more than two ordered categories as outcome variable, we use the ordered probit model as the benchmark model. The ordered nature of the 3 categories would have been implied by the natural ordinal values of *t*-statistic, if mixed or controversial findings were not present in our sample and classified in the middle category. Thus, to check if our findings are sensitive to the used ordered categorization and to retain the easiness of interpretation of the findings, we proceed as follows. First, we generated a new binary dependent variable, which is equal to 1 if a study is in support of the stepping stone hypothesis and 0 otherwise and estimated a probit model. By doing so, we emphasize which study characteristics are associated to a higher probability that a study result is in favor of the stepping stone hypothesis. Second and similarly, we generated a new binary dependent variable, which is equal to 1 if a study is in support of the dead end hypothesis and 0 otherwise and estimated a probit model. By doing so, we can understand which study characteristics are associated to a higher probability that a study result is in favor of the dead end hypothesis. A similar approach to test the implicit restrictions of the ordered probit model was used by Card et al. (2010). Under the assumption that the ordered probit specification is correct, the coefficients of the separated probit models should be very similar to those in the ordered probit and the two probit models should have coefficients that are similar in magnitude but with opposite sign. Findings from both regressions are in line with the benchmark ones and are reported in Table A.5. The main difference concerns the EPL for permanent workers, which is now significant, but only in the probit model for the dead end scenario.

Table A.6 reports the findings if we had used an order logit model. All the results are very similar to the ones from the benchmark model.

In Table A.7 we present estimation results if we include in our meta-analytic sample further 15 studies (for a total of 21 observations), which we excluded in the main analysis because not published in peer-reviewed journals with SJR indicator. They are 6 book chapters (Houseman and Polivcka, 2000; Autor and Houseman 2006, Andersson et al., 2009; Böheim and Cardoso, 2009; Heinrich et al., 2009; Kvasnicka, 2009), 5 working papers (Güell and Petrongolo, 2000; Larsson et al., 2005; Dekker, 2008; Goebel and Verhofstadt, 2009; Summerfield, 2009), and 4 articles published in journals which are not ranked in Scimago (Lilla and Staffolani, 2012; Shikata, 2012; Hopp et al., 2016; Bosco and Valeriani, 2019). The set of regressors is now slightly modified. We removed dummies for journal classification and the SJR index and we included a dummy variable equal to 1 for study results belonging to the original sample and 0 for the new observations. The coefficient of the latter dummy was not significantly different from 0 and therefore we removed it from the set of final regressors. Study-related characteristics such as citations, year, and sample size are now not statistically significant. Nevertheless, the main findings are confirmed: selection on unobservables methods matter in explaining the study outcome; TAW and seasonal/casual jobs are more likely to support the dead end hypothesis; the higher the unemployment rate, the more likely the dead end scenario is the study outcome, although with lower statistical significance.

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Table A.1: Articles included in the meta-analysis ($N = 64$)

Authors	Journal	Google Scholar citations on 08/03/21	Country	Data (Time Span)	Sample size	Method	Hypothesis supported
Addison and Surfield (2009)	Applied Economics	42	USA	CPS/CAEAS (1997-2005)	Medium	CF	Stepping stone
Addison et al. (2015)	Manchester School	11	USA	NLSY (1992-1998)	Large	PSM	Stepping stone
Ahn (2016)	International Labour Review	1	South Korea	KLIPS (1998-2012)	Medium	DREP	Dead end
Alba-Ramirez (1998)	Journal of Labor Research	165	Spain	SAP (1987-1996)	Large	CF	Dead end
Amuedo-Dorantes (2000)	ILR Review	333	Spain	LFS (1995-1996)	Large	Multin. logit, DM	Dead end
Amuedo-Dorantes et al. (2008)	Journal of Labor Research	81	Spain	Admin. Data (1998-2004)	Large	PSM	Dead end
Auray and Lepage-Saucier (2021)	Labour Economics	0	France	FH-DADS (1996-2004)	Large	ToE	Stepping stone
Autor and Houseman (2010)	American Economic Journal	311	USA	Work First Data (1999-2003)	Large	OLS, IV	Dead end
Babos (2014)	Post-Communist Economies	14	8 East-EU countries	EU-SILC (2005-2010)	Medium	CF	Dead end
Baranovska-Rataj et al. (2011)	Work, Employment and Society	74	Poland	PSLS (1998-2005)	Large	DM	Mixed
Barbieri and Sestito (2008)	Labour	87	Italy	LFS (1993-2003)	Large	PSM	Stepping stone
Barbieri and Cutuli (2016)	European Sociological Review	112	13 EU countries	EU-LFS (1992-2008)	Medium	FE	Mixed
Barbieri and Cutuli (2018)	De Economist	7	Italy	SHIW (2004-2014)	Medium	DREP	Dead end
Barbieri et al. (2019)	Socio-Economic Review	22	Italy	MSIH (1980-2009)	Large	DREP	Dead end
Berglund et al. (2017)	Nordic Journal of Working Life Studies	29	Sweden	LFS (1992-2010)	Large	Multin. Logit	Mixed*
Berson (2018)	De Economist	6	France	LFS, PIAAC, WDN (2003-2016)	Large	Multin. Probit, Heckprobit	Dead end
Berton et al. (2011)	International Journal of Manpower	141	Italy	WHIP (1998-2004)	Medium	FE	Stepping stone
Böheim and Weber (2011)	German Economic Review	32	Austria	ASSD (1993-2001)	Large	PSM	Dead end
Boockmann and Hagen (2008)	Labour Economics	122	Germany	GSOEP (1985-2002)	Medium	PSM	Stepping stone
Booth et al. (2002)	Economic Journal	1,561	UK	BHPS (1991-1997)	Medium	DM	Stepping stone (FTCs), Dead end (Casual jobs)
Bosco and Valeriani (2018)	Italian Economic Journal	1	Italy	Admin. Data (2008-2015)	Large	PSM	Dead end
Bosio (2011)	Politica Economica	6	Italy	CLAP (1992-2002)	Large	DM	Mixed
Bruno et al. (2013)	Rivista Internazionale di Scienze Sociali	29	Italy	IT-SILC (2004-2007)	Medium	DM	Dead end
Buddelmeyer and Wooden (2011)	Industrial Relations	51	Australia	HILDA (2001-2005)	Large	DREP	Stepping stone
Chalmers and Kalb (2001)	Australian Economic Review	48	Australia	SEUP (1994-1997)	Medium	ToE	Mixed
Cockx and Picchio (2012)	Oxford Bulletin of Econ. and Statistics	123	Belgium	CBSS (1998-2001)	Large	ToE	Stepping stone
D'Addio and Rosholm (2005)	Labour Economics	160	EU members	ECHP (1994-1999)	Large	Multin. logit	Dead end
De Graaf-Zijl et al. (2011)	Journal of Population Economics	349	Netherlands	OSA-LSP (1988-2000)	Small	ToE	Stepping stone
De Lange et al. (2014)	Economic and Industrial Democracy	31	Netherlands	OSA-LSP (1986-2008)	Small	CF	Mixed
Esteban-Pretel et al. (2011)	Labour Economics	59	Japan	ES Survey (2002)	Medium	Other method	Mixed
Freier and Steiner (2008)	Journal of Labour Market Research	42	Germany	EP-FEA (2001-2002)	Large	PSM	Mixed
Fremigacci and Terracol (2013)	Applied Economics	35	France	Admin. Data (2001-2004)	Large	ToE	Stepping stone
Gagliarducci (2005)	Labour Economics	258	Italy	ILFI (1997)	Medium	ToE	Mixed
García-Pérez and Munoz-Bullón (2011)	British Journal of Ind. Relations	108	Spain	SSS Records (1996-2003)	Large	DM	Dead end
García-Pérez et al. (2019)	Economic Journal	51	Spain	MCVL (2006-2012)	Large	RDD	Dead end
Gash (2008)	European Sociological Review	232	4 EU countries	ECHP (1995-2001)	Medium	DM	Mixed
Giesecke and Groß (2003)	European Sociological Review	262	Germany	GSOEP (1984-1999)	Large	RE	Dead end
Givord and Wilner (2015)	Journal of Applied Econometrics	44	France	LFS (2002-2010)	Large	FE	Stepping stone (FTCs), Dead end (THA)
Hartman et al. (2010)	Empirical Economics	23	Sweden	Admin. Data (2002-2003)	Small	PSM	Mixed
Högberg et al. (2019)	Journal of Sociology	4	18 EU countries	EU-SILC (2004-2013)	Large	Other method	Stepping stone

(continued on next page)

Table A.1: *Continued from previous page*

Authors	Journal	Google Scholar citations on 08/03/21	Country	Data (Time Span)	Sample size	Method	Hypothesis supported
Hveem (2013)	IZA Journal of Migration	28	Sweden	LISA (1997-2008)	Large	DiD	Dead end
Hyatt and Spletzer (2017)	Labour Economics	37	USA	LEHD, CPS (1996-2012)	Large	Stock-flows analysis	Stepping stone
Ichino et al. (2008)	Journal of Applied Econometrics	690	Italy	Manpower (2001)	Medium	PSM	Stepping stone
Jahn and Rosholm (2013)	Economics Letters	42	Denmark	Admin. Data (1997-2006)	Large	ToE	Stepping stone
Jahn and Rosholm (2014)	European Economic Review	48	Denmark	Admin. Data (1997-2006)	Large	ToE	Mixed
Kiersztyn (2020)	Acta Sociologica	1	Poland	POLPAN (2008-2013)	Small	CF	Dead end
Lane et al. (2003)	Journal of Policy Analysis and Manag.	94	USA	SIPP (1990-1993)	Large	PSM	Stepping stone
McGinnity et al. (2005)	European Sociological Review	174	Germany	GLHS (80s-90s)	Medium	Multin. logit	Mixed
McVicar et al. (2019)	European Sociological Review	14	Australia	HILDA (2001-2014)	Medium	Sequence analysis	Mixed
Mooi-Reci and Dekker (2015)	British Journal of Ind. Relations	22	Netherlands	OSA-LSP (1980-2000)	Medium	DREP	Dead end
Muehlberger and Pasqua (2009)	Review of Social Economy	38	Italy	ILFS (2004)	Large	Multin. logit	Dead end
Nunziata and Staffolani (2007)	Scottish Journal of Pol. Economy	107	15 EU countries	LFS (1983-1998)	Medium	FE, DiD	Stepping stone (FTCs), Dead end (THA)
Okudaira et al. (2013)	Journal of the Japan. and Int. Ec.	12	Japan	TWS (2008-2010)	Small	PSM	Dead end
Passaretta and Wolbers (2019)	Economic and Industrial Democracy	20	17 EU countries	LFS (1995-2009)	Large	Multin. logit	Dead end
Pavlopoulos (2013)	Review of Social Economy	18	UK, Germany	BHPS, GSOEP (1984-2008)	Medium	CF	Mixed
Picchio (2008)	Labour	107	Italy	SHIW (2000-2004)	Medium	DREP	Stepping stone
Sanz (2011)	Manchester School	19	Spain	LWLS (2000-2007)	Large	ToE	Mixed
Scherer (2004)	Work, Employment and Society	437	Germany, Italy, UK	GSOEP, BHPS, ILFI (1983-1998)	Medium	DM, RE	Mixed (FTCs), Dead end (Other jobs)
Steijn et al. (2006)	Work, Employment and Society	99	Netherlands	FSDP (2000)	Medium	Logit	Stepping stone
Svalund and Berglund (2018)	European Journal of Ind. Relations	22	Norway, Sweden	LFS (2000-2008)	Large	Logit	Dead end
Van den Berg et al. (2002)	Journal of Population Economics	68	Netherlands	Basic Doctor Data (1984-1990)	Medium	ToE	Stepping stone
Van Ours (2004)	Journal of Comparative Economics	257	Slovakia	Admin. Data (1993-1998)	Large	ToE	Mixed
Watson (2013)	Journal of Industrial Relations	65	Australia	HILDA (2001-2009)	Large	Multin. logit	Dead end
Yu (2012)	Social Forces	53	Japan	SSSMS (2005)	Medium	DM	Dead end

Notes: CF = Control Function; PSM = Propensity Score Matching; DREP = Dynamic Random Effects Probit; ToE = Timing of Events; OLS = Ordinary Least Squares; IV = Instrumental Variables; DM = Duration Model; FE = Fixed Effects; Multin. logit= Multinomial logit; RDD = Regression Discontinuity Design; DiD = Difference-in-Differences; RE= Random Effects; QR = Quantile Regression. Sample size: small means $N < 1,000$; medium means $1,000 \leq N < 10,000$; large means $N \geq 10,000$.

*Berglund et al. (2017): Substitute and probationary contracts = Stepping stones; Temporary jobs = Mixed; Seasonal, on-call, project and summer-works = Dead ends.

Table A.2: Descriptive statistics on article citations and SJR

	Stepping Stone	Dead End	Mixed/Controversial
Overall sample			
a) Number of citations per year on 08/03/2021 (Google scholar)			
Mean	12.216	9.727	8.854
Standard deviation	18.421	14.445	7.531
Minimum	0.000	0.200	0.600
Maximum	82.158	82.158	25.706
b) SJR at the time of publication[(a)]			
Mean	0.939	1.055	1.056
Standard deviation	0.669	1.188	0.801
Minimum	0.172	0.111	0.111
Maximum	2.331	5.453	2.664
Observations	25	35	18
Single-country studies			
a) Number of citations per year on 08/03/2021 (Google scholar)			
Mean	12.859	9.578	6.513
Standard deviation	19.080	15.548	4.766
Minimum	0.000	0.200	0.600
Maximum	82.158	82.158	16.125
b) SJR at the time of publication[(a)]			
Mean	0.977	1.088	0.982
Standard deviation	0.683	1.293	0.799
Minimum	0.172	0.111	0.111
Maximum	2.331	5.453	2.664
Observations	23	29	14
Multi-country studies			
a) Number of citations per year on 08/03/2021 (Google scholar)			
Mean	4.821	10.447	17.051
Standard deviation	3.990	8.027	10.380
Minimum	2.000	2.000	2.250
Maximum	7.643	25.706	25.706
b) SJR at the time of publication[(a)]			
Mean	0.502	0.892	1.313
Standard deviation	0.197	0.438	0.868
Minimum	0.362	0.362	0.335
Maximum	0.641	1.477	2.345
Observations	2	6	4

Source: Data retrieved from Google Scholar and Scimago Institutions Rankings on 08/03/2021.

(a) At the time of publication, some journals did not have the SJR index yet, either because they were published in too recent years or because the journal was not indexed yet in Scimago. Footnote (iv) explains how we deal with these cases of missing information.

Table A.3: Descriptive statistics of institutional context and macroeconomic conditions by study outcome

	Stepping Stone	Dead End	Mixed/Controversial
a) EPL of permanent jobs			
Mean	1.989	2.409	2.376
Standard deviation	1.303	0.684	0.672
Minimum	0.090	0.090	1.230
Maximum	3.620	3.350	3.320
b) EPL gap			
Mean	0.378	0.427	0.422
Standard deviation	0.864	0.803	1.113
Minimum	-0.790	-0.890	-1.740
Maximum	2.360	2.050	2.180
c) Unemployment rate			
Mean	7.243	8.938	8.871
Standard deviation	1.869	3.989	3.153
Minimum	3.700	4.000	4.800
Maximum	10.300	20.400	16.800
d) GDP growth			
Mean	2.539	1.947	2.550
Standard deviation	0.842	1.574	1.322
Minimum	1.220	-2.300	0.100
Maximum	4.200	4.600	5.100
Observations	23	29	14

Source: OECD Database. The EPL of permanent jobs is the "strictness of employment protection: individual and collective dismissals (regular contracts)". We calculate the EPL gap as the difference between the EPL of permanent jobs and the EPL of temporary jobs. The unemployment rate comes from the General statistics, Key short-term economic indicators. The GDP growth comes from the Annual national accounts, Main aggregates.

Table A.4: Full set of estimation results of the ordered probit model for the study outcome

	(1)			(2)			(3)		
	Coeff.		Std. Err.	Coeff.		Std. Err.	Coeff.		Std. Err.
Google scholar citation per year	0.035	***	0.012	0.042	***	0.014	0.018		0.014
SJR index	-0.281		0.212	-0.274		0.223	-0.070		0.265
Year of publication - Reference: 2015-2021									
1999-2009	0.685	*	0.366	0.253		0.429	1.004	*	0.547
2010-2014	0.906	**	0.384	0.712	*	0.408	1.211	***	0.456
Subject area - Reference: Multi area									
Economics, Econometrics and Finance	-1.192	***	0.387	-1.653	***	0.511	-1.801	***	0.459
Social sciences	-0.116		0.449	-0.181		0.457	-0.853		0.645
Business, Management and Accounting	-1.636	***	0.531	-1.444	***	0.519	-1.569	***	0.514
Sample size - Reference: N < 1,000									
1,000 <= N < 10,000	1.184	*	0.692	1.709	**	0.794	1.943	**	0.798
N >= 10,000	1.364	**	0.683	1.878	**	0.790	1.703	**	0.735
Continental dummies - Reference: UE									
Extra EU	1.428	***	0.526	1.829	***	0.497	-0.600		0.963
Multi country	-0.577		0.391	-0.393		0.458	--		--
Identification strategy - Reference: Multivariate analysis with reduced number of controls									
Selection on observables	1.365	***	0.457	--		--	1.715	***	0.509
Selection on unobservables	1.546	***	0.405	--		--	1.619	***	0.532
Identification strategy - Reference: Multivariate analysis with reduced number of controls									
Control function	--		--	1.800	**	0.771	--		--
Propensity score matching	--		--	1.637	***	0.519	--		--
DiD-Fe	--		--	1.503	***	0.513	--		--
Timing-to-Events	--		--	2.554	***	0.771	--		--
Dynamic random effects probit	--		--	0.681		0.835	--		--
Other methods, including RDD and IV	--		--	0.808		0.869	--		--
Institutional context and macroeconomic conditions									
EPL for permanent workers	--		--	--		--	-0.873	*	0.483
EPL gap permanent/temporary workers	--		--	--		--	0.111		0.216
Unemployment rate	--		--	--		--	-0.128	**	0.062
GDP growth rate	--		--	--		--	0.268	*	0.142
Contract type - Reference: temporary jobs									
Fixed-term contracts	-0.186		0.372	0.042		0.420	-0.194		0.564
Temporary Help Agencies	-1.677	***	0.637	-1.740	***	0.648	-2.048	***	0.671
Casual/Seasonal jobs	-1.621	***	0.515	-1.664	***	0.531	-1.437	**	0.625
Other atypical contracts	-0.006		0.355	-0.097		0.367	0.302		0.500
Ordered probit cut points									
α_0	1.626		0.839	2.086		0.966	-0.625		1.726
α_1	2.504		0.858	3.028		0.992	0.311		1.708
Observations (studies)	78 (64)			78 (64)			66 (54)		
Pseudo-R^2	0.244			0.283			0.335		

Notes: *** Significant at 1%, ** significant at 5%, * significant at 10%. The outcome variable is an ordered response variable indicating whether a study supports the dead end hypothesis (-1), finds mixed or null results (0), or finds evidence in favor of the stepping stone hypothesis (1). The standard errors are clustered at study level.

Table A.5 Average partial effects from 2 separate probit models

	(1)				(2)				(3)			
	APE_{DE}	Std.Err.	APE_{SS}	Std.Err.	APE_{DE}	Std.Err.	APE_{SS}	Std.Err.	APE_{DE}	Std.Err.	APE_{SS}	Std.Err.
Google scholar citations per year	-0.006 *	0.003	0.014 ***	0.004	-0.001	0.003	0.014 ***	0.005	0.004	0.004	0.010 ***	0.004
SJR index	0.052	0.057	-0.157 **	0.072	-0.001	0.067	-0.153 **	0.076	0.003	0.059	-0.107	0.073
Year of publication - Reference: 2015-2021												
1999-2009	-0.284 ***	0.101	0.112	0.107	-0.264 **	0.120	0.079	0.127	-0.354 ***	0.064	0.153	0.162
2010-2014	-0.305 ***	0.090	0.133	0.092	-0.279 ***	0.101	0.108	0.100	-0.320 ***	0.084	-0.056	0.119
Subject area - Reference: Multi area												
Economics, Econometrics and Finance	0.286 ***	0.087	-0.282 ***	0.060	0.149	0.113	-0.286 ***	0.069	0.313 ***	0.059	-0.266 ***	0.089
Social sciences	0.059	0.138	-0.173	0.114	0.121	0.158	-0.172	0.104	0.376 ***	0.086	--	--
Business, Management and Accounting	0.485 ***	0.087	-0.277 ***	0.074	0.451 ***	0.103	-0.264 ***	0.076	0.463 ***	0.074	--	--
Sample size: Reference: N < 1,000												
1,000 <= N < 10,000	-0.200	0.231	0.389 ***	0.107	-0.147	0.269	0.398 ***	0.126	-0.138 ***	0.227	0.300	0.200
N >= 10,000	-0.185	0.173	0.373 ***	0.061	-0.090	0.217	0.376 ***	0.069	0.097 ***	0.239	0.318 ***	0.087
Continental dummies - Reference: UE												
Extra EU	-0.276 ***	0.104	0.430 ***	0.097	-0.274 **	0.118	0.452 ***	0.086	0.173	0.174	-0.292 ***	0.079
Multi country	0.152	0.120	-0.135	0.107	0.180	0.147	-0.133	0.111	--	--	--	--
Identification strategy - Reference: Multivariate analysis with reduced number of controls												
Selection on observables	-0.260 **	0.101	0.370 ***	0.097	--	--	--	--	-0.207 *	0.111	0.400 ***	0.100
Selection on unobservables	-0.386 ***	0.083	0.428 ***	0.086	--	--	--	--	-0.331 ***	0.086	0.444 ***	0.074
Identification strategy - Reference: Multivariate analysis with reduced number of controls												
Control function	--	--	--	--	0.007	0.191	0.391 **	0.177	--	--	--	--
Propensity score matching	--	--	--	--	-0.054	0.147	0.360 ***	0.100	--	--	--	--
DiD-FE	--	--	--	--	-0.202	0.140	0.462 ***	0.093	--	--	--	--
Timing-to-Events	--	--	--	--	--	--	0.489 ***	0.135	--	--	--	--
Dynamic random effects probit	--	--	--	--	0.121	0.229	0.361 **	0.146	--	--	--	--
Other methods, including RDD and IV	--	--	--	--	-0.001	0.283	0.405 **	0.181	--	--	--	--

Institutional context and macroeconomic conditions																			
EPL for permanent workers	--		--	--		--	--		--	--		--	0.202	**	0.100	-0.212		0.140	
EPL gap permanent/temporary workers	--		--	--		--	--		--	--		--	0.029		0.074	-0.033		0.072	
Unemployment rate	--		--	--		--	--		--	--		--	0.007		0.019	-0.089	***	0.032	
GDP growth rate	--		--	--		--	--		--	--		--	-0.111	***	0.042	0.031		0.052	
Contract type - Reference: temporary jobs																			
Fixed-term contracts	0.049		0.126	0.014		0.118	0.102		0.128	0.013		0.143	-0.053		0.157	-0.077		0.137	
Temporary Help Agencies	0.463	***	0.092	-0.247	***	0.089	0.446	***	0.123	-0.253	**	0.112	0.327	***	0.102	-0.311	***	0.081	
Casual/Seasonal jobs	0.283	**	0.129	-0.357	***	0.050	0.346	***	0.131	-0.356	***	0.053	0.049		0.194	--		--	
Other atypical contracts	0.067		0.113	0.070		0.096	0.176		0.119	0.053		0.097	-0.084		0.152	--		--	
Observations (studies)	78 (64)						78 (64)						66 (54)						

Notes: *** Significant at 1%, ** significant at 5%, * significant at 10%. APE_{DE} are the average partial effects from probit model for dead end hypothesis, whereas APE_{SS} are the average partial effects from the probit model for stepping stone hypothesis. In specification (3) for the stepping stone outcome the full set of covariates cannot be included in the probit model because some covariates predict the outcome perfectly. The standard errors are clustered at study level.

Table A.6 Average partial effects from ordered logit model

	(1)			(2)			(3)		
	APE_{-1}	Std.Err.	APE_1	APE_{-1}	Std.Err.	APE_1	APE_{-1}	Std.Err.	APE_1	Std.Err.
Google scholar citations per year	-0.010 ***	0.003	0.009 ***	0.003	-0.011 **	0.004	0.009 **	0.004	-0.004	0.004	0.004	0.004
SJR index	0.073	0.063	-0.065	0.059	0.058	0.075	-0.049	0.065	0.031	0.089	-0.029	0.084
Year of publication - Reference: 2015-2021												
1999-2009	-0.182 *	0.098	0.177 *	0.099	-0.068	0.122	0.058	0.107	-0.245 **	0.121	0.271 *	0.150
2010-2014	-0.219 **	0.089	0.210 **	0.094	-0.168	0.115	0.145	0.103	-0.265 ***	0.098	0.247 ***	0.093
Subject area - Reference: Multi area												
Economics, Econometrics and Finance	0.314 ***	0.082	-0.254 ***	0.064	0.368 ***	0.073	-0.278 ***	0.059	0.367 ***	0.066	-0.299 ***	0.052
Social sciences	0.032	0.124	-0.028	0.108	0.056	0.145	-0.046	0.115	0.247	0.188	-0.193	0.126
Business, Management and Accounting	0.411 ***	0.127	-0.296 ***	0.076	0.354 ***	0.122	-0.254 ***	0.075	0.327 ***	0.122	-0.258 ***	0.093
Sample size: Reference: N < 1,000												
1,000 <= N < 10,000	-0.306 **	0.146	0.300 *	0.156	-0.418 ***	0.135	0.399 ***	0.147	-0.366 ***	0.131	0.403 **	0.169
N >= 10,000	-0.309 ***	0.105	0.279 ***	0.100	-0.342 ***	0.102	0.319 ***	0.097	-0.328 ***	0.098	0.261 ***	0.082
Continental dummies - Reference: UE												
Extra EU	-0.343 ***	0.098	0.381 ***	0.130	-0.387 ***	0.099	0.418 ***	0.116	0.159	0.234	-0.131	0.169
Multi country	0.144	0.108	-0.124	0.089	0.118	0.143	-0.096	0.112	--	--	--	--
Identification strategy - Reference: Multivariate analysis with reduced number of controls												
Selection on observables	-0.320 ***	0.077	0.352 ***	0.089	--	--	--	--	-0.286 ***	0.064	0.358 ***	0.083
Selection on unobservables	-0.380 ***	0.082	0.383 ***	0.094	--	--	--	--	-0.365 ***	0.107	0.333 ***	0.109
Identification strategy - Reference: Multivariate analysis with reduced number of controls												
Control function	--	--	--	--	-0.367 ***	0.112	0.425 **	0.166	--	--	--	--
Propensity score matching	--	--	--	--	-0.357 ***	0.070	0.404 ***	0.100	--	--	--	--
DiD-FE	--	--	--	--	-0.330 ***	0.087	0.353 ***	0.122	--	--	--	--
Timing-to-Events	--	--	--	--	-0.476 ***	0.072	0.605 ***	0.125	--	--	--	--
Dynamic random effects probit	--	--	--	--	-0.140	0.289	0.127	0.296	--	--	--	--
Other methods, including RDD and IV	--	--	--	--	-0.173	0.277	0.165	0.310	--	--	--	--

Institutional context and macroeconomic conditions																			
EPL for permanent workers	--			--			--			--			--			0.211	*	0.124	-0.197	*	0.108
EPL gap permanent/temporary workers	--			--			--			--			--			-0.025		0.054	0.023		0.050
Unemployment rate	--			--			--			--			--			0.033	**	0.015	-0.031	**	0.016
GDP growth rate	--			--			--			--			--			-0.055		0.038	0.052		0.034
Contract type - Reference: temporary jobs																			
Fixed-term contracts	0.049			0.111	-0.044		0.097	0.001		0.128	-0.001		0.107	0.022			0.172	-0.021		0.155	
Temporary Help Agencies	0.427	***		0.129	-0.308	***	0.077	0.400	***	0.120	-0.290	***	0.077	0.401	***		0.096	-0.312	***	0.074	
Casual/Seasonal jobs	0.409	***		0.092	-0.299	***	0.063	0.391	***	0.110	-0.287	***	0.064	0.341	***		0.107	-0.275	***	0.080	
Other atypical contracts	0.016			0.102	-0.015		0.090	0.047		0.112	-0.039		0.089	-0.062			0.129	0.059		0.129	
Observations (studies)				78 (64)						78 (64)							66 (54)				

Notes: *** Significant at 1%, ** significant at 5%, * significant at 10%. The outcome variable is an ordered response variable indicating whether a study supports the dead end hypothesis (-1), finds mixed or null results (0), or finds evidence in favor of the stepping stone hypothesis (1). The standard errors are clustered at study level.

Table A.7 Average partial effects from ordered probit model, including 15 studies not published in peer-reviewed journals with SJR index

	(1)				(2)				(3)			
	APE_{-1}	Std.Err.	APE_{1}	Std.Err.	APE_{-1}	Std.Err.	APE_{1}	Std.Err.	APE_{-1}	Std.Err.	APE_{1}	Std.Err.
Google scholar citations per year	-0.003	0.003	0.003	0.002	-0.004	0.002	0.003	0.002	-0.002	0.003	0.002	0.003
Year of publication - Reference: 2015-2021												
1999-2009	-0.161	0.121	0.139	0.106	-0.066	0.123	0.055	0.103	-0.174	0.150	0.157	0.139
2010-2014	-0.164	0.115	0.149	0.111	-0.126	0.123	0.110	0.114	-0.197 *	0.114	0.186	0.116
Sample size: Reference: N < 1,000												
1,000 <= N < 10,000	-0.240	0.180	0.220	0.181	-0.293 *	0.158	0.267	0.168	-0.313 *	0.177	0.313	0.205
N >= 10,000	-0.108	0.167	0.091	0.142	-0.134	0.153	0.110	0.128	-0.186	0.169	0.157	0.141
Continental dummies - Reference: UE												
Extra EU	-0.010	0.153	0.009	0.132	-0.129	0.130	0.113	0.122	0.147	0.204	-0.125	0.164
Multi country	0.207 *	0.108	-0.157 **	0.075	0.194 *	0.117	-0.144 *	0.079	--	--	--	--
Identification strategy - Reference: Multivariate analysis with reduced number of controls												
Selection on observables	-0.174	0.125	0.156	0.123	--	--	--	--	-0.152	0.135	0.141	0.136
Selection on unobservables	-0.297 ***	0.094	0.272 ***	0.096	--	--	--	--	-0.195 *	0.106	0.178 *	0.103
Identification strategy - Reference: Multivariate analysis with reduced number of controls												
Control function	--	--	--	--	-0.022	0.188	0.019	0.160	--	--	--	--
Propensity score matching	--	--	--	--	-0.324 ***	0.111	0.324 **	0.141	--	--	--	--
DiD-FE	--	--	--	--	-0.377 ***	0.069	0.416 ***	0.097	--	--	--	--
Timing-to-Events	--	--	--	--	-0.372 ***	0.089	0.407 ***	0.124	--	--	--	--
Dynamic random effects probit	--	--	--	--	0.023	0.257	-0.018	0.207	--	--	--	--
Other methods, including RDD and IV	--	--	--	--	-0.115	0.217	0.104	0.214	--	--	--	--
Institutional context and macroeconomic conditions												
EPL for permanent workers	--	--	--	--	--	--	--	--	0.023	0.083	-0.020	0.074
EPL gap permanent/temporary workers	--	--	--	--	--	--	--	--	-0.015	0.060	0.013	0.053
Unemployment rate	--	--	--	--	--	--	--	--	0.027 *	0.016	-0.024	0.015
GDP growth rate	--	--	--	--	--	--	--	--	-0.046	0.038	0.040	0.034

Contract type - Reference: temporary jobs												
Fixed-term contracts	0.001	0.118	-0.001	0.100	0.041	0.117	-0.034	0.094	-0.018	0.134	0.016	0.121
Temporary Help Agencies	0.241 **	0.122	-0.187 **	0.094	0.335 ***	0.109	-0.250 ***	0.082	0.241 *	0.141	-0.196 *	0.114
Casual/Seasonal jobs	0.242	0.147	-0.178 *	0.100	0.315 **	0.129	-0.219 ***	0.083	0.237	0.170	-0.185	0.123
Other atypical contracts	-0.015	0.119	0.013	0.103	0.026	0.105	-0.021	0.084	0.001	0.120	-0.001	0.106
Observations (studies)	99 (79)				99 (79)				86 (68)			

Notes: *** Significant at 1%, ** significant at 5%, * significant at 10%. The outcome variable is an ordered response variable indicating whether a study supports the dead end hypothesis (-1), finds mixed or null results (0), or finds evidence in favor of the stepping stone hypothesis (1). The standard errors are clustered at study level.