Stopgap Jobs: Search and Temporary Jobs

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May 26, 2022

Temporary Jobs as Stopgap Jobs

- $\sim$2% of workers have a temporary contract
- $\sim$10% of $U \to E$ and $E \to U$ flows involve temporary jobs
- How does the availability of temporary jobs affect job search?
  - Temporary jobs are less costly for firms
  - If temporary jobs are easier to find, they can be used as a stopgap
    - "Stopgap:" a temporary, quick, dirty fix
  - However, temp jobs may not be good for upward mobility/skill accumulation

Research Questions

- How does accounting for temporary jobs affect the cost of unemployment?
- What would be the effects of changing the rules of temporary jobs?
  - Outcomes of interest: welfare, optimal UI, dynamism, etc.

What I Do

- Document temporary job facts in data (SIPP and CPS Contingent Worker Supplement)
- Write model with temporary jobs from worker's perspective
  - Search frictions
  - Incomplete markets
- Today's exercise
  - Turn off temporary jobs
  - Calibrate without taking temporary jobs into account

▸ Literature

Institutional Notes

- Firms do not need to offer retirement benefits to workers of $<$ 1,000 hours (26 weeks full time) (ERISA)
- Sufficiently large firms do not need to offer health insurance to workers of $<$ 90 days (ACA)
- Firms can fire without cause (unless there is union protection against it)
- I find that the same worker earns a smaller wage at temporary jobs than permanent jobs

Data

Why Job Ends

- I use three SIPP panels: 2004, 2008, and 2014
- SIPP asks why jobs end
- This is how I classify temporary jobs

Why did job end?

Why job ended	Percentage of jobs
Terminated	16.5%
Job was temporary	11.7%
Quit	35.0%
Quit to take another job	26.0%
Layoff	10.2%
Retired	0.5%

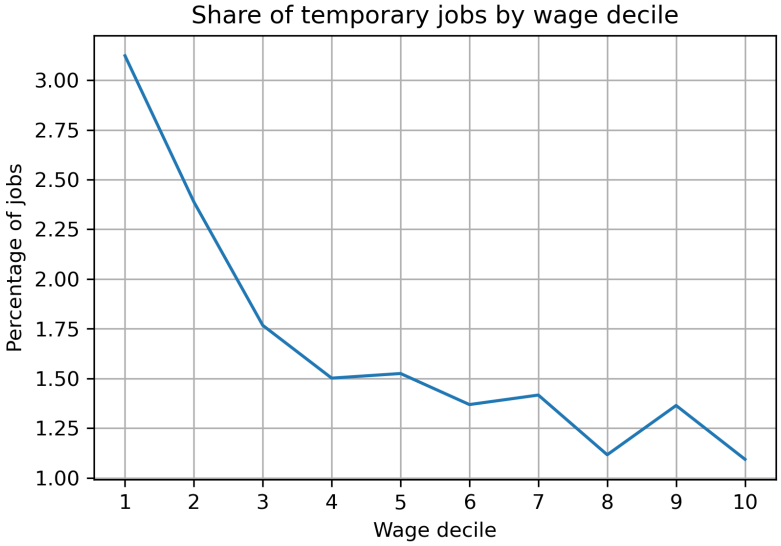
Data source explanation

Frequency of Temporary Jobs

Temporary job statistics

% of jobs	11.7%
Average % of workers at point in time, SIPP	1.8%
Average % of workers at point in time, CPS	3.7%
% of $U \to E$ flows	8.8%
% of $E \to U$ flows	9.4%

Low-Wage Workers More Likely to Work Temporary Jobs



"Desperation" is Top Reason for Working a Temporary Job

Why Working a Temporary Job

Reason	% of temp workers
All I could find/hope it leads to permanent job	40.2%
In school	21.2%
Flexibility of schedule	10.9%
Personal	23.3%
Nature of work/seasonal	4.4%

Source: CPS Contingent Worker Supplement

▸ CPS contingent worker categories ▸ Wages ▸ Length ▸ Hours ▸ Industry ▸ Occupation ▸ Adjacent state ▸ Unemp length

Temporary Job Wages Have a Wage Penalty

- Temporary wages are $\approx 90\%$ of adjacent permanent job wage

Log wage difference between temporary job wage and...

Previous job, $E \to U \to T$	-0.025
Next job, $T \to U \to E$	-0.110
Next job, $T \to E$	-0.153

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Model

Model Intuition

- Search with incomplete markets and a borrowing constraint

Krusell et al. (2010)

- Three states: U, E, and T
- Unemployed workers find a permanent job with some probability (DMP)
- Unemployed workers can accept a temporary job if it is available (McCall)

$\Rightarrow$ If unable to find a permanent job, unemployed workers can smooth consumption by taking a temporary job.

$\Rightarrow$ Unemployed workers will take temporary job if assets are low enough (reservation asset strategy)

Model Framework

- Agents are heterogeneous in...
  - Assets: a
  - If employed, log wage: w
  - If unemployed or temp worker, reference log wage (previous wage): $\tilde{w}$
    - Determines unemployment benefits, temp wages, and wages of new jobs
- Temporary job is different from permanent job because it...
  - Is short: ends with probability δ, $\delta > \lambda$
  - Pays differently: wage is $\phi e^{\tilde{w}}$
- Agents choose...
  - Next period assets: a'
  - If unemployed, whether to accept temporary job or remain unemployed
- Transition rates (UE, EU, UT) depend on w and $\tilde{w}$

Problem of Employed Worker

$$V_E(a,w) = \max_{c,a'} \; u(c) + \frac{1}{1+\rho}\left[\lambda_w V_U(a',w) + (1-\lambda_w)\sum_{w'}\mu(w'|w)V_E(a',w')\right]$$
$$\text{s.t. } c + a' \leq a(1+r) + e^w$$
$$a' \geq \underline{a}$$

- λ_w = separation rate for permanent jobs
- μ = idiosyncratic wage risk, random walk with variance σ^2
- u is CRRA:

$$u(c) = \frac{c^{1-\gamma}}{1-\gamma}$$

CT

Problem of Unemployed Worker

$$V_U(a,\tilde{w}) = \max_{c,a'} \; u(c) + \frac{1}{1+\rho}\Bigg[\alpha_{\tilde{w}} V_E(a',\tilde{w}) + (1-\alpha_{\tilde{w}})\Bigg(\eta_{\tilde{w}} \max\Big\{V_U(a',\tilde{w}), V_T(a',\tilde{w})\Big\} + (1-\eta_{\tilde{w}})V_U(a',\tilde{w})\Bigg)\Bigg] \quad (1)$$

$$\text{s.t. } c + a' \leq a(1+r) + be^{\tilde{w}}$$

$$a' \geq \underline{a}$$

- $\alpha_{\tilde{w}} =$ job finding rate for *permanent* jobs
- $\eta_{\tilde{w}} =$ job offer arrival rate for *temporary* jobs
- $b =$ unemployment benefits (replacement rate)

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Problem of Temporary Worker

$$V_T(a,\tilde{w}) = \max_{c,a'} \; u(c) + \frac{1}{1+\rho}\Bigg[\psi V_E(a',\tilde{w}) + (1-\psi)\Big(\delta V_U(a',\tilde{w}) + (1-\delta)V_T(a',\tilde{w})\Big)\Bigg]$$

$$\text{s.t. } c + a' \leq a(1+r) + \phi e^{\tilde{w}}$$

$$a' \geq \underline{a}$$

- $\psi =$ job finding rate for permanent jobs *for temporary workers*
- $\delta =$ separation rate for temporary jobs
- $\phi =$ temporary wage relative to permanent wage

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Calibration

Calibration Scheme

- Set some parameters externally using SIPP results:

Parameter	Meaning	Value
δ	Separation rate of temporary jobs	0.195
ψ	Finding rate of permanent jobs from temp jobs	0.058
ϕ	Relative temporary job wage	0.9

- For α_w and $\lambda_{\tilde{w}}$:
  - Use job finding and job loss rates by wage decile from Karahan et al. (2022)
  - Use share of temp jobs by wage decile from SIPP
  - Solve for α_w, $\lambda_{\tilde{w}}$, and $p_{\tilde{w}}$ using steady state equations for each w
- For $\eta_{\tilde{w}}$ (job offer arrival rate of temporary jobs), target $p_{\tilde{w}}$ and calibrate using minimum distance

▸ Other parameters

Job Finding and Separation Moments from Karahan et al. (2022)

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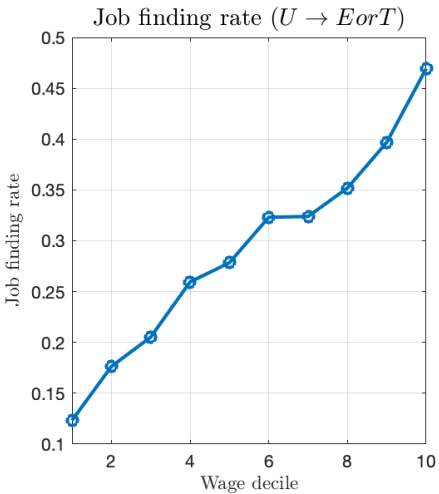
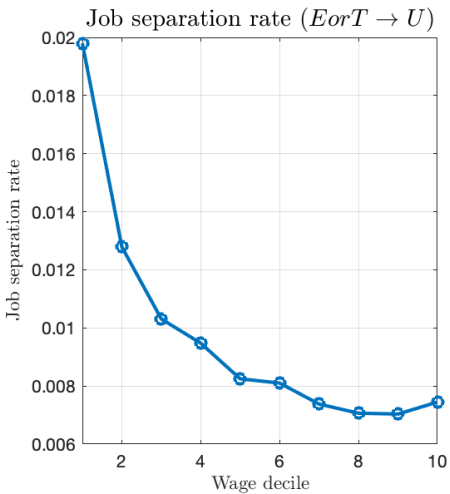
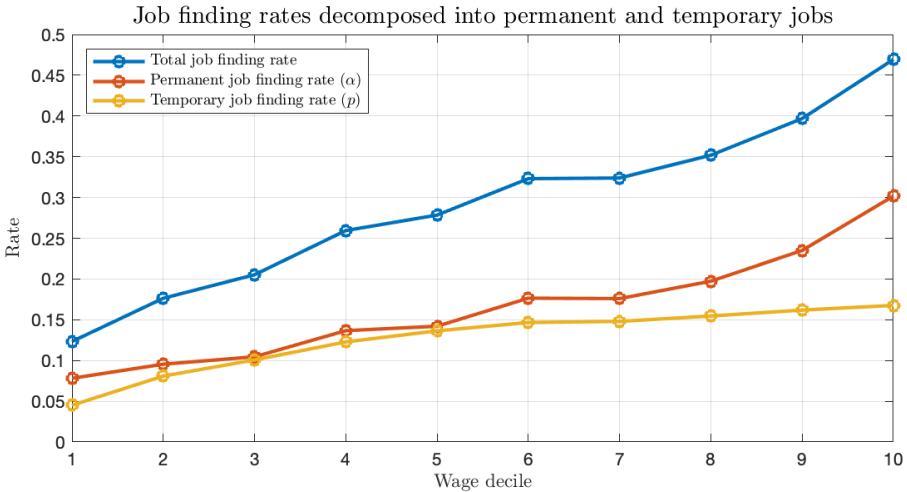




Calibrated Job Finding Rates

$\eta_{i\tilde{w}}$ Back



Counterfactual Analysis

Counterfactual Labor Markets

Call the calibrated model the "baseline" labor market.

1. Turn temporary jobs off
   - Set $\eta_{\tilde{w}} = 0$, keep rest the same
   - Only flows left are between U and E
   - Unemployed workers lose option of temporary jobs for smoothing consumption

2. Re-calibrate model without temporary jobs
   - Set $\eta_{\tilde{w}} = 0$
   - Let $\alpha_{\tilde{w}}$ equal *total* job finding rate
   - Let λ_w equal *total* job separation rate
   - All jobs are permanent

Consumption Equivalence

	Consumption equivalence relative to baseline	
	Entire labor market	Unemployed workers
Temp jobs are turned off	-0.2%	-1.0%
All flows are attributed to permanent jobs	1.0%	6.1%

- Workers value the existence of temporary jobs as a stopgap solution
- A model without temp jobs understates the cost of unemployment
  - A significant part of job finding is temporary jobs
  - Temp jobs are not as desirable as permanent jobs

Conclusion

1. There is evidence for the stopgap job hypothesis
2. The existence of temporary jobs makes job searchers better off
3. A model that doesn't take temp jobs into account understates cost of unemployment

Future work?

- Firms and general equilibrium
- Skill accumulation/job ladder $\rightarrow$ explain churn at bottom of ladder
- Instead of turning off temporary jobs, experiment with in-between policy change for US

Contribution to Literature

- Alonso-Borrego et al. (2005) $\Rightarrow$ very similar to me, does not consider skill accumulation and the setting is Spain
- Veracierto (2007) $\Rightarrow$ setting is Argentina, focus is on firing taxes
- Gregory et al. (2021) $\Rightarrow$ I help explain why γ workers have short job duration (instead of match learning)
- Jarosch (2021) $\Rightarrow$ I help explain the "slippery bottom rungs" of job ladder

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Data Sources

Survey of Income and Program Participation

- 2004, 2008, and 2014 panels
- $\sim$40,000 households per panel
- Why I use SIPP: longer panel, wage data, job ID's
- Households interviewed every four months for 2004 & 2008 panels, every year for 2014 panel
- Households recall weekly labor force states

CPS Contingent Worker Supplement

- Asks about job duration and employment types
- Last administered in May 2017 (before that, 2005)

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Contingent Worker Categories

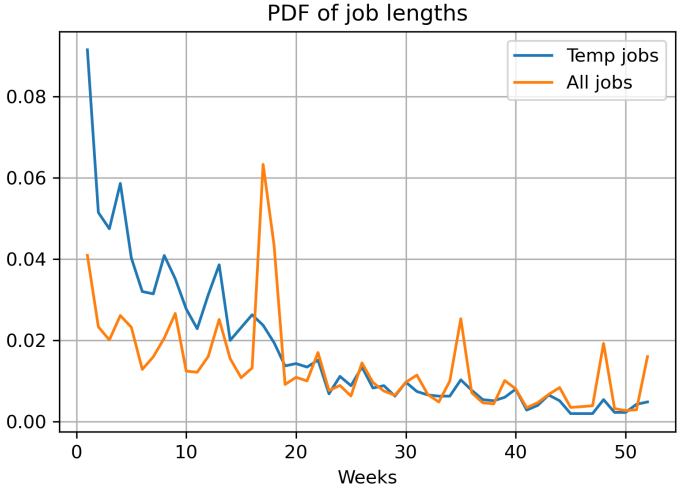
CPS Contingent Worker Categories

Contingent worker type	Percent of employed workers
Temp worker	3.7%
Company contractor	1.6%
Day laborer	1.7%
Temp agency	1.0%
Independent contractor	1.2%

Source: CPS Contingent Worker Supplement Back

Temporary Jobs are Shorter

- Mean = 21.1 weeks, median = 11 weeks



Temporary Jobs More Likely to be Preceded and Followed by Unemployment

Adjacent States

	State before job		State after job	
	All jobs	Temp jobs	All jobs	Temp jobs
E	72.1%	53.9%	60.3%	31.1%
U	27.9%	46.1%	39.7%	68.9%

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Hours Worked

Percentage of jobs by hours worked per week

	Percentage of jobs		
Hours worked per week	All jobs	Temp jobs	Temp jobs - all jobs
0-10	12.3%	19.4%	7.1%
10-20	17.2%	21.4%	4.3%
20-30	12.2%	12.0%	-0.2%
30-40	50.1%	41.8%	-8.3%
40-50	8.3%	5.4%	-2.9%

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Industry

Industry	Percentage of jobs		
	All jobs	Temp jobs	Temp jobs - all jobs
Agriculture and mining	2.3%	6.5%	4.1%
Construction	8.8%	8.9%	0.1%
Manufacturing	8.6%	6.1%	-2.5%
Wholesale	2.3%	2.3%	0.0%
Retail	12.2%	9.2%	-3.0%
Transportation	3.7%	2.7%	-1.0%
Utilities	0.4%	0.5%	0.1%
Information	1.9%	2.0%	0.2%
FIRE	4.6%	2.1%	-2.4%
Professional	5.2%	7.3%	2.1%
Administrative	8.9%	15.6%	6.7%
Education	8.0%	11.8%	3.8%
Healthcare	12.5%	6.1%	-6.5%
Entertainment	2.5%	5.5%	3.0%
Accomodation and food service	10.3%	5.3%	-5.0%
Public administration	2.9%	3.9%	1.0%
Other	4.9%	4.3%	-0.6%

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Occupation

	All jobs	Temp jobs	Temp jobs - all jobs
Management	4.7%	2.6%	-2.1%
Business and finance	2.9%	3.9%	1.0%
Computer	1.8%	1.6%	-0.2%
Engineering	1.1%	0.7%	-0.4%
Science	0.7%	1.3%	0.6%
Social service	1.2%	0.9%	-0.4%
Legal	0.6%	0.6%	0.0%
Education	5.9%	9.1%	3.3%
Entertainment	2.0%	4.0%	2.1%
Healthcare practitioner	3.7%	1.6%	-2.1%
Healthcare support	3.3%	1.8%	-1.5%
Protective	1.9%	1.8%	-0.1%
Food	8.5%	4.0%	-4.5%
Building and grounds	5.4%	4.8%	-0.5%
Personal care	4.4%	4.2%	-0.2%
Sales	10.8%	7.8%	-3.0%
Administrative	13.1%	16.3%	3.2%
Farming	1.6%	5.6%	4.0%
Construction	8.2%	9.1%	0.9%
Mechanical	3.0%	1.3%	-1.6%
Production	6.8%	7.2%	0.4%
Transportation	8.3%	9.7%	1.4%

Unemployment Length

Average unemployment length given adjacent job types

Sequence	Average unemployment length (weeks)
$E \to U \to E$	16.9
$E \to U \to T$	19.5
$T \to U \to E$	15.8
$T \to U \to T$	6.4

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Continuous Time Equations

$$\rho V_E(a,w) = \max_c \; u(c) + \frac{\partial V_E(a,w)}{\partial a}(ar + e^w - c) + \frac{\partial^2 V_E(a,w)}{\partial w^2}\frac{\sigma^2}{2}$$
$$+\lambda_w \left[V_U(a,w) - V_E(a,w)\right]$$

$$\rho V_U(a,\tilde{w}) = \max_c \; u(c) + \frac{\partial V_U(a,\tilde{w})}{\partial a}(ar + be^{\tilde{w}} - c) + \alpha_{\tilde{w}} \left[V_E(a,\tilde{w}) - V_U(a,\tilde{w})\right]$$
$$+\eta_{\tilde{w}} \max\left\{V_T(a,\tilde{w}) - V_U(a,\tilde{w}), 0\right\}$$

$$\rho V_T(a,\tilde{w}) = \max_c \; u(c) + \frac{\partial V_T(a,\tilde{w})}{\partial a}(ar + \phi e^{\tilde{w}} - c) + \delta \left[V_U(a,\tilde{w}) - V_T(a,\tilde{w})\right]$$
$$+\psi \left[V_E(a,\hat{w}) - V_T(a,\tilde{w})\right]$$

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External Parameters

Borrowed Parameters

Parameter	Meaning	Value	Source
γ	CRRA curvature	2	
ρ	Discount rate	0.008	$\beta = 0.9$ annual
r	Interest rate	0.0025	3% annual
$\underline{a}$	Borrowing constraint	-3	Nirei (2006)
b	Unemployment benefits	0.44	50% for 6 months
σ	St dev of idiosyncratic log wage risk	0.119	Guvenen et al. (2021)

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Calibrated Temporary Job Offer Arrival Rate $\eta_{\tilde{w}}$ Back

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