SUPPLEMENTAL APPENDIX
for "Job Search Behavior among the Employed and Non-Employed"

by R. Jason Faberman, Andreas I. Mueller, Ayşegül Şahin, and Giorgio Topa

Table of Contents

S-A SCE Job Search Supplement

S-A.1 Selected Survey Questions

This appendix lists the relevant survey questions from the SCE Job Search supplement for our analysis. A complete codebook that includes all survey questions in the supplement is available via the Federal Reserve Bank of New York at `https://www.newyorkfed.org/microeconomics/databank.html`. The subsections and question numbers are listed as they are in the codebook, and the questions are listed in the order they are asked on the online survey.

L. GENERAL LABOR MARKET QUESTIONS

L1a. [All respondents] [NOTE: L1, L1a asked as a single question (L1a) in 2013.]
Are you currently working for pay, either for yourself or for someone else?

- Yes, working for pay full-time (1)
- Yes, working for pay part-time (2)
- No (3)

L1. [if L1a = 3] [NOTE: L1, L1a asked as a single question (L1a) in 2013.]
You said that you are not currently working for pay. Which of the following BEST describes your current employment situation?

- Not working, but would like to work (1)
- Temporarily laid off (2)
- On sick leave or other temporary leave (3)
- Permanently disabled or unable to work (4)
- Retiree or early retiree (5)
- Student, at school, or in training (6)
- Homemaker, caregiver, or at home and not seeking work (7)

L2a. [All employed, including temporary layoffs]
Altogether, how many jobs do you have (including the job from which you were temporarily laid off, but excluding volunteer or other unpaid work)?

_____ job(s)

L4. [Employed only, including on layoff]
In your main/current job, do you work for someone else or are you self-employed?

- Self-employed (1)
- Work for someone else (0)

L5. [Non-employed only, but including those on layoff]
Have you done anything in the LAST 4 WEEKS to look for work?

- Yes (1)
- No (0)

L5b. [Follow up, if L5 = 2 (no search in last 4 weeks)]
Would you want a job, either full-time or part-time, if one was offered to you?

- Yes (1)
- Maybe, depending on the job and circumstances (2)
- No (3)

L6. [Employed only, excluding layoffs]
Have you done anything in the LAST 4 WEEKS to look for new work?
- Yes, looking to leave my current job for a new job (1)
- Yes, looking for an additional job without leaving my current job (2)
- No (3)

L6c. [Follow up, if L6 = 2 (no search in last 4 weeks)]
Would you want a job in addition to your main/current job, if one was offered to you?
- Yes (1)
- Maybe, depending on the job and circumstances (2)
- No (3)

L6b. [Follow up, if L6 = 2 (no search in last 4 weeks]
Would you want a new job, either full-time or part-time, if one was offered to you?
- Yes (1)
- Maybe, depending on the job and circumstances (2)
- No (3)

L7. [All respondents, searched within last 4 weeks] (all responses converted to days)
How long have you been looking for a job?
- _____ day(s)

L8. [Non-employed only, but including those on layoff]
How long has it been since you have done any paid work, either full-time or part-time? Please round up to the nearest number of months.
- I have been out of work for _____ month(s)
- I have never had a paid job

L9. [Employed only, including on layoff]
What was the month and year that you started working at your main/current job?
- _____ (reported as YYYYMM)

L10. [Employed only, including on layoff]
How many hours per week do you USUALLY work at your main/current job?
- I usually work _____ hours per week

L11. [Employed only, including on layoff]
How much do you make BEFORE taxes or other deductions at your main/current job? Please include any bonuses, overtime pay, tips or commissions.
_____ (reported as hourly, weekly, or annually, with option to report annual income in brackets)

JH9. [Employed only, including on layoff]
And how much did you make when you STARTED your main/current job, before taxes and other deductions? Please include any bonuses, overtime pay, tips or commissions
- _____ (reported as hourly, weekly, or annually)

- Don't remember (included in hourly earnings variable)

L14. [Employed, wage and salary earners only, including on layoff] [check all that apply]
Do you receive any of the following employer-provided benefits at your main/current job?
- Traditional pension plan (1)
- Employer contribution to a retirement account (for instance, a 401(k), 403(b) or IRA account) (2)
- Health insurance (3)
- Dental or vision insurance (4)
- Health Care or Dependent Care Flexible Spending Account (5)
- Housing or housing subsidy (6)
- Life or disability insurance (7)
- Commuter benefits (8)
- Childcare assistance (9)
- Stocks, options, or other company equity (10)
- Quality of life benefits (gym memberships, tuition reimbursements, etc.) (11)
- None of the above (13)

L20. [Not employed or on layoff and had previous employment]
What month and year did you last work at your most recent job?
- _____ (reported as YYYYMM)

L21. [Not employed or on layoff and had previous employment] *And what was the month and year that you STARTED working at your most recent job?*
- _____ (reported as YYYYMM)

L22. [Not employed or on layoff and had previous employment]
How many hours per week did you usually work at your most recent job?
- I usually worked _____ hours per week

L24. [Not employed or on layoff and had previous employment]
How much did you make, BEFORE taxes and other deductions, on your most recent job? Please include any bonuses, overtime pay, tips or commissions.
- _____ (reported as hourly, weekly, or annually)

For annual salaries reported as a range (Please include any bonuses, overtime pay, tips or commissions)
- Less than $10,000 [Value used = $5,000] (1)
- $10,000 to $19,999 [Value used = $15,000] (2)
- $20,000 to $29,999 [Value used = $25,000] (3)
- $30,000 to $39,999 [Value used = $35,000] (4)
- $40,000 to $49,999 [Value used = $45,000] (5)
- $50,000 to $59,999 [Value used = $55,000] (6)
- $60,000 to $74,999 [Value used = $67,500] (7)
- $75,000 to $99,999 [Value used = $87,500] (8)
- $100,000 to $149,999 [Value used = $125,000] (9)
- $150,000 or more [Value used = $227,850] (10)

EC. ADDITIONAL EMPLOYMENT INFORMATION

EC1a. [Wage and salary earners only, including on layoff]
In your main/current job, what type of employer do you work for?
- Government (1)

- Private-sector, for-profit company (2)
- Non-profit organization (3)
- Work in the family business (4)

EC1f. [Follow up, if EC1a = 1 (Private, non-profit, or family business)] [Revised in 2014.]
What kind of business or INDUSTRY is this?
- Agriculture, Forestry, Fishing or Hunting (1)
- Mining, Quarrying, or Oil and Gas Extraction (2)
- Utilities (3)
- Construction (4)
- Manufacturing (5)
- Wholesale Trade (6)
- Retail Trade (7)
- Transportation or Warehousing (8)
- Information Services (including Publishing or Media) (9)
- Banking, Finance, or Insurance (10)
- Real Estate, or Rental & Leasing Services (11)
- Professional, Technical, or Business Services (12)
- Education (13)
- Health Care or Social Assistance (14)
- Arts, Entertainment, or Recreation (15)
- Hotel, Accommodation, Restaurant, or Food Services (16)
- Other Services (except Government) (17)

EC2a. [Wage and salary earners only, including on layoff]
What kind of work do you do, that is, what is your OCCUPATION on your main/current job? (for example: Electrical engineer, stock clerk, typist, farmer, ...)
- _____ (responses coded into 3-digit SOC codes)

EC3a. [Wage and salary earners only, including on layoff]
For your main/current job, does your employer's business operate out of more than one LOCATION (office, store, or other permanent place of business)?
- Yes (1)
- No (0)

EC3b. [Wage and salary earners only, including on layoff]
How many paid employees does your employer's business at your main/current job usually have AT YOUR USUAL PLACE OF WORK?
- Less than 10 (1)
- 10–99 (2)
- 100–499 (3)
- 500–999 (4)
- 1,000–4,999 (5)
- 5,000 or more (6)

EC3c. [Follow up, if EC3a = 1 (Multi-location business)]
Counting ALL LOCATIONS where your employer operates, what is your best guess for the total number of persons who work for your employer?
- Less than 10 (1)
- 10–99 (2)
- 100–499 (3)
- 500–999 (4)

- 1,000–4,999 (5)
- 5,000 or more (6)

EO. ADDITIONAL INFORMATION FOR THE NON-EMPLOYED

EO1. [Temporary layoffs only]
As of last week, how many weeks have you been on layoff?
- _____ week(s)

EO6. [If L2a or L2b > 1 (multiple-jobholders)]
You indicated that you currently have more than one job. Outside of your main job, how many hours per week do you USUALLY work in your other job(s)?
- _____ hours per week

EO11. [All but self-employed and wage and salary owners with current employer for at least 5 years]
During the LAST 5 YEARS, how many months IN TOTAL did you spend without a job?
- _____ month(s)

EO12. [Follow up to EO11]
You just mentioned that during the LAST 5 YEARS you spent [EO11 answer] months without a job. How many of these months were spent primarily...
- Looking for work: _____ months (1)
- Enrolled in school: _____ months (2)
- Not looking for work because no work was available: _____ months (3)
- Not looking for work because of disability or retirement: _____ months (4)
- Not looking for work for family/personal reasons: _____ months (5)
- Not looking for work for other reasons: _____ months (6)

EL. ADDITIONAL INFORMATION ON THE MOST RECENT JOB

EL1. [Not employed or on layoff, with a previous paid job, excluding the previously self-employed]
Now we would like to ask you some more questions about your most recent job. What was the MAIN REASON that you separated from this job?
- Layoff due to slow business conditions or employer going out of business (1)
- Internal reorganization or position eliminated (2)
- End of temporary or seasonal work (3)
- Firing or termination (4)
- Voluntary separation from job (5)
- Retirement or old age (6)
- Disability (7)

EL2a. [Not employed or on layoff, with a previous paid job, excluding the previously self-employed]
In your most recent job, what type of employer did you work for?
- Government (1)
- Private-sector, for-profit company (2)
- Non-profit organization (3)
- Self-employed (4)
- Working in the family business (5)

EL3a. [Not employed or on layoff, with a previous paid job, excluding the previously self-employed]
Did this employer's business operate out of more than one LOCATION (office, store, or other permanent place of business)?

- Yes (1)
- No (0)

EL3b. [Not employed or on layoff, with a previous paid job, excluding the previously self-employed]
How many paid employees did this business usually have AT YOUR USUAL PLACE OF WORK?

- Less than 10 (1)
- 10–99 (2)
- 100–499 (3)
- 500–999 (4)
- 1,000–4,999 (5)
- 5,000 or more (6)

EL3c. [Follow-up, if EL3a = 1 (multiple-location business)]
Counting ALL LOCATIONS where your employer operated, what is your best guess for the total number of persons who worked for this employer?

- Less than 10 (1)
- 10–99 (2)
- 100–499 (3)
- 500–999 (4)
- 1,000–4,999 (5)
- 5,000 or more (6)

EL3d. [Not employed or on layoff, with a previous paid job, excluding the previously self-employed]
Did this employer shut down your usual place of work, or go out of business entirely, at the time or shortly after you left your job?

- Yes, shut down my usual place of work (1)
- Yes, went out of business entirely (2)
- No (3)
- Don't know (4)

EL4a. [Follow up, if EL2a = 2, 3, or 4 (reported non-government previous employment)]
What kind of business or INDUSTRY was this?

- Agriculture, Forestry, Fishing or Hunting (1)
- Mining, Quarrying, or Oil and Gas Extraction (2)
- Utilities (3)
- Construction (4)
- Manufacturing (5)
- Wholesale Trade (6)
- Retail Trade (7)
- Transportation or Warehousing (8)
- Information Services (including Publishing or Media) (9)
- Banking, Finance, or Insurance (10)
- Real Estate, or Rental & Leasing Services (11)
- Professional, Technical, or Business Services (12)
- Education (13)
- Health Care or Social Assistance (14)
- Arts, Entertainment, or Recreation (15)
- Hotel, Accommodation, Restaurant, or Food Services (16)
- Other Services (except Government) (17)

EL4b. [Not employed or on layoff, with a previous paid job, excluding the previously self-employed]
What kind of work did you do, that is, what was your OCCUPATION on your most recent job? (for example: Electrical engineer, stock clerk, typist, farmer, ...)

- _____ (responses coded into 3-digit SOC codes)

JS. JOB SEARCH BEHAVIOR

JS1. [All who looked for new/additional work in last 4 weeks, or want or might want a new/additional job, excluding the self-employed]
You indicated that you have looked for work in the last four weeks (you currently would want a job). Are you interested in full-time work of at least 35 hours per week, part-time work, or would you take the best available job regardless of the hours offered?

- Full-time of at least 35 hours (1)
- Part-time (2)
- Either full-time or part-time (3)

JS1b. [Follow up, if JS1 = 2 (part-time)]
What is the main reason why you are interested in part-time and not full-time work?

- Child care problems or other family obligations (1)
- Health/medical limitations (2)
- School/training (3)
- Retired/Social Security limit on earnings (4)
- Current full-time work week is less than 35 hours (5)
- I have a job and am looking for an additional part-time job (6)
- I prefer the hours flexibility and/or shorter workweek of part-time work (7)
- I am just looking for additional income (8)

JS2a. [Wage and salary earners, seeking a new job only]
Why are you a looking for a new job? [check all that apply]

- I have been given notice that I will lose my job (1)
- Not satisfied with pay or benefits on current job (2)
- Not satisfied with duties on current job (3)
- Unsuitable work hours on current job (4)
- Commuting distance is too long (5)
- I was denied a promotion/pay increase / I am unlikely to receive a promotion/pay increase in the near future (6)
- I am not making good use of my experience or skills on this job (7)
- The job has a low quality of work life, such as inflexibility with child care and family responsibilities (8)
- Conflict with co-workers or boss (9)
- I am relocating for non-job-related reasons (10)
- I am just looking for a change of environment or careers (11)
- I am worried about being laid off from my current job (12)

JS3. [All that did not search within the last 4 weeks, excluding the self-employed]
You indicated that you were not looking for a job over the last 4 weeks. Why didn't you look for work? Please select the answer that best describes why you did not look for work.

- I currently have a job (1)
- No work available in my line of work or area (2)
- I tried to find work, but could not find any (3)
- I lack the necessary schooling, training or experience (4)
- Employers think I have been out of work for too long (5)

- Lack of child care, or other family responsibilities (6)
- In school or other training (7)
- Ill health or physical disability (8)
- Retired (9)
- Transportation problems (10)
- I have no desire or financial need to work (11)

JS6. [All that reported searching within the last 4 weeks]
What were ALL the things you have done to look for work during the LAST 4 WEEKS? [check all that apply]

- Contacted an employer directly online or through e-mail (1)
- Contacted an employer directly through other means, including in-person (2)
- Contacted an employment agency or career center, including a career center at a school or university (3)
- Contacted friends or relatives (4)
- Contacted former co-workers, supervisors, teachers, business associates (5)
- Contacted current employees at other companies (6)
- Applied to a job posting online (7)
- Applied to a job opening found through other means, including help wanted ads (8)
- Checked union/professional registers (9)
- Looked at job postings online (10)
- Looked at job postings elsewhere, including help wanted ads (11)
- Posted or updated a resume or other employment information, either online or through other means (12)

JS7. [All that reported searching within the last 4 weeks]
And within the LAST 7 DAYS, about how many TOTAL hours did you spend on job search activities? Please round up to the nearest total number of hours.

- _____ hours

JS11. [All who looked for new/additional work in last 4 weeks, or want or might want a new/additional job, excluding the self-employed]
If someone offered you a job today, could you begin work within the next 7 days?

- Yes (1)
- No (0)

JS12. [All that reported searching within the last 4 weeks]
Are you looking for work similar to your current/most recent job?

- Yes, only searching for work similar to my most recent job (1)
- Yes, but also searching across a range of jobs (2)
- No (3)

JS14. [All but self-employed]
How many potential employers, if any, did you apply to for employment within the LAST 4 WEEKS? Please include all applications made in person, online, or through other direct methods. Do not include inquiries that did not lead to a job application.

- I applied to _____ employers

JS15. [All but self-employed]
In the LAST 4 WEEKS, how many potential employers contacted you about a job opening? Please include all contacts, even those that were not solicited by you.

- _____ Employers

JS16. [Follow up, if JS15 > 0 (at least one employer contact)]
How many of these contacts were unsolicited? In other words, how many potential employers contacted you without a direct application by you?
- _____ employers

JS18a. [All except self-employed] [Question introduced in 2014.]
Did you have any job interviews, including any informal interviews, in the LAST 4 WEEKS?
- Yes (1)
- No (2)

JS18b. [if JS18a = 1 (at least one interview)][Question introduced in 2014.]
How many job interviews did you have in the LAST 4 WEEKS?
- _____ job interviews

JS19. [All but self-employed]
How many job offers have you received in the LAST 4 WEEKS? Please include all offers, including those made informally and those made by contacts not solicited by you.
- _____ job offers

JS19b. [Follow up, if JS19 = 0 (no job offers in last 4 weeks)]
And looking further back, how many job offers have you received in the LAST 6 MONTHS? Please include all offers, including those made informally and those made by contacts not solicited by you.
- _____ job offers

JS19c. [Follow up, if JS19b > 0 (job offers within last 6 months) and most recent job started less than 6 months ago]
Was this offer (one of these offers) the one you received for your most recent job?
- Yes (1)
- No (0)

JS19d. [Follow up, if JS19 > 0 and respondent did not search]
You indicated that you received "a job offer"/"several job offers" in the last 4 weeks. Earlier you indicated that you were not actively looking for work in the last 4 weeks. How did the "job offer"/"job offers" come about?
- The job "offer was"/"offers were" the result of me looking for work, but more than 4 weeks ago (1)
- The job "offer"/"offers" came up without me looking for work (for example, through "networking, a referral or other unsolicited contact by the employer"/"networking, referrals or other unsolicited contacts by the employer" (2)
- Actually, I did look for work in the last 4 weeks (3)

JS20. [Follow up, if JS19 = 1 or JS19b = 1 (one job offer in last 4 weeks or 6 months)]
(Out of the [JS19 or JS19b answer] job offers you received over the last 4 weeks (6 months), please consider the BEST job offer.) What OCCUPATION would best describe the kind of work that the job would entail? (For example: Electrical engineer, stock clerk, typist, farmer, ...)
- _____ (responses coded into 3-digit SOC codes)

JS22. [Follow up, if JS19 = 1 or JS19b = 1 (one job offer in last 4 weeks or 6 months)]
What was the month and year that you received "this"/"your best" job offer?

- _____ reported as YYYYMM)

JSemp. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
Were you employed, either full-time or part-time, at the time you received this (your best) job offer?
- Yes, full-time (1)
- Yes, part-time (2)
- No (3)

JS22a. [If JSemp = 3 (not employed at time of offer)]
Did you do anything to look for work in the months prior to receiving "this"/"your best" job offer?
- Yes, I was looking for work (1)
- No, the job offer came up without me looking for work (for example, through networking, a referral or other unsolicited contact by the employer) (0)

JS22g. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
What was the wage or salary offered (before taxes and other deductions) for this (your best) job offer? Please include any bonuses, overtime pay, tips or commissions.
- _____ (reported as hourly, weekly, or annually)

JS22b. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
And about how many hours a week would/do you have to work on this job?
- _____ hours per week

JS23. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
Have you accepted, or do you plan to accept, this (your best) job offer?
- Accepted or will accept (1)
- Rejected or will reject (2)
- Don't know yet (3)

JS24a. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
Please select the employer-provided benefits, if any, included in this (your best) offer. [check all that apply]
- Traditional pension plan (1)
- Employer contribution to a retirement account (2)
- Health insurance (3)
- Dental or vision insurance (4)
- Health or Dependent Care Flexible Spending Account (5)
- Housing or housing subsidy (6)
- Life or disability insurance (7)
- Commuter benefits (8)
- Childcare assistance (9)
- Stock options, or other equity (10)
- Quality of life benefits (gym memberships, tuition subsidies, etc.) (11)
- None of these (12)

JS25. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
For this (your best) job offer, how did you learn about this job? [check all that apply]
I learned about this job from:
- Found through the employer's website (1)
- Inquired with the employer directly through other means, including in-person (2)

- Found through an employment agency or career center (3)
- A temporary job was converted to permanent job (4)
- Referred by a friend or relative (5)
- Referred by a former co-worker, supervisor, business associate (6)
- Referred by a current employee at the company (7)
- Found through an online job search engine (8)
- Found job opening through other means, including help wanted ads (9)
- Found through union/professional registers (10)
- Unsolicited contact by potential employer, recruiter, or headhunter (11)
- I had worked for this employer previously (12)

JS26. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
For this (your best) job offer, roughly how many people work for this employer? Please include all locations where this employer operates.
- Less than 10 (1)
- 10–99 (2)
- 100–499 (3)
- 500–999 (4)
- 1,000–4,999 (5)
- 5,000 or more (6)

JS28. [Follow up, if JS23 = 1 (accepted or will accept (best) offer)]
In how many weeks, counting from today, will you start working on your new job?
- I will start in _____ week(s)
- Already started this new job

JS28b. [Follow up, if JS28 = "already started this new job"]
Is this the same job that you reported as your main/current job above?
- Yes (1)
- No (0)

JS30. [Follow up, if JS27 = 2 or JS29 = 2 (benefits were better than expected (inadequate))]
You indicated above that the benefits offered are/were important in the decision to accept (reject) the job offer. Which of the following employer-provided benefits are/were important in your decision? [check all that apply]
- Traditional pension plan (1)
- Employer contribution to a retirement account (for instance, a 401(k), 403(b) or IRA account) (2)
- Health insurance (3)
- Dental or vision insurance (4)
- Health Care or Dependent Care Flexible Spending Account (5)
- Housing or housing subsidy (6)
- Life or disability insurance (7)
- Commuter benefits (8)
- Childcare assistance (9)
- Stocks, options, or other company equity (10)
- Quality of life benefits (gym memberships, tuition reimbursements, etc.) (11)
- None of the above (13)

JS31b. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
Consider again your (best) job offer. At the time that you were first interviewed for this job, did you already know exactly how much it would pay, had a pretty good idea of how much it would pay, or had

very little idea of how much it would pay if you got it?
- Knew exactly what it would pay (1)
- Had a good idea (2)
- Had very little idea (3)
- Did not have an interview for this job (4)

JS31d. [Follow up, if JS19 > 0 or JS19b > 0 (at least one job offer in last 4 weeks or 6 months)]
Consider again your (best) job offer. When you were offered this job, did the employer make a 'take-it-or leave-it' offer or was there some bargaining that took place over the pay?
- Some bargaining over pay (1)
- 'Take-it-or leave-it' offer (0)

JS32a. [Follow up, if JS28 = "already started this new job"]
Did your PREVIOUS employer match the wage that was offered on your new job, or do you think they would have if you asked?
- Yes, my previous employer matched the wage offered (1)
- Yes, I think my previous employer would have matched the wage offered (2)
- No (3)

JS32c/JS32d. [Follow up, if JS28 = "already started this new job"]
(Were you able to secure any promotion, pay increase, or increase in benefits on your main/current job as a result of this outside job offer?)/Before you accepted the offer for your new job, were you offered any promotion, pay increase, or increase in benefits by your previous employer as a counter-offer to this outside job offer? [check all that apply]
- Yes, a promotion was offered (1)
- Yes, a pay increase was offered (2)
- Yes, an increase in benefits was offered (3)
- No promotion, pay increase, or increase in benefits were offered (4)

JS34a. [All except self-employed]
In the LAST 4 WEEKS, have any employers indicated that they would be willing to make you a job offer, but you indicated that you were not interested?
- Yes (1)
- No (0)

JS34b. [Follow up, if JS34a = 1 (yes)]
How many employers indicated that they would be willing to make you a job offer, but you were not interested?
- _____ employers (1)

JH. JOB SEARCH FOR MOST RECENT JOB

JH2. [All wage and salary earners, including those on layoff but excluding the self-employed] [Revised in 2014.]
Were you hired to your current employer while still employed somewhere else?
- Yes, I was employed when I got hired but was about to lose my previous job (1)
- Yes, I was employed when I got hired and quit my previous job (2)
- Yes, I was employed when I got hired but a temporary or seasonal job ended (3)
- Yes, I was employed when I got hired and kept my previous job (4)
- Yes, I was employed in a temporary job that was converted into a permanent job (5)
- No, there was a period where I was not employed prior to my current job (6)

- No, I did not have any job prior to my current job (my current job is my first job ever) (7)
- Don't remember (9)

JH2a. [All wage and salary earners, including those on layoff but excluding the self-employed]
Were you actively looking for work in the months prior to accepting your current job?
- Yes (1)
- No (2)
- Don't remember (3)

JH2b. [Follow up, if JH2 = 1, 2, 3, or 6 (reported prior work history)]
How many weeks passed between the time when your previous job ended and the time when your current job started? Please enter 0 if you started your current job right after your previous job ended.
- _____ week(s)
- Don't remember

JH5b. [Follow up, if JH2 = 1, 2, 3, 4, 5, or 6 (reported prior or existing work history)]
How many hours per week did you USUALLY work at your PREVIOUS job? That is, the job you had immediately before your current job?
- _____ hours per week

JH10. [Follow up, if JH2 = 1, 2, 3, 4, 5, or 6 (reported prior or existing work history)]
Please give your best estimate of how much you made, before taxes and other deductions, AT THE TIME YOU LEFT your previous job / at your previous job JUST PRIOR TO STARTING YOUR CURRENT JOB. Please include any bonuses, overtime pay, tips or commissions.
- _____ (reported as hourly, weekly, or annually)
- Don't remember (reported in hourly earnings variable)

S-B Additional Empirical Analysis

S-B.1 Results Conditional on Observable Characteristics

In this section, we re-estimate our main results on search effort and search outcomes conditioning on observable worker and job characteristics. We find that these characteristics have only a small effect on the differences in search behavior by labor force status, while – as documented in Tables 6 and 7 in the paper – they account for about half of the observed wage offer gap between the employed and non-employed in our main results.

Our worker controls include sex, age, age squared, four education categories, four race categories, a dummy for homeownership, the number of children under age six in the household, marital status, and marital status interacted with sex. The job controls include the two-digit SOC occupation of the current, most recent, or offered job (depending on the outcomes and respondent's labor force status), six categories of the job's firm size, and, when available, the two-digit NAICS industry of the firm. State and year fixed effects are included throughout as well. Tables S-B1, S-B2, and S-B3 correspond to Tables 2, 4, and 6 in the main text. In general, controlling for observable characteristics does little to alter the original results in the main text. Table S-B1 shows that search effort is practically unchanged regardless of the measure used or the timing of the measurement of labor force status. The search effort of the employed relative to the unemployed, ignoring search for additional work (our preferred measure of relative effort for our model calibration) is essentially unchanged as well.

Table S-B2 shows that search outcomes and acceptance rates also change little after controlling for observables. If we ignore the effects of censoring of the wage offer distribution, we obtain a relative offer yield of the employed to the unemployed of 4.0, somewhat higher than the 3.2 value we obtain with the unconditional data.

Finally, Table S-B3 reports the characteristics of the best job offer for the employed and non-employed after controlling for observable characteristics. Controlling for observables leads to only modest reductions in the observed gaps in job offer characteristics between the employed and non-employed.

Table S-B1: Intensive Margin: Search Effort by Labor Force Status, Conditional on Observable Worker and Job Characteristics

	Employed			Unemployed	Out of Labor Force
	Looking for Work	**Not Looking**	**All**		
Labor Force Status at Time of Survey					
Hours spent searching, last 7 days	4.31	0.11	1.17	8.86	0.07
	(0.27)	(0.02)	(0.07)	(0.66)	(0.07)
Mean applications sent, last 4 weeks	4.21	-0.07	1.00	8.78	0.33
	(0.31)	(0.02)	(0.08)	(1.07)	(0.06)
N	797	2,477	3,274	210	617
Labor Force Status in Prior Month					
Mean applications sent	3.86	0.01	0.96	10.70	0.73
	0.30	0.02	(0.08)	(1.42)	(0.09)
Mean applications sent, ignoring	2.89	-0.02	0.71	10.76	0.69
applications to additional jobs	0.30	0.02	(0.08)	(1.42)	(0.09)
N	805	2,483	3,288	157	656

Notes: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement for all individuals aged 18-64, excluding the self-employed, by detailed labor force status. The top panel reports estimates by labor force status at the time of the survey, while the bottom panel reports the results by labor force status in the prior month. See the appendix text for set of observable characteristics used as controls. Standard errors are in parentheses.

Table S-B2: Search Outcomes by Labor Force Status, Conditional on Observable Worker and Job Characteristics

	Employed			Unemployed	Out of Labor Force
	Looking for Work	**Not Looking**	**All**		
Labor Force Status at Time of Survey					
Mean offers	0.434	0.120	0.199	0.449	0.108
	(0.033)	(0.023)	(0.019)	(0.222)	(0.031)
Fraction with at least one formal offer,	0.293	0.063	0.121	0.189	0.034
including unsolicited offers	(0.015)	(0.005)	(0.005)	(0.027)	(0.009)
Fraction with at least one	0.049	0.027	0.032	0.054	0.021
unsolicited offer	(0.007)	(0.003)	(0.003)	(0.015)	(0.006)
Fraction with at least one formal	0.354	0.101	0.165	0.212	0.055
or unrealized offer	(0.016)	(0.006)	(0.006)	(0.028)	(0.010)
N	797	2,477	3,274	210	617
Labor Force Status in Prior Month					
Fraction with at least one formal offer,	0.245	0.063	0.109	0.313	0.067
including unsolicited offers	(0.015)	(0.005)	(0.005)	(0.036)	(0.010)
Fraction with at least one	0.047	0.026	0.031	0.045	0.030
unsolicited offer	(0.007)	(0.003)	(0.003)	(0.016)	(0.007)
Fraction with at least one formal	0.301	0.103	0.153	0.344	0.085
or unrealized offer	(0.016)	(0.006)	(0.006)	(0.037)	(0.011)
Fraction of best formal	0.396	0.210	0.331	0.540	0.307
offers accepted	(0.027)	(0.030)	(0.021)	(0.051)	(0.043)
Labor Force Status in Prior Month, Ignoring Search Outcomes for Additional Jobs					
Fraction with at least one formal offer,	0.157	0.059	0.083	0.319	0.068
or unrealized offer	(0.012)	(0.004)	(0.005)	(0.036)	(0.010)
Fraction with at least one	0.033	0.025	0.027	0.047	0.030
unsolicited offer	(0.006)	(0.003)	(0.003)	(0.016)	(0.007)
Fraction with at least one formal	0.201	0.098	0.123	0.351	0.087
or unrealized offer	(0.014)	(0.006)	(0.006)	(0.037)	(0.011)
Fraction of best formal	0.416	0.199	0.320	0.526	0.274
offers accepted	(0.031)	(0.029)	(0.023)	(0.048)	(3.6)
N	805	2,483	3,288	157	656

Notes: Estimates come from tabulations from the October 2013-17 waves of the SCE Job Search Supplement, for all individuals aged 18-64, excluding the self-employed, with at least one job offer in the last six months. Standard errors are in parentheses. See appendix text for set of observable characteristics used as controls.

Table S-B3: Characteristics of Best Job Offer by Labor Force Status, Conditional on Observable Worker and Job Characteristics

	Employed at Offer	**Non-Employed at Offer**	**Difference, E - NE**
log offer usual hours	3.382	3.301	0.080
	(0.020)	(0.033)	(0.053)
Pct. of offers with no benefits	42.0	57.4	-15.4
	(1.4)	(2.5)	(3.8)
Pct. of offers through an unsolicited	24.2	18.3	5.9
contact	(1.4)	(2.0)	(3.4)
Pct. of respondents with at least a 'good	60.2	57.8	2.4
idea' of pay	(1.6)	(2.8)	(4.5)
Pct. of offers that involved	37.6	26.1	11.5
bargaining	(1.6)	(2.6)	(4.1)
Pct. of job offers accepted	34.4	52.7	-18.3
	(1.5)	(2.6)	(4.0)
Pct. of offers accepted as	9.2	23.9	-14.7
only option	(1.4)	(2.9)	(4.6)
N	797	257	

Notes: Estimates come from tabulations from the October 2013-17 waves of the SCE Job Search Supplement, for all individuals aged 18-64, excluding the self-employed, with at least one job offer in the last six months. Standard errors are in parentheses. See appendix text for set of observable characteristics used as controls.

S-B.2 Results Using the CPS Definition of Unemployment

As we note in the main text and discuss in Online Appendix A, the Current Population Survey (CPS) only asks respondents about actively looking for work if the respondent first states that they "want work," while our Job Search supplement asks about active search regardless. The difference in scope between the two surveys is that the CPS does not follow up with certain nonemployed individuals (predominantly the retired and disabled) who report that they either do not want work or cannot work, to ask if they have looked for work.

Consequently, the Job Search supplement can capture a wider definition of job search (and thus a wider definition of unemployment) than in the CPS. In fact, evidence from the supplement suggests that many individuals that are never asked about job search actively search and are available for work. We label the "CPS" definition of unemployment as those who actively search for work, are available for work, and state that they want work. We label the "Job Search" definition of unemployment as those who actively search and are available for work, regardless of whether they state that they want work. Table S-B4 is a replication of Table 1 in the main text. The table shows that 12 percent of respondents counted as out of the labor force under the CPS definition engaged in active search. A similar fraction of those out of the labor force sent at least one application in the prior four weeks or spent some time searching in the previous seven days. Table 1 in the main text reports results using our wider Job Search definition of unemployment, so many of these individuals are instead counted as unemployed. Consequently, under our broader definition of unemployment, only 2.4 percent of those out of the labor force report actively looking for work (and are not counted as unemployed because they state that they are unavailable to start new work). Further analysis (not reported here) suggests that the majority of the difference is due to retired individuals seeking only part-time work. In fact, almost half of all individuals actively searching from out of the labor force under the CPS definition are only seeking part-time work. Conditional on actively searching, just under 9 percent are looking for work similar to their most recent job. Notably, Table A1 in Online Appendix A shows that our broader definition of unemployment increases the measured unemployment rate by 2.3 percentage points, to 6.8 percent, relative to the unemployment rate estimated using the CPS definition.

Tables S-B5 and S-B6 replicate our job search analysis using the CPS definition of unemployment with the SCE Job Search supplement data. The tables correspond to Tables 2 and 4 in the main text, though we only report the replicated results by labor force status at the time of the survey since the difference in the unemployment definition only matter for this period.[2] Note also that the results for the employed

[2]We determine labor force status in the previous month using responses from a variety of other survey questions that do

Table S-B4: Basic Job Search Statistics by Labor Force Status, CPS Measure of Unemployment

	Employed	**Unemployed**	**Out of Labor Force**
Percent that actively searched for work	22.4	99.4	12.2
	(0.7)	(0.6)	(1.2)
Percent that actively searched and available for work	13.2	99.4	10.1
	(0.6)	(0.6)	(1.1)
Percent reporting no active search or availability, but would take job if offered	5.9	0.3	5.5
	(0.4)	(0.5)	(0.8)
Percent applying to at least one vacancy in last four weeks	21.4	96.3	10.7
	(0.7)	(1.5)	(1.1)
Percent with positive time spent searching in last seven days	21.3	97.4	8.9
	(0.7)	(1.3)	(1.0)
Conditional on Active Search			
Percent only searching for an additional job	36.0	—	—
	(1.7)		
Percent only seeking part-time work, conditional on active search	21.7	9.8	46.4
	(1.5)	(2.4)	(5.3)
Percent only seeking similar work (to most recent job), conditional on active search	25.3	9.0	8.8
	(1.7)	(2.3)	(3.4)
No. of Observations	3,725	153	781

Note: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement, for all individuals aged 18-64, by labor force status using the CPS definition of unemployment. Standard errors are in parentheses.

(regardless of whether they actively searched for work) are the same under both definitions.

The tables show that moving from the broader Job Search definition to the CPS definition of unemployment has only a minor effect on our estimates for the intensive margin of search effort and search outcomes for the unemployed. The CPS definition implies a somewhat higher level of search effort. The number of applications rises by 22 percent, to 10.35 per month, and time spent searching rises by 25 percent, to 11.47 hours per week. The number of job offers received rise somewhat as well, though the differences between the estimates in Table S-B6 and Table 4 in the main text are not statistically significant. The Job Search definition and the CPS definition of employment also imply similar a ratio of job offers per application (i.e., they imply similar offer yields).

Finally, note that the definitions used here have no bearing on our model calibration since the calibration uses job search effort and outcome estimates based on labor force status in the prior month.

not directly correspond to the CPS definition. See Online Appendix B for the details.

Table S-B5: Intensive Margin: Search Effort by Labor Force Status, CPS Measure of Unemployment

	Employed			Unemployed	Out of Labor Force
	Looking for Work	Not Looking	All		
Labor Force Status at Time of Survey					
Hours spent searching, last 7 days	4.40	0.07	1.16	11.47	0.60
	(0.29)	(0.01)	(0.08)	(0.81)	(0.13)
Mean applications sent, last 4 weeks	4.17	0.00	1.06	10.35	0.60
	(0.31)	(—)	(0.08)	(1.35)	(0.17)

Note: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement, for all individuals aged 18-64, excluding the self-employed, by detailed labor force status using the CPS definition of unemployment. Standard errors are in parentheses.

Table S-B6: Search Outcomes by Labor Force Status, CPS Measure of Unemployment

	Employed			Unemployed	Out of Labor Force
	Looking for Work	Not Looking	All		
Labor Force Status at Time of Survey					
Mean offers	0.442	0.117	0.200	0.560	0.133
	(0.033)	(0.023)	(0.019)	(0.317)	(0.027)
Fraction with at least one offer	0.291	0.058	0.117	0.208	0.072
	(0.016)	(0.005)	(0.006)	(0.033)	(0.009)
Fraction with at least one unsolicited offer	0.044	0.027	0.037	0.064	0.023
	(0.007)	(0.003)	(0.003)	(0.020)	(0.005)
Fraction with at least one unsolicited offer, including unrealized offers	0.350	0.098	0.162	0.234	0.084
	(0.017)	(0.006)	(0.006)	(0.034)	(0.010)
N	804	2,498	3,302	153	780

Note: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement, for all individuals aged 18-64, excluding the self-employed, by detailed labor force status using the CPS definition of unemployment. Standard errors are in parentheses. Job interview data are only available for 2014 forward.

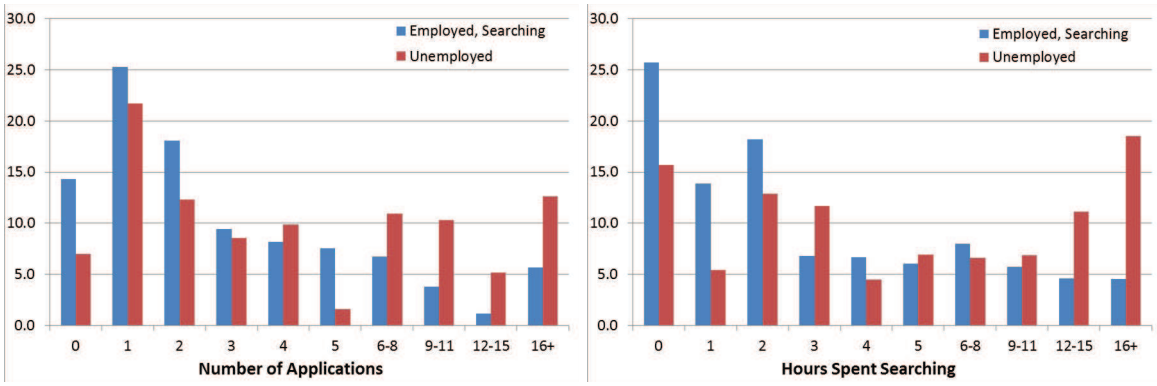
S-B.3 Additional Evidence on Search Effort and Search Outcomes

In this section, we present additional empirical evidence regarding search effort by labor force status (LFS), the search effort-wage relationship, search outcomes by LFS, offer yields and returns to search by LFS, search methods by LFS, and the reasons for accepting a wage cut.

S-B.3.1 Additional Evidence on Search Effort

Figure S-B1 replicates the results for the distribution of search effort from Figure 1 using finer bins for each search effort measure. The greater detail shows that our main result from Figure 1 holds: the search effort of the employed is weighted more towards lower-levels of effort relative to the unemployed.

Figure S-B1: Distribution of Number of Applications Sent in the last Four Weeks (left panel) and Search Time in Hours in the Last Seven Days (right panel) by Labor Force Status



Notes: Figure reports the detailed histograms of the number of applications sent in the last four weeks (top panel) and the hours of time spent searching for work in the last seven days (bottom panel). Estimates are for all individuals, excluding the self-employed, in the October 2013-17 waves of the SCE Job Search Supplement.

To understand how the two measures of search effort correlate, we compute the percent distribution of individuals by search time in the last seven days and by the number of applications sent in the last four weeks in Table S-B7. Around 22% of employed workers who sent at least one application in the last four weeks did not spend any time searching last week. For the unemployed the corresponding fraction is lower at 12.5%. These results are informative about the *intermittent* nature of job search especially for the employed (see also the comparison of the ATUS and the SCE in the Online Appendix C).

Table S-B8 reports the distribution of additional measures of search behavior by labor force status in the prior month. Specifically, we report the share of the population, applications, offers, and unsolicited offers by labor force status. The distributions of applications and offers correspond to the shares reported in Figure 3 of the main text. The remaining statistics underscore our main finding that the employed enjoy relatively high success in generating job offers despite relatively low search effort.

Table S-B7: Percent Distribution of Individuals by Search Effort Reported

	Employed, Actively Searched	
	No search time in the last 7 days	Any search time in the last 7 days
No applications sent in last 4 weeks	3.5	12.1
At least one application sent in last 4 weeks	21.9	62.5
	Unemployed	
	No search time in the last 7 days	Any search time in the last 7 days
No applications sent in last 4 weeks	0.8	6.4
At least one application sent in last 4 weeks	12.5	80.4

Source: SCE Job Search Supplement, 2013-17 main sample (conditional on active search).

Table S-B8: Distribution of Search Effort and Outcomes by Labor Force Status

	Employed				
	Looking for Work	**Not Looking**	**All**	**Unemployed**	**Out of Labor Force**
Pct. of population	19.0	56.7	75.7	4.4	20.0
Job Search over Last Four Weeks					
Pct. of total applications	58.5	0.0	58.5	34.4	7.1
Pct. of offers received	39.7	32.7	72.4	14.7	13.0
Pct. of unsolicited offers received	19.6	59.0	78.6	3.8	17.5

Notes: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement, for all individuals aged 18-64, excluding the self-employed, by labor force status at the time of the survey.

S-B.3.2 Additional Evidence on the Search-Wage Relationship

This subsection provides additional evidence and robustness on the relationship between search effort and wages. First, Table S-B9 replicates Table 3, reporting estimates for regressions that additionally control for broad reasons for on-the-job search. The exercise examines how much the scope of one's job search affects their search intensity and its subsequent relationship to their current wage. We group the reasons given in the survey into six broad categories: poor job stability, low job satisfaction, poor commute, poor career advancement opportunities, unsuitable work hours, and personal reasons. Table S-B9 shows that controlling for individuals' reasons for on-the-job search reduces the search effort-wage elasticity estimates only slightly, the coefficient estimates all remain highly statistically significant and the implied elasticities change little. Our preferred estimate of the search effort-wage elasticity, which uses the number of applications sent, is only slightly reduced from -0.36 to -0.32 when we control for reasons for on-the-job search.

Table S-B9: Relationship between Search Effort and the Current Wage, Controlling for Reasons for Search

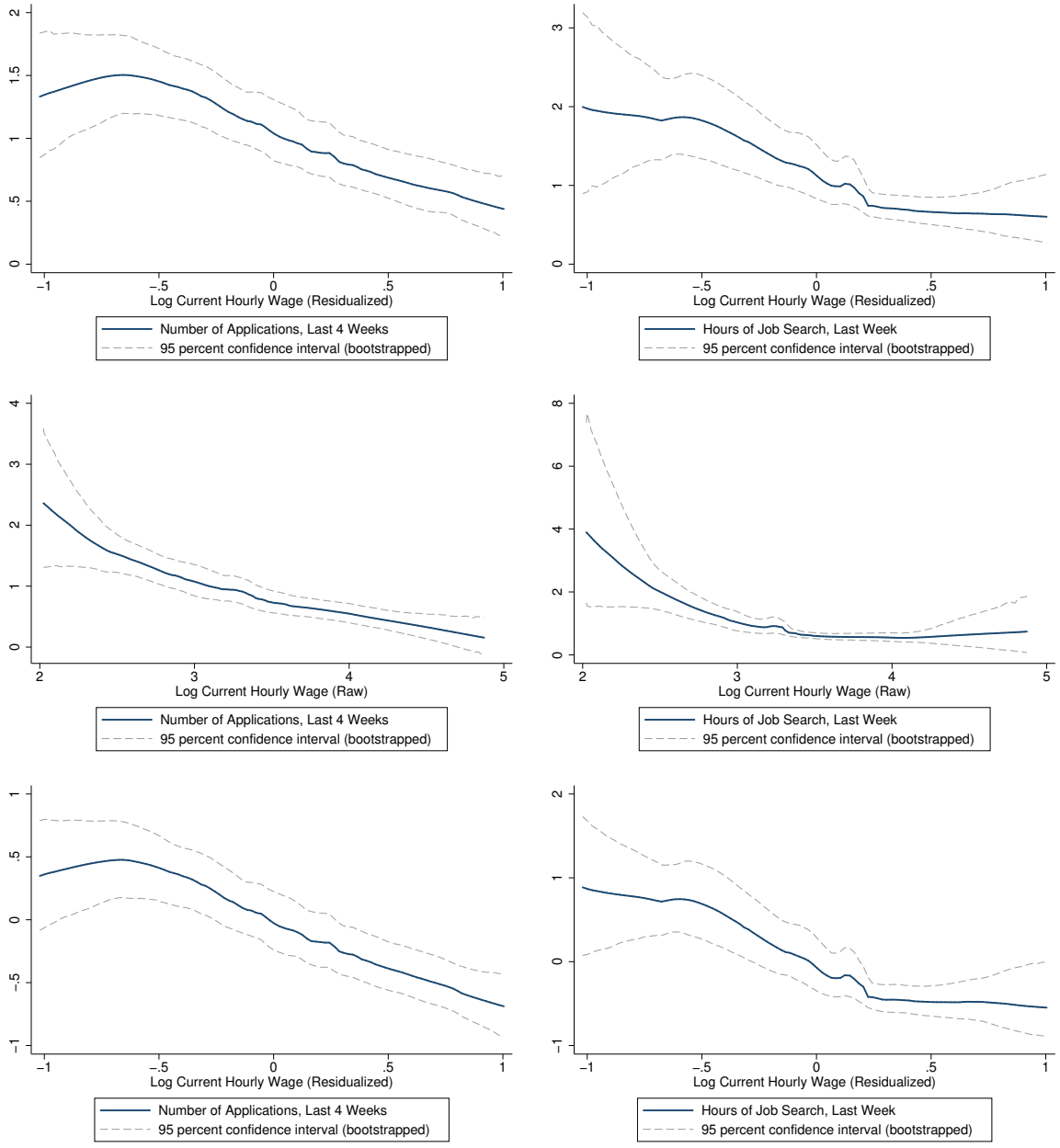
	Incidence of Search		**Search Effort**	
	Active Search	Applied	Applications	Search Time
log current real wage	-0.055^{***}	-0.051^{**}	-0.343^{***}	-0.530^{***}
	(0.017)	(0.017)	(0.107)	(0.114)
Dependent variable mean	0.252	0.213	1.059	1.163
R^2	0.329	0.265	0.078	0.169
N	3,278	3,278	3,278	3,278

Notes: The table reports the estimated relationship from an OLS regression between the dependent variables listed in each column and the (log) real current wage for all employed individuals in the October 2013-17 waves of the SCE Job Search Supplement. "Active Search" equals one if an individual actively looked for work in the last four weeks. "Applied" equals one if an individual applied to at least one job in the last four weeks. "Applications" refers to the number of applications sent in the last four weeks. "Search Time" refers to the number of hours spent looking for work in the last seven days. Regressions are sample weighted and control for gender, age, age squared, four education dummies, four race dummies, a homeownership dummy, marital status, marital status×male, the number of children aged 5 and younger, and fixed effects for state and year. Regressions additionally control for dummies for each respondent's reasons for on-the-job search, categorized as: poor job stability, low job satisfaction, poor commute, poor career advancement opportunities, unsuitable work hours, and personal reasons. Standard errors are in parentheses. *** represents significance at the 1 percent level. ** represents significance at the 5 percent level.

Second, Figure S-B2 replicates our estimates of the search effort-wage gradient with differing degree of controls for observable worker and job characteristics. The top two panels show the relationship between unconditional search effort, measured using applications sent in the last four weeks and time spent searching in the last seven days, respectively, versus the residualized (log) current wage. These are the same results reported in Figure 2 of the main text. The middle two panels replicate the relationship using the unconditional (log) wage in each case. The bottom two panels report the estimates using a residualized measure for each search effort measure as well as the (log) current wage. All results in the figure show a strong negative relationship between search effort and the current wage.

Finally, we end the subsection with an analysis of offer outcomes by initial wages for the employed. Table S-B10 reports job offer outcomes by quartiles of workers' pre-offer wage. The top panel reports the results using wages residualized conditional on the same observable characteristics used in Figure 2 in the paper, and the bottom panel reports results using the raw wage. The table reports the fraction of each quartile with an offer in the last four weeks, the mean (log) offer wage, and the mean (log) accepted offer wage. The table is comparable to the search effort behavior observed in Figure S-B2, except that it reports search outcomes. The table shows that the offer rate falls with the pre-offer wage. As one might expect, both the offer wage and the accepted wage both rise with the pre-offer wage. All findings are consistent with the predicted behavior of a job ladder model.

Figure S-B2: Job Search Effort by the Current Wage (Residualized)



Note: Figure reports the LOWESS estimates (with smoothing parameter 0.8) of the relationship between the measures of search effort listed on each vertical axis and the (log) real current wage of the employed. The charts show the results with wages residualized after controlling for observable worker characteristics (top panels), unconditionally (middle panels), and with both wages and each search effort measure residualized after controlling for observable characteristics (bottom panels). See Table 3 for the list of specific variables. The confidence intervals are based on a bootstrap with 500 replications. The estimates use all employed individuals, excluding the self-employed, age 18-64 from the October 2013-17 waves of the SCE Job Search Supplement. Dashed lines represent 95 percent confidence intervals.

Table S-B10: Offer and Wage Outcomes by Pre-Offer Wage Categories

	Offer Rate	**log(Offer Wage)**	**log(Accepted Wage)**
Based on Residual Pre-Offer Wages			
Lowest quartile	0.168	2.578	2.643
2nd quartile	0.108	2.516	2.186
3rd quartile	0.073	2.905	2.867
Highest quartile	0.092	3.409	3.528
Based on Raw Pre-Offer Wages			
Lowest quartile	0.200	2.351	2.079
2nd quartile	0.100	2.649	2.770
3rd quartile	0.086	3.088	3.218
Highest quartile	0.069	3.655	3.532

Notes: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement, restricted to those employed in the prior month. The table reports the fraction receiving an offer, the fraction accepting an offer, the mean log real hourly wage of any offers, and the mean log real hourly wage of any accepted offers.

S-B.3.3 Additional Evidence on Search Outcomes

Table S-B11 reports the distribution of the number of offers by labor force status. Most job seekers (both employed and unemployed) receive either no job offer at all or one job offer over the period of a month. This remains true even if we look at the number of offers over a 6-month period (see the last column of Table S-B11). Many job seekers who receive only one job offer accept them (35.7% for employed and 62.5% for unemployed) and are therefore unlikely to sample additional offers. Overall, this evidence seems inconsistent with the view that job seekers collect a large number of competing job offers that they decide on jointly within a short period of time. Instead, job seekers appear to sample job offers sequentially.

Table S-B12 has additional job search outcomes by labor force status at the time of the survey using the broader Job Search definition used in the main text. It shows that job search outcomes besides offers also differ considerably by labor force status. Specifically, relative to their search effort, the employed receive a higher rate of employer contacts and job interviews. We also obtain similar results as in the main text when we look at the mean number of unsolicited offers rather than the incidence thereof. The bottom half of Table S-B12 shows that these differences hold when controlling for observable worker and job characteristics as we do for the outcomes reported in the main text in Table S-B2.

Table S-B11: Distribution of Number of Job Offers by Labor Force Status Last Month

	Last 4 Weeks:				
Number of Offers	Employed (all offers)	Employed (excl. offers for additional jobs)	Unemployed	All	Last 6 Months: All
0	89.4%	91.8%	65.8%	90.8%	73.5%
1	6.8%	5.1%	22.8%	5.9%	17.0%
2	2.5%	2.1%	8.3%	2.4%	6.2%
3	0.6%	0.5%	0.9%	0.4%	1.7%
4	0.3%	0.2%	2.0%	0.3%	0.5%
5+	0.5%	0.3%	0.2%	0.3%	1.1%
N	3,348	3,348	166	4,235	4,235

Source: SCE 2013-17 panel of all individuals age 18-64. All includes also offers to those out of the labor force. Standard errors are reported in parenthesis.

Table S-B12: Additional Search Outcomes by Labor Force Status

	Employed				
	Looking for Work	**Not Looking**	**All**	**Unemployed**	**Out of Labor Force**
Labor Force Status at Time of Survey, unconditional estimates					
Mean contacts received	1.647	0.337	0.699	1.575	0.129
	(0.167)	(0.035)	(0.050)	(0.320)	(0.032)
Mean unsolicited contacts	0.795	0.341	0.455	0.764	0.105
	(0.095)	(0.032)	(0.034)	(0.279)	(0.030)
Mean job interviews (2014-17)	0.314	0.007	0.081	0.224	0.008
	(0.019)	(0.002)	(0.005)	(0.033)	(0.004)
Mean unsolicited offers	0.069	0.068	0.068	0.063	0.061
	(0.015)	(0.022)	(0.017)	(0.019)	(0.025)
N	804	2,498	3,294	228	705
Labor Force Status at Time of Survey, controlling for worker and job characteristics					
Mean contacts received	1.612	0.347	0.664	1.506	0.273
	(0.165)	(0.035)	(0.050)	(0.293)	(0.040)
Mean unsolicited contacts	0.768	0.308	0.423	0.703	0.235
	(0.094)	(0.032)	(0.033)	(0.249)	(0.035)
Mean job interviews (2014-17)	0.540	0.001	0.133	0.422	0.018
	(0.048)	(0.003)	(0.012)	(0.099)	(0.012)
Mean unsolicited offers	0.071	0.063	0.065	0.089	0.077
	(0.016)	(0.022)	(0.017)	(0.021)	(0.029)
N	797	2,477	3,274	210	617

Notes: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement for all individuals aged 18-64, excluding the self-employed, by labor force status. The table reports estimates by labor force status at the time of the survey. Standard errors are in parentheses.

S-B.3.4 Additional Evidence on Offer Yields

Table S-B13 expands on the results reported in Table 5 in the main text. Specifically, we report mean applications sent, the fraction receiving a job offer, and the offer yield for all demographic groups by labor force status (employed and unemployed), as well as for individuals either searching only for similar work to their current or most recent job, or searching more broadly. We also include those employed looking because of a poor skill fit on their current job. As in Table 5 of the main text, there are notable differences by age, gender, race, education, and type of search behavior. For all groups, the offer yields of the employed are higher than the offer yields of the unemployed, leading to the high relative offer yields reported in 5 in the main text.

Table S-B14 replicates Table 5 in the main text including search effort and related offers for an additional job among the employed within each demographic group. The effort and outcome estimates of the employed are somewhat higher by construction, yet the offer yields are very similar and generate similar estimates for relative yields of the employed to the unemployed.

Table S-B13: Search Effort, Outcomes, and Offer Yields by Selected Characteristics and Employment Status

	Applications Sent	**Fraction with a Formal Offer**	**Offer Yield,** λ/s
A. All Employed			
Searching because of poor skill fit	4.23	0.235	0.056
Searching for similar work	2.96	0.159	0.054
Searching more broadly	2.93	0.144	0.049
Age 18 to 39	0.82	0.083	0.102
Age 40 to 54	0.90	0.095	0.106
Age 55 to 64	0.43	0.053	0.122
Male	0.74	0.079	0.107
Female	0.80	0.084	0.106
White	0.62	0.073	0.117
Non-White	1.16	0.105	0.091
Less than college	0.69	0.088	0.128
College or more	0.79	0.066	0.083
B. All Unemployed			
Searching for similar work	15.35	0.429	0.028
Searching more broadly	10.53	0.238	0.023
Age 18 to 39	12.01	0.416	0.035
Age 40 to 54	11.65	0.371	0.032
Age 55 to 64	7.47	0.238	0.032
Male	10.37	0.361	0.035
Female	10.41	0.330	0.032
White	10.23	0.314	0.031
Non-White	10.63	0.382	0.036
Less than college	10.53	0.408	0.039
College or more	12.26	0.290	0.024

Notes: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement. The table shows mean applications sent in the last four weeks, the fraction with an offer (excluding offers for additional work), and the offer yield by labor force status in the prior month. Education estimates are for those age 25 to 64. Estimates searching because of skill fit, searching for similar work, and searching more broadly are conditional on active search, and all estimates exclude search effort and offers for an additional job.

Table S-B14: Search Effort, Outcomes, and Offer Yields by Demographics, Including Search for Additional Work

	Number of Applications Sent	**Fraction with an Offer**	**Offer Yield,** λ/s	**Relative Offer Yield,** $\frac{\lambda_e/s_e}{\lambda_u/s_u}$
Age				
Age 18 to 39	1.53	0.118	0.077	2.61
Age 40 to 54	1.51	0.125	0.083	3.37
Age 55 to 64	0.83	0.082	0.099	4.19
Gender				
Male	1.18	0.103	0.088	3.13
Female	1.46	0.117	0.080	3.10
Race				
White	1.05	0.095	0.090	3.73
Non-White	2.03	0.151	0.074	2.45
Education (Age 25-64)				
Less than college	1.30	0.121	0.093	3.27
College or more	1.37	0.090	0.065	3.20

Notes: Estimates come from authors' tabulations from the October 2013-17 waves of the SCE Job Search Supplement for all individuals aged 18-64, except for results by education, which are for those aged 25-64. Relative offer yields use labor force status from the prior month.

S-B.3.5 Evidence on the Returns to Search Effort from Individual-Level Regressions

In this subsection we provide evidence on the returns to job search for the employed and unemployed from individual-level regressions. Table S-B15 reports the estimates of the relationship between offer outcomes and search effort. Specifically, we regress the probability an individual received an offer in the last four weeks or the (log) real hourly wage offered, for those who received an offer, on a quadratic polynomial in the number of job applications sent in the last four weeks. We interact these quadratic polynomial terms with a dummy variable for employment status (i.e., employed or unemployed, excluding those out of the labor force from our sample) and include employment status along and fixed effects for year. We replicate the regressions additionally controlling for worker characteristics (age, gender, race, education, and marital status). We use the number of applications over the last 4 weeks as a measure of search effort because it perfectly overlaps with the reference period for offers. It would be misleading to use search hours over the last 7 days in these regressions because individuals may reduce their search hours after receiving an offer, which would likely bias our coefficients on search effort downward.

The results show that higher search effort is associated with a higher offer arrival rate and the coefficient

Table S-B15: Estimates on the Relationship between Offer Incidence and (log) Offer Wages and Search Effort

	Pr(Offer)		Log(Offered Wage)	
Employed x s_{it}	0.0190	0.0181	0.0005	0.0038
	(0.0043)	(0.0043)	(0.0071)	(0.0063)
Employed x s_{it}^2 x 100	-0.0096	-0.0092	-0.0003	-0.0018
	(0.0034)	(0.0033)	(0.0037)	(0.0033)
Unemployed x s_{it}	0.0090	0.0087	-0.0287	-0.0202
	(0.0052)	(0.0050)	(0.0170)	(0.0176)
Unemployed x s_{it}^2 x 100	-0.0061	-0.0058	0.0540	0.0439
	(0.0030)	(0.0029)	(0.0331)	(0.0320)
LFS Controls?	Yes	Yes	Yes	Yes
Year Controls?	Yes	Yes	Yes	Yes
Demographic Controls?		Yes		Yes
Adj. R2	0.067	0.075	0.066	0.302
N	3,516	3,516	433	433

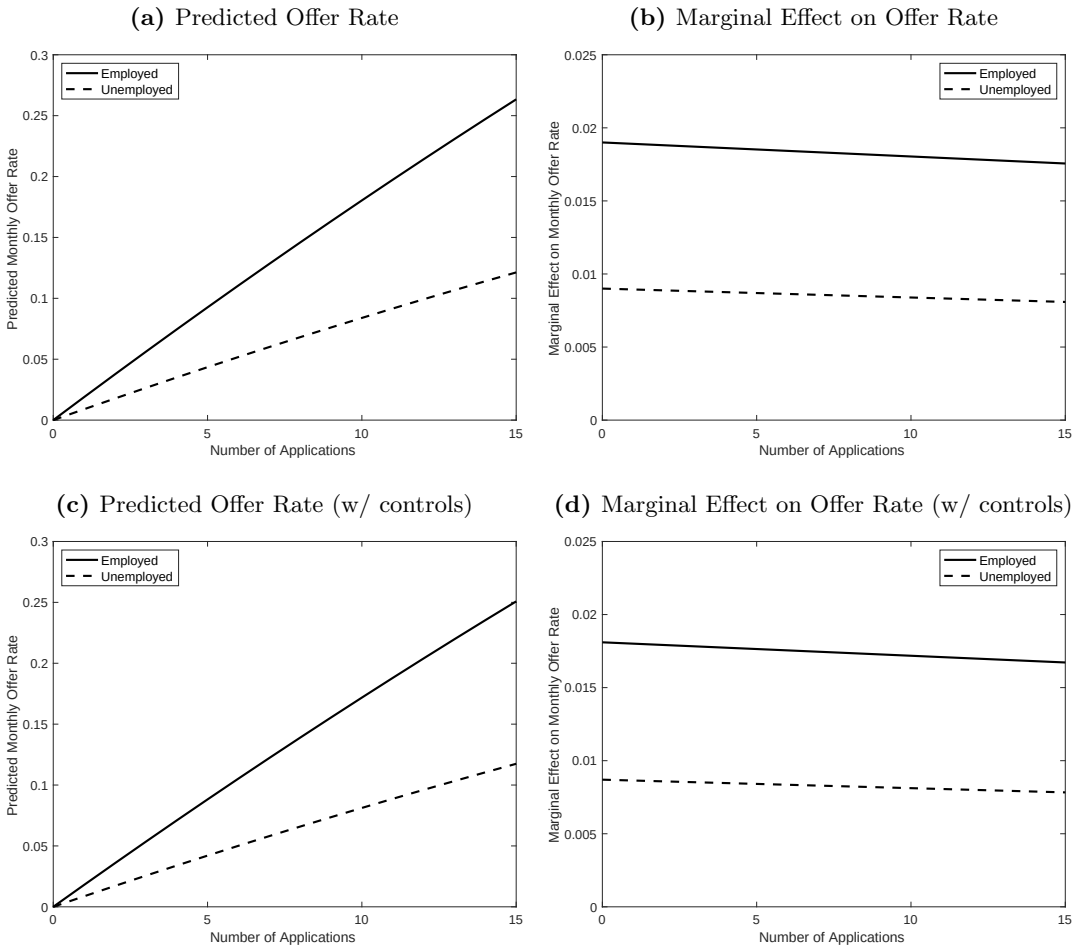
Source: SCE Job Search Supplement, 2013-17 main sample, restricted to employed and unemployed individuals in prior month. s_{it} refers to search effort by individual i in month t measured by the number of applications over the last 4 weeks. Employment status refers to labor force status in the prior month, restricting the sample to those who are either employed or unemployed in the prior month. Demographic controls include fixed effects for gender, age, race, and education. Standard errors in parentheses.

for the employed is about double the coefficient for the unemployed. The coefficients on s_{it}^2 for the employed and unemployed show somewhat decreasing returns to search effort. When we plot the predicted offer rate from these coefficients in Figure S-B3, however, the marginal returns to search (defined as the slope implied by the coefficients) are only slightly declining with respect to applications sent. Controlling for demographic characteristics does little to change these results.

In contrast to the offer rate, the (log) offer wage shows little relationship to search effort, as evident from Columns 3 and 4 in Table S-B15. The offer wages of the employed have essentially zero relation to search effort, and the offer wages of the unemployed have a slightly negative (albeit statistically insignificant) relationship to search effort. We believe that overall this evidence is consistent with models of random search as search effort increases the incidence of offers but not their quality.

Finally, we investigate to what extent the returns to search may differ among the employed for different

Figure S-B3: Returns to Search Effort by LFS



Note: The figures shows the predicted offer rate by the number of applications in Panels a and c from the regressions in Columns 1 and 2 in Table S-B15. The offer rate is normalized to zero for both the employed and unemployed for zero applications. Panels b and d show the marginal effect of one additional application on the offer rate, dPr(Offer)/ds.

Table S-B16: Relationship between Search Effort and Offer Arrival Rate, by Wage Quartile

	(1)	(2)
1st Wage Quartile xs_{it}	0.0131	0.0118
	(0.0096)	(0.0089)
2nd Wage Quartile xs_{it}	0.0084	0.0081
	(0.0024)	(0.0024)
3rd Wage Quartile xs_{it}	0.0111	0.0108
	(0.0070)	(0.0075)
4th Wage Quartile xs_{it}	0.0109	0.0119
	(0.0041)	(0.0042)
Year Controls?	Yes	Yes
Demographic Controls?		Yes
Adj. R2	0.134	0.143
N	3,242	3,242

Source: SCE Job Search Supplement, 2013-17 main sample, restricted to those employed in prior month. Wages categories determined based on workers' current wage or pre-offer wage if they received an offer that was for their current job. Demographic controls include fixed effects for gender, age, race, and education. Standard errors in parentheses.

quartiles of the wage distribution. One may worry that our results in Figure 2 in the paper are driven by greater search efficiency among individuals at the higher end of the wage distribution. Table S-B16 shows that there is no clear relationship between the returns to search and the pre-offer wage, as they are all positive and of similar magnitude. For this reason, we believe that unobserved differences in search efficiency are unlikely to drive the patterns we observe in Figure 2.

S-B.3.6 Evidence on the Use of and the Returns to Search Methods

In this subsection, we present evidence on the use of different search methods and the returns to using these methods. Table S-B17 reports the search methods used by labor force status in the prior month. The survey question is asked of any respondent who reports searching in the prior four weeks. The table shows that the most common search methods are the direct contact of or application to a potential employer (especially online) and passive search methods such as updating one's resume or looking through vacancy postings (again, especially online). Note that passive search methods do not count as active search for defining the unemployed and those actively searching while employed. Comparing the employed and unemployed shows that the unemployed engage in more search and use more search methods overall. This is especially true when it comes to directly contacting or applying to an employer online and using an employment agency or other intermediary.

Table S-B18 replicates the regression analysis we report in Table S-B15, but examines the relationship of the search outcomes to broad categories of search methods rather than a quadratic in search effort, and does so pooling the employed and unemployed together (though we still include a dummy for employment status in the regressions). By construction, the sample is restricted to those who actively searched in the last four weeks. The table shows that directly contacting an employer leads to a higher offer rate and higher offer wages, on average. There is also some evidence that some methods may reflect the negative selection of individuals who otherwise have poor job prospects into certain search methods. For example, applying to jobs (online or otherwise) is negatively associated with offer arrival rates and offer wages. In some cases, a zero estimated relationship may reflect negative selection or that a particular method is ineffective at generating job offers. There is also evidence of negative selection in the relationships between search methods and offered wages, especially for those who searched via friends or relatives. Table S-B17 shows, however, that the employed and unemployed use this method with equal likelihood, so this cannot account for the wage offer premium of the employed.

Table S-B17: Job Search Methods Used in Last 4 Weeks by Labor Force Status Last Month, Conditional on Searching in Last 4 Weeks

Method	Employed	Unemployed
Contacted an employer directly online or through e-mail	0.441	0.671
Contacted an employer directly through other means, including in-person	0.261	0.332
Contacted an employment agency or career center	0.198	0.388
Contacted friends or relatives	0.400	0.439
Contacted former co-workers, supervisors, teachers, business associates	0.255	0.335
Contacted current employees at other companies	0.136	0.208
Applied to a job posting online	0.638	0.749
Applied to a job opening found through other means, including help wanted ads	0.231	0.393
Checked union/professional registers	0.069	0.021
Looked at job postings online	0.834	0.813
Looked at job postings elsewhere, including help wanted ads	0.404	0.615
Posted or updated a resume or other employment information, either online or through other means	0.394	0.431
Number of methods used	4.26	5.40
Number of active methods used	2.63	3.54
N	815	144

Source: SCE 2013-17 panel of all individuals age 18-64. All includes also offers to those out of the labor force. Standard errors are reported in parenthesis.

Table S-B18: Estimates on the Relationship between Offer Incidence and (log) Offer Wages and Search Methods, Conditional on Active Search

	Pr(Offer)		Log(Offered Wage)	
Contact employer online	0.082	0.086	0.269	0.173
	(0.042)	(0.042)	(0.120)	(0.090)
Contacted employer through other means	0.075	0.060	-0.117	-0.0054
	(0.055)	(0.054)	(0.101)	(0.082)
Applied to a job online	-0.089	-0.093	-0.352	-0.245
	(0.054)	(0.052)	(0.199)	(0.113)
Applied to a job through other means	-0.021	-0.043	-0.125	0.006
	(0.045)	(0.046)	(0.112)	(0.093)
Used an employment intermediary	0.003	0.006	0.084	0.072
	(0.046)	(0.048)	(0.091)	(0.087)
Used a union or other professional registry	0.012	0.012	-0.002	-0.034
	(0.070)	(0.069)	(0.146)	(0.120)
Contacted friends or relatives	0.000	0.000	-0.327	-0.302
	(0.045)	(0.044)	(0.135)	(0.097)
Contacted business associates	0.013	0.043	0.090	-0.103
	(0.044)	(0.043)	(0.127)	(0.107)
Contacted employees at other companies	0.100	0.123	0.209	0.224
	(0.059)	(0.057)	(0.133)	(0.132)
Looked for jobs online	-0.101	-0.103	0.050	0.065
	(0.064)	(0.062)	(0.128)	(0.097)
Looked for jobs through other means	-0.000	-0.011	-0.072	-0.039
	(0.045)	(0.045)	(0.131)	(0.109)
Updated one's resume	0.019	0.050	0.167	0.019
	(0.042)	(0.042)	(0.116)	(0.089)
LFS Control?	Yes	Yes	Yes	Yes
Year Controls?	Yes	Yes	Yes	Yes
Demographic Controls?		Yes		Yes
Adj. R2	0.035	0.065	0.153	0.364
N	861	861	362	362

Source: SCE Job Search Supplement, 2013-17 main sample, restricted to employed and unemployed individuals in prior month who actively searched in the last four weeks and with non-missing demographics. Employment status refers to labor force status in the prior month. Demographic controls include fixed effects for gender, age, race, and education. Standard errors in parentheses.

S-B.3.7 Evidence on Reasons for Wage Cuts and Offer Rejections

In this subsection, we present evidence on the reasons individuals accepted their current job, and we restrict the sample to those who are currently employed but had a starting wage lower than the wage on their prior job. This sheds light on the degree that compensating differentials, as in Sorkin (2018), and other non-wage factors affect job search and job acceptance decisions that lead to a wage cut. Table S-B19 shows that the primary reasons for those taking a wage cut involve a significant increase in benefits, a significant increase in quality of work life, and a significant change in job duties. All are consistent with job amenities causing a compensating differential. Notably, nearly half of the individuals taking a wage cut cited anticipating losing their prior job before taking their current job. This suggests that adverse shocks to their prior job leads individuals to take lower-paying jobs as well.

Table S-B19: Reasons for Accepting Current Job for Currently Employed who Took a Wage Cut

Circumstances of Job Acceptance	Pct. of Employed with a Wage Cut
Received advance notice before leaving previous job	49.4%
Accepting current job caused a relocation	8.5%
Accepting current job caused an increase in commute	19.7%
Accepting current job caused work hours to increase	10.3%
Accepting current job caused work hours to decrease	7.9%
Accepting current job caused quality of work life to increase	38.6%
Accepting current job caused quality of work life to decrease	18.6%
Accepting current job caused job benefits to increase	43.3%
Accepting current job caused job benefits to decrease	16.5%
Accepting current job caused a significant change in job duties	54.2%
N	127

Source: SCE 2013-17 panel of all individuals age 18-64 that were employed at the time of the survey and whose starting hourly wage at their current job was less than their final hourly wage at their prior job.

Our survey also contains information on the reasons for rejecting offers, which we tabulate here in Table S-B20 both for all offers and by employment status. The results reveal that an important reason for rejecting offers is related to non-wage characteristics of the job such as its benefits, hours, commute, or quality of work life. These findings are consistent with Hall and Mueller (2018), who found, for a larger sample of nonemployed job seekers, that non-wage characteristics are a more important factor than the offered wage in the decision whether to accept a job offer.

Table S-B20: Reasons for Rejecting Offer, by LFS at Time of Offer (Multiple Answers Allowed)

	Employed	Non-Employed
Inadequate pay	44.1%	42.3%
Inadequate benefits	20.8%	22.8%
Unsuitable work hours	27.0%	16.1%
Commute time	11.8%	15.9%
Job requires relocation	10.6%	2.0%
Low quality of work life	12.9%	16.7%
Would not make good use of my experience or skills	10.7%	18.2%
Little chances of promotion	10.8%	9.0%
Unlikely to receive a pay increase	12.5%	8.2%
Risk of layoff	6.8%	7.5%
Happy with current job/situation	26.0%	15.8%
N	430	88

Source: SCE 2013-17 panel of all individuals age 18-64 with a rejected job offer in last 6 months.

S-C Theoretical Framework

S-C.1 Wages in the Stationary Model

In this Appendix, we describe how we solve for wages in the stationary model. As mentioned in the paper and the Online Appendix, it is not necessary to solve for wages to solve for the equilibrium allocation. We proceed in two steps: First, we describe in detail how we model censoring of wage offers. Second, we describe how we model rejected offered wages in the model and how we solve for both accepted and rejected offered wages.

S-C.1.1 Modelling of Censoring

We assume that the productivity of the match is revealed prior to the firm making a formal offer with probability χ_i.[3] This is consistent with our finding in the SCE data that the employed appear to reject many offers before they are made, on the order of 50 percent of formal offers made, compared to 8 percent for the unemployed. The distinction between formal and informal offers is important for the wage offer differential in the model between employed and unemployed offers, as we only observe the terms of formal offers.

Our assumptions imply that the probability of receiving a *formal* offer rate for an employed worker of type x in match with productivity y is:

$$\begin{aligned}\hat{\delta}_0(x,\theta)+\hat{\lambda}_e(y,x,\theta) &= \tilde{\delta}_0(x,\theta)(\chi_e(1-F(R_u(x)))+1-\chi_e)\\ &+ \tilde{\lambda}_e(s_e(y,x),x,\theta)(\chi_e(1-F(y))+1-\chi_e),\end{aligned} \tag{C1}$$

where $\tilde{\delta}_0(x,\theta)+\tilde{\lambda}_e(s_e(y,x),x,\theta)$ is the "true" offer probability, including unrealized offers, and $1-F(R_u(x))$ respectively. $1-F(y)$ are the likelihoods that a match is above the reservation threshold. Similarly, for an unemployed worker of type x, the formal offer rate satisfies:

$$\hat{\lambda}_u(x,\theta)=\lambda_u(s_u(x),\theta)(\chi_u(1-F(R_u(x)))+1-\chi_u), \tag{C2}$$

where $\lambda_u(s_u(x),\theta)$ is the "true" offer probability, including unrealized offers, and $1-F(R_u(x))$ is the likelihood that a match is above the reservation threshold.

[3] Hall and Mueller (2018) introduce censoring of offers in a similar way in their appendix to capture partially directed search.

S-C.1.2 Solving for Accepted and Rejected Wage Offers

We assume that firms commit to making an offer even when the match-specific productivity is below the reservation threshold, or else all formal offers would be accepted, which is inconsistent with the observation in the data that many offers are rejected. We assume that the value of a rejected offer equals the joint value, $W(n,y,x) = K(n,x)$ for the employed and $W(n,0,x) = K(n,x)$ for the unemployed, thus bidding the entire joint value.

Employed (Accepted offers): $y' \geq y \geq R_u(x)$**.** The value function $W(y',y,x)$ of an offer $w(y',y,x)$ for an employed worker satisfies:

$$\begin{aligned} W(y',y,x) \quad &= w(y',y,x) - c_e(s_e(y',x))x + \frac{1}{1+r}\Big[W(y',y,x) \\ &-\delta(x)(W(y',y,x) - U(x)) \\ &+\tilde{\delta}_0(x,\theta)\int_{R_u(x)}(W(n,0,x) - W(y',y,x))dF(n) \\ &-\tilde{\delta}_0(x,\theta)(F(R_u(x)))(W(y',y,x) - U(x)) \\ &+\tilde{\lambda}_e(s_e(y',x),x,\theta)\int_{y'}[W(n,y',x) - W(y',y,x)]dF(n) \\ &+\tilde{\lambda}_e(s_e(y',x),x,\theta)\int_{R_u(x)}^{y'}[\max(W(n,y',x),W(y',y,x)) - W(y',y,x)]dF(n)\Big]. \end{aligned} \tag{C3}$$

Nash-Bargaining implies that

$$W(n,y,x) = \begin{cases} \tau_e K(n,x) + (1-\tau_e)K(y,x) \text{ if } n \geq y, \\ (1-\tau_e)K(n,x) + \tau_e K(y,x) \text{ if } n < y, \end{cases} \tag{C4}$$

$$W(n,0,x) = \tau_u K(n,x) + (1-\tau_u)U(x). \tag{C5}$$

After some algebra, we get:

$$\begin{aligned} (1+r)w(y',y,x) \quad &= (1+r)x[b + (c_e(s_e(y',x)) - c_u(s_u(x)))] \\ &+[r + \delta(x) + \tilde{\delta}_0(x,\theta)][\tau_e(K(y',x) - K(y,x)) + K(y,x) - U(x)] \\ &-[\tilde{\delta}_0(x,\theta) - \lambda_u(s_u(x),\theta)]\tau_u\int_{R_u(x)}[K(n,x) - U(x)]dF(n) \\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)\tau_e\int_{y'}[(K(n,x) - K(y',x))]dF(n) \\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)(1-\tau_e)(K(y',x) - K(y,x))(1-F(y')) \\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)(1-\tau_e)\int_y^{y'}[K(n,x) - K(y,x)]dF(n). \end{aligned} \tag{C6}$$

Defining $Q(y',y,x) \equiv K(y',x) - K(y,x) = \int_y^{y'} K^y(n,x)dn$ and $A(y',y,x) \equiv \int_y^{y'}[K(n,x) - K(y,x)]dF(n) = \int_y^{y'}[K^y(n,x)(1-F(n))]dn - [K(y',x) - K(y,x)][1-F(y')] = \int_y^{y'}[K^y(n,x)(1-F(n))]dn - Q(y',y,x)[1 -$

$F(y')]$, and using the fact that $K(R_u(x), x) = U(x)$, we get:

$$\begin{aligned}(1+r)w(y',y,x) \quad &= (1+r)x[b + (c_e(s_e(y',x)) - c_u(s_u(x)))] \\ &+[r + D(x,\theta)][\tau_e Q(y',y,x) + Q(y, R_u(x), x)] \\ &-[\tilde{\delta}_0(x,\theta) - \lambda_u(s_u(x),\theta)]\tau_u A(\bar{y}, R_u(x), x) \\ &-\tilde{\lambda}_e(s_e(y',x), x, \theta)\tau_e A(\bar{y}, y', x) \\ &-\tilde{\lambda}_e(s_e(y',x), x, \theta)(1-\tau_e)Q(y',y,x)[1 - F(y')] \\ &-\tilde{\lambda}_e(s_e(y',x), x, \theta)(1-\tau_e)A(y',y,x), \end{aligned} \tag{C7}$$

where $\bar{y}$ is the upper bound of the distribution.

Employed (Rejected offers): $R_u(x) \leq y' < y$**.**

$$\begin{aligned}W(y',y,x) \quad &= w(y',y,x) - c_e(s_e(y',x))x + \frac{1}{1+r}\Bigg[W(y',y,x) \\ &-\delta(x)(W(y',y,x) - U(x)) \\ &+\tilde{\delta}_0(x,\theta)\int_{R_u(x)}(W(n,0,x) - W(y',y,x))dF(n) \\ &-\tilde{\delta}_0(x,\theta)(F(R_u(x)))(W(y',y,x) - U(x)) \\ &+\tilde{\lambda}_e(s_e(y',x), x, \theta)\int_{y'}[W(n,y',x) - W(y',y,x)]dF(n) \\ &+\tilde{\lambda}_e(s_e(y',x), x, \theta)\int_{R_u(x)}^{y'}[\max(W(n,y',x), W(y',y,x)) - W(y',y,x)]dF(n)\Bigg], \end{aligned} \tag{C8}$$

If $y' < y$, then $W(y',y,x) = K(y',x)$. Re-arranging and subtracting $rU(x)$ on both sides:

$$\begin{aligned}&[r + \delta(x) + \tilde{\delta}_0(x,\theta)][K(y',x) - U(x)] \\ &= (1+r)[w(y',y,x) - bx - (c_e(s_e(y',x))x - c_u(s_u(x))x)] \\ &+[\tilde{\delta}_0(x,\theta) - \lambda_u(s_u(x),\theta)]\tau_u\int_{R_u(x)}[K(n,x) - U(x)]dF(n) \\ &+\tilde{\lambda}_e(s_e(y',x), x, \theta)\tau_e\int_{y'}(K(n,x) - K(y',x))dF(n), \end{aligned}$$

and re-arranging:

$$\begin{aligned}(1+r)w(y',y,x) \quad &= (1+r)x[b + (c_e(s_e(y',x)) - c_u(s_u(x)))] \\ &+[r + \delta(x) + \tilde{\delta}_0(x,\theta)]Q(y', R_u(x), x) \\ &-[\tilde{\delta}_0(x,\theta) - \lambda_u(s_u(x),\theta)]\tau_u A(\bar{y}, R_u(x), x) \\ &-\tilde{\lambda}_e(s_e(y',x), x, \theta)\tau_e A(\bar{y}, y', x). \end{aligned} \tag{C9}$$

Employed (Rejected offers): $y' < R_u(x) \leq y$**.** In this case, the worker considers working for one period, and separating into unemployment next period unless a better job or better match-specific productivity arrive:

$$\begin{aligned} W(y', y, x) \quad &= w(y', y, x) - c_e(s_e(y', x))x + \frac{1}{1+r}\Bigg[U(x) \\ &+\tilde{\delta}_0(x, \theta)\int_{R_u(x)}(W(n, 0, x) - U(x))dF(n) \\ &+\tilde{\lambda}_e(s_e(y', x), x, \theta)\int_{R_u(x)}[W(n, R_u(x), x) - U(x)]dF(n)\Bigg]. \end{aligned}$$

Note that for $y < R_u(x)$

$$\begin{aligned} K(y, x) \quad &= \max_{\bar{s}_e \geq s \geq 0}\Bigg\{pyx - c_e(s)x + \frac{1}{1+r}\Bigg[U(x) \\ &+\tilde{\delta}_0(x, \theta)\int_{R_u(x)}(W(n, 0, x) - U(x))dF(n) \\ &+\tilde{\lambda}_e(s, x, \theta)\int_{R_u(x)}[W(n, R_u(x), x) - U(x)]dF(n)\Bigg]\Bigg\}, \end{aligned} \tag{C10}$$

and for $y = R_u(x)$

$$\begin{aligned} K(R_u(x), x) \quad &= \max_{\bar{s}_e \geq s \geq 0}\Bigg\{pR_u(x)x - c_e(s)x + \frac{1}{1+r}\Bigg[U(x) \\ &+\tilde{\delta}_0(x, \theta)\int_{R_u(x)}(W(n, 0, x) - U(x))dF(n) \\ &+\tilde{\lambda}_e(s, x, \theta)\int_{R_u(x)}[W(n, R_u(x), x) - U(x)]dF(n)\Bigg]\Bigg\}, \end{aligned} \tag{C11}$$

which implies that $s_e(y', x) = s_e(R_u(x), x)$ and thus, for $y' \leq R_u(x)$, $K(R_u(x), x) - K(y', x) = px(R_u(x) - y')$ and:

$$w(y', y, x) = w(R_u(x), y, x) - px(R_u(x) - y'). \tag{C12}$$

Unemployed (Accepted offers): $y' \geq R_u(x)$**.** The value function $W(y',0,x)$ of an offer $w(y',0,x)$ for an unemployed worker satisfies:

$$\begin{aligned} W(y',0,x) \quad &= w(y',0,x) - c_e(s_e(y',x))x + \frac{1}{1+r}\Big[W(y',0,x) \\ &-\delta(x)(W(y',0,x)-U(x)) \\ &+\tilde{\delta}_0(x,\theta)\int_{R_u(x)}(W(n,0,x)-W(y',0,x))dF(n) \\ &-\tilde{\delta}_0(x,\theta)(F(R_u(x)))(W(y',0,x)-U(x)) \\ &+\tilde{\lambda}_e(s_e(y',x),x,\theta)\int_{y'}[W(n,y',x)-W(y',0,x)]dF(n) \qquad \text{(C13)} \\ &+\tilde{\lambda}_e(s_e(y',x),x,\theta)\int^{y'}[\max(W(n,y',x),W(y',0,x))-W(y',0,x)]dF(n)\Big]. \qquad \text{(C14)} \end{aligned}$$

Nash-Bargaining implies that

$$\begin{aligned} W(n,y,x) &= \begin{cases} \tau_e K(n,x)+(1-\tau_e)K(y,x) \text{ if } n \geq y \\ (1-\tau_e)K(n,x)+\tau_e K(y,x) \text{ if } n < y \end{cases} \qquad \text{(C15)} \\ W(n,0,x) &= \tau_u K(n,x)+(1-\tau_u)U(x). \qquad \text{(C16)} \end{aligned}$$

Define $N_e(y',x)$ such that

$$(1-\tau_e)K(N_e(y',x),x)+\tau_e K(y',x) = \tau_u K(y',x)+(1-\tau_u)U(x), \qquad \text{(C17)}$$

then

$$(1-\tau_e)(K(N_e(y',x),x)-U(x)) = -(\tau_e-\tau_u)(K(y',x)-U(x)), \qquad \text{(C18)}$$

which implies that $N_e(y',x) = R_u(x)$ if $\tau_e = \tau_u$ and $N_e(y',x) < R_u(x)$ if $\tau_e > \tau_u$.

After some re-arranging, we get

$$\begin{aligned} (1+r)w(y',0,x) \quad &= (1+r)x(b+(c_e(s_e(y',x))-c_u(s_u(x)))) \\ &+((r+\delta(x)+\tilde{\delta}_0(x,\theta))\tau_u(K(y',x)-U(x)) \\ &-[\tilde{\delta}_0(x,\theta)-\lambda_u(s_u(x),\theta)]\tau_u\int_{R_u(x)}(K(n,x)-U(x))dF(n) \\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)\tau_e\int_{y'}(K(n,x)-K(y',x))dF(n) \\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)(1-\tau_u)(K(y',x)-U(x))(1-F(y')) \\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)(1-\tau_e)\int_{N_e(y',x)}^{y'}(K(n,x)-K(N_e(y',x)))dF(n), \qquad \text{(C19)} \end{aligned}$$

Defining $Q(y',y,x) \equiv K(y',x)-K(y,x) = \int_y^{y'} K^y(n,x)dn$ and $A(y',y,x) \equiv \int_y^{y'}[K(n,x)-K(y,x)]dF(n) = \int_y^{y'}[K^y(n,x)(1-F(n))]dn - [K(y',x)-K(y,x)][1-F(y')] = \int_y^{y'}[K^y(n,x)(1-F(n))]dn - Q(y',y,x)[1-$

$F(y')]$, and using the fact that $K(R_u(x), x) = U(x)$, we get:

$$\begin{aligned}(1+r)w(y',0,x) \quad &= (1+r)x(b + (c_e(s_e(y',x)) - c_u(s_u(x))))\\ &+((r+\delta(x)+\tilde{\delta}_0(x,\theta))\tau_u Q(y', R_u(x), x)\\ &-[\tilde{\delta}_0(x,\theta) - \lambda_u(s_u(x),\theta)]\tau_u A(\bar{y}, R_u(x), x)\\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)\tau_e A(\bar{y}, y', x)\\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)(1-\tau_u)Q(y', R_u(x), x)(1-F(y'))\\ &-\tilde{\lambda}_e(s_e(y',x),x,\theta)(1-\tau_e)A(y', N_e(y',x), x), \end{aligned} \tag{C20}$$

where $\bar{y}$ is the upper bound of the distribution.

Unemployed (Rejected offers): $y' < R_u(x)$. In this case, the worker considers working for one period, and separating into unemployment next period unless a better job or better match-specific productivity arrive:

$$\begin{aligned}W(y',0,x) \quad &= w(y',0,x) - c_e(s_e(y',x))x + \frac{1}{1+r}\Bigg[U(x)\\ &+\tilde{\delta}_0(x,\theta)\int_{R_u(x)}(W(n,0,x) - U(x))dF(n)\\ &+\tilde{\lambda}_e(s_e(y',x),x,\theta)\int_{R_u(x)}[\max(W(n,y',x), U(x)) - U(x)]dF(n)\Bigg], \end{aligned}$$

which has same structure as for employed, so, for $y' < R_u(x)$:

$$w(y',0,x) = w(R_u(x), y, x) - px(R_u(x) - y'). \tag{C21}$$

S-C.2 Non-Stationary Model with Perfect Foresight

We extend the stationary model in the paper to allow for changes aggregate productivity, p, that are fully anticipated. For this reason, we need to introduce a subscript t. For the purposes here, we also assume that aggregate productivity converges to a finite value with probability 1 at time T in the future. The non-stationary model follows the same setup as the stationary model in the main paper and online appendix, and we focus here on the differences between the two models.

Joint Match Value. We assume that firms' and workers' search and separations decisions are jointly optimal, which makes the problem tractable in general equilibrium as in Bagger and Lentz (2019). Let $W_t(n, y, x)$ be the value of the worker in a match with productivity n when the outside option is a match with productivity y, with $y = 0$ if the worker's outside option is unemployment. The joint value of the firm and worker is:

$$\begin{aligned} K_t(y,x) \quad = \max_{\bar{s}_e \geq s \geq 0, R^\delta, R^e} \Bigg\{ & p_t y x - c_e(s)x + \frac{1}{1+r}\Bigg[\tilde{K}_{t+1}(y,x) \\ & -\delta(x)(\tilde{K}_{t+1}(y,x) - U_{t+1}(x) - V_{t+1}) \\ & +\tilde{\delta}_0(x,\theta_t)\int_{R^\delta}(W_{t+1}(n,0,x) + V_{t+1} - \tilde{K}_{t+1}(y,x))dF(n) \\ & -\tilde{\delta}_0(x,\theta_t)(F(R^\delta))(\tilde{K}_{t+1}(y,x) - U_{t+1}(x) - V_{t+1}) \\ & +\tilde{\lambda}_e(s,x,\theta_t)\int_{R^e}[W_{t+1}(n,y,x) + V_{t+1} - \tilde{K}_{t+1}(y,x)]dF(n)\Bigg]\Bigg\}. \end{aligned} \tag{C22}$$

where $\tilde{\delta}_0(x,\theta_t) = (1-\delta(x))\delta_0\lambda(\theta_t)$ and $\tilde{\lambda}_e(s,x,\theta_t) = (1-\delta(x))(1-\delta_0)\lambda_e(s)\lambda(\theta_t)$ and where $\tilde{K}_t(y,x) = \max(K_t(y,x), U_t + V_t)$ reflects the endogenous joint decision to dissolve the current match if the value of the outside option next period is higher than the joint match value. Workers and firms maximize the joint flow value plus the future expected value of the job. With a reallocation shock (δ_0), the worker samples an outside offer, which she takes if above the unemployed's reservation wage since that is the outside option, or else she becomes unemployed. Finally, if the worker stays on the job, she samples an outside offer with probability $\tilde{\lambda}_e(s,x,\theta_t)$.

Value of Unemployment. The value of unemployment, $U_t(x)$, satisfies:

$$\begin{aligned} U_t(x) \quad = \max_{\bar{s}_u \geq s \geq 0, R^u} \Bigg\{ & bx - c_u(s)x + \\ & \frac{1}{1+r}\Big[U_{t+1}(x) + \lambda_u(s,\theta_t)\int_{R^u}[W_{t+1}(n,0,x) - U_{t+1}(x)]dF(n)\Big]\Bigg\}, \end{aligned} \tag{C23}$$

where bx is the flow value of unemployment, $\lambda_u(s,\theta) = \lambda_u(s)\lambda(\theta)$ is the probability of matching with a firm, and $R_u(x)$ is the type-x unemployed worker's optimal reservation productivity.

Vacancy Posting. Firms pay a per-period vacancy posting cost, c, and vacancies are filled with probability $q(\theta_t)$. Let $J_t(n,y,x)$ be the value of the firm in a match with productivity n when the outside option of the worker is a match with productivity y with $y = 0$ if the worker's outside option is unemployment. The value of a vacancy, V_t, satisfies:

$$\begin{aligned} V_t = -c + \frac{1}{1+r}\Bigg[& V_{t+1} + q(\theta_t)\sum \pi(x)\Bigg(\frac{u_t(x)}{S_t}\lambda_u(s_t^u(x)) \int_{R_t^u(x)} (J_{t+1}(n,0,x) - V_{t+1}) dF(n) \\ & + \frac{1-u_t(x)}{S_t}\tilde{\delta}_0(x) \int_{R_t^\delta(x)} (J_{t+1}(n,0,x) - V_{t+1}) dF(n) \\ & + \frac{1-u_t(x)}{S_t} \int \tilde{\lambda}_e(s_t^e(\hat{y},x),x) \int_{R_t^e(\hat{y},x)} (J_{t+1}(n,\hat{y},x) - V_{t+1}) dF(n) dG_t(\hat{y}|x) \Bigg)\Bigg], \end{aligned} \tag{C24}$$

where where $\tilde{\delta}_0(x) = (1-\delta(x))\delta_0$ and $\tilde{\lambda}_e(s,x) = (1-\delta(x))(1-\delta_0)\lambda_e(s)$ and

$$S_t(x) = u_t(x)\lambda(s_t^u(x)) + (1-u_t(x))\tilde{\delta}_0(x) + (1-u_t(x)) \int \tilde{\lambda}_e(s_t^e(\hat{y},x),x) dG_t(\hat{y}|x) \tag{C25}$$

$$S_t = \sum_x \pi(x) S_t(x). \tag{C26}$$

Aggregate effective search effort is $S = \sum \pi(x)S(x)$, where the effective number of searchers with productivity x is $S(x)$. As is evident from the equations above, the value of a vacancy is calculated taking into account matching with different types of workers.

Wage Contracts. Wage contracts are negotiated at the beginning of the match and renegotiated in the presence of an outside offer as in Cahuc et al. (2006). The value of a job offer with productivity n for workers in a match with productivity y satisfies the Nash-Bargaining solution:

$$W_t(n,y,x) = \tau_e(K_t(n,x) - V_t) + (1-\tau_e)(\tilde{K}_t(y,x)), \tag{C27}$$

where $K_t(y,x)$ is the joint value of the match with match-productivity y and $\tilde{K}_t(y,x) = \max(K_t(y,x), U_t + V_t)$. Value of job offer for unemployed workers with job offer n satisfies Nash-Bargaining solution:

$$W_t(n,0,x) = \tau_u(K_t(n,x) - V_t) + (1-\tau_u)U_t(x), \tag{C28}$$

where $K_t(y,x)$ is the joint value of the match with match-productivity y. The value of the match for firms, $J_t(n,y,x)$, is the remainder of the joint value $K_t(n,x)$.

First-Order Conditions. The bargaining solutions helps to simplify the value functions further above. The joint value of a match can be written as:

$$\begin{aligned} K_t(y,x) \quad &= \max_{\bar{s}_e \geq s \geq 0, R^\delta, R^e} \Bigg\{ p_t y x - c_e(s)x + \frac{1}{1+r}\Bigg[\tilde{K}_{t+1}(y,x) \\ &\quad -[\delta(x) + \tilde{\delta}_0(x,\theta)][\tilde{K}_{t+1}(y,x) - U_{t+1}(x) - V_{t+1}] \\ &\quad +\tilde{\delta}_0(x,\theta_t)\tau_u \int_{R^\delta} [K_{t+1}(n,x) - U_{t+1}(x) - V_{t+1}]dF(n) \\ &\quad +\tilde{\lambda}_e(s,x,\theta_t) \int_{R^e} [\tau_e(K_{t+1}(n,x) - \tilde{K}_{t+1}(y,x)) + (1-\tau_e)V_{t+1}]dF(n)\Bigg]\Bigg\}. \end{aligned} \tag{C29}$$

The value of unemployment is:

$$\begin{aligned} U_t(x) \quad &= \quad \max_{\bar{s}_u \geq s \geq 0, R^u} \Bigg\{ bx - c_u(s)x + \\ &\quad \frac{1}{1+r}\Big[U_{t+1}(x) + \lambda_u(s,\theta_t)\tau_u \int_{R^u} [K_{t+1}(n,x) - U_{t+1}(x) - V_{t+1}]dF(n)\Big]\Bigg\}. \end{aligned} \tag{C30}$$

The value of a vacancy is:

$$\begin{aligned} V_t \quad &= \quad -c + \frac{1}{1+r}\Bigg[V_{t+1} \\ &+ \quad q(\theta_t)\sum \pi(x)\Bigg(\frac{u_t(x)}{S_t}\lambda_u(s_t^u(x))(1-\tau_u)\int_{R_t^u(x)} [K_{t+1}(n,x) - U_{t+1}(x) - V_{t+1}]dF(n) \\ &+ \quad \frac{1-u_t(x)}{S_t}\tilde{\delta}_0(x)(1-\tau_u)\int_{R_t^\delta(x)} [K_{t+1}(n,x) - U_{t+1}(x) - V_{t+1}]dF(n) \\ &+ \quad \frac{1-u_t(x)}{S_t}(1-\tau_e)\int \tilde{\lambda}_e(s_t^e(\hat{y},x),x)\int_{R_t^e(\hat{y},x)} [K_{t+1}(n,x) - \tilde{K}_{t+1}(\hat{y},x) - V_{t+1}]dF(n)dG_t(\hat{y}|x)\Bigg)\Bigg]. \end{aligned} \tag{C31}$$

The first-order condition w.r.t. the reservation productivities then are (imposing the zero-profit condition $V_t = 0$):

$$K_{t+1}(R_t^\delta(x),x) = U_{t+1}(x) \tag{C32}$$

$$K_{t+1}(R_t^u(x),x) = U_{t+1}(x) \tag{C33}$$

$$K_{t+1}(R_t^e(y,x),x) = \tilde{K}_{t+1}(y,x), \tag{C34}$$

which implies that $R_t^\delta(x) = R_t^u(x)$ and $R_t^e(y,x) = \max\{y, R_t^u(x)\}$. This also implies that $R_t(x) = R_{t-1}^u(x)$, where $R_t(x)$ is the lower bound on the distribution $G_t(\cdot|x)$, $G_t(R_t(x),x) = G_t(R_{t-1}^u(x),x) = 0$, is last period's reservation productivity of the unemployed. The first-order condition w.r.t. search efforts for the employed resp. unemployed are (imposing the zero profit condition):

$$(1+r)c_e'(s_t^e(y,x))x = \tilde{\lambda}_e^s(s_t^e(y,x),x,\theta_t)\tau_e \int_{\max\{y,R_t^u\}} [K_{t+1}(n,x) - \tilde{K}_{t+1}(y,x)]dF(n) \tag{C35}$$

$$(1+r)c_u'(s_t^u(x))x = \lambda_u^s(s_t^u(x),\theta_t)\tau_u \int_{R_t^u(x)} [K_{t+1}(n,x) - U_{t+1}(x)]dF(n). \tag{C36}$$

Law of Motions and Equilibrium. The law of motions for the unemployment rates, $u_t(x)$, are:

$$\begin{aligned} u_{t+1}(x) &= u_t(x) - u_t(x)\lambda_u(s_t^u(x),\theta_t)(1-F(R_t^u(x))) \\ &+ (1-u_t(x))[\delta(x)+\tilde{\delta}_0(x,\theta_t)F(R_t^u(x))] \\ &+ (1-u_t(x))(1-\delta(x))(1-\delta_0(\theta_t))G_t(R_t^u(x)|x) \\ &- (1-u_t(x))\tilde{\lambda}_e(s_t^e(R_t^u(x),x),x,\theta_t)(1-F(R_t^u(x)))G_t(R_t^u(x)|x), \end{aligned} \tag{C37}$$

which implies that the unemployment rate next period is equal to this period's unemployment rate minus the fraction of unemployed who get an acceptable offer this period (row 1), plus the fraction of employed who receive an exogenous separation shock or reallocation shock with an match productivity below the reservation threshold (row 2), plus the fraction of employed whose match productivity is below this period's reservation threshold and who do not receive a reallocation shock (row 3), minus those employed whose match productivity is below this period's reservation threshold but who find an acceptable job in the same period (row 4).[4] Note that we define $\delta_0(\theta_t) = \delta_0\lambda(\theta_t)$ and $\tilde{\delta}_0(x,\theta_t) = (1-\delta(x))\delta_0\lambda(\theta_t)$.

The law of motions for the distributions, $dG_t(y|x)$, are:

$$\begin{aligned} (1-u_{t+1}(x))dG_{t+1}(y|x) &= 1[y \geq R_t^u(x)]\Big[u_t(x)\lambda_u(s_t^u(x),\theta_t)dF(y) \\ &+(1-u_t(x))\Big(\big[1-\delta(x)-\tilde{\delta}_0(x,\theta_t)\big]dG_t(y|x) \\ &+\big[\tilde{\delta}_0(x,\theta_t)+\int^y \tilde{\lambda}_e(s_t^e(\hat{y},x),x,\theta_t)dG_t(\hat{y}|x)\big]dF(y) \\ &-(1-F(y))\tilde{\lambda}_e(s_t^e(y,x),x,\theta_t)dG_t(y|x)\Big)\Big], \end{aligned} \tag{C38}$$

which implies that the density of individuals who are employed and with productivity y next period is equal to the density of unemployed who receive an offer with productivity y (row 1), plus the density of employed this period who do not receive an exogenous separation shock nor a reallocation shock (row 2), plus the density of employed who accept an offer with productivity y (row 3), minus the density of employed with productivity y who receive a job offer with productivity y or higher (row 4).

Definition 3 *Given initial conditions $u_1(x)$ and $dG_1(y|x)$ for all x, a perfect-foresight equilibrium is defined as the search efforts $s_t^u(x)$ and $s_t^e(y,x)$, the reservation productivities $R_t^u(x)$, $R_t^\delta(x)$ and $R_t^e(y,x)$, the unemployment rates $u_{t+1}(x)$, the distributions $dG_{t+1}(y|x)$, the labor market tightness θ_t, and the value functions $K_t(y,x)$, $U_t(x)$, and V_t, that for all x, y and $t \geq 1$ satisfy equations (C29)-(C31), the first-order conditions (C32)-(C36), the law of motions (C37) and (C38), and the zero-profit condition $V_t = 0$.*

[4] Note that the last two rows are zero in the stationary equilibrium. Note also that we used the fact that $s_t^e(y,x) = s_t^e(R_t^u(x),x)$ for all $y < R_t^u(x)$ in the last row.

Solving the Model. In what follows we impose the zero-profit condition throughout. Taking the derivative of $K_t(y,x)$ w.r.t. y and using the envelope theorem:

$$K_t^y(y,x) = p_t x + 1[y \geq R_t^u(x)] \frac{1-\delta(x)-\tilde{\delta}_0(x,\theta_t)-\tilde{\lambda}_e(s_t^e(y,x),x,\theta_t)\tau_e(1-F(y))}{1+r} K_{t+1}^y(y,x)$$

and in steady state:

$$K^y(y,x) = \frac{(1+r)px}{r+\delta(x)+\tilde{\delta}_0(x,\theta)+\tau_e\tilde{\lambda}_e(s_e(y,x),x,\theta)(1-F(y))}.$$

Assuming that productivity p_t converges to a stationary value after $t+T$ periods and that the economy converges to a steady state after $t+S > t+T$ periods, we can write:

$$K_t^y(y,x) = x\left[p_t + \sum_{s=1}^{S}\Big(\prod_{i=1}^{s} N_{t+i-1}(y,x)\Big)p_{t+s}\right] + N_{t+S}(y,x)K^y(y,x), \tag{C39}$$

where

$$N_t(y,x) = 1[y \geq R_t^u(x)] \frac{1-\delta(x)-\tilde{\delta}_0(x,\theta_t)-\tilde{\lambda}_e(s_t^e(y,x),x,\theta_t)\tau_e(1-F(y))}{1+r}.$$

Using integration by parts, one gets:

$$\int_{\max\{y,R_t^u(x)\}} (K_{t+1}(n,x)-\tilde{K}_{t+1}(y,x))dF(n) = \int_{\max\{y,R_t^u(x)\}} K_{t+1}^y(n,x)(1-F(n))dn.$$

Plugging this into the first-order condition for search effort of the employed and unemployed, we get

$$\frac{(1+r)c_e'(s_t^e(y,x))x}{\tilde{\lambda}_e^s(s_t^e(y,x),x,\theta_t)} = \tau_e \int_{\max\{y,R_t^u(x)\}} K_{t+1}^y(n,x)(1-F(n))dn \tag{C40}$$

$$\frac{(1+r)c_u'(s_t^u(x))x}{\lambda_u^s(s_t^u(x),\theta_t)} = \tau_u \int_{R_t^u(x)} K_{t+1}^y(n,x)(1-F(n))dn. \tag{C41}$$

Together with equation (C39), these equations implicitly define the optimal search effort for the employed and unemployed in period t. Note that this implies that the optimal search effort for employed with match productivity $y < R_t^u(x)$ is $s_t^e(y,x) = s_t^e(R_t^u(x),x)$ for all $y < R_t^u(x)$.

Evaluating the joint match value at $y = R_{t-1}^u(x)$, we get:

$$\begin{aligned} K_t(R_{t-1}^u(x),x) = {} & p_t R_{t-1}^u(x)x - c_e(s_t^e(R_{t-1}^u(x),x))x + \frac{1}{1+r}\Big[\tilde{K}_{t+1}(R_{t-1}^u(x),x) \\ & -[\delta(x)+\tilde{\delta}_0(x,\theta_t)][\tilde{K}_{t+1}(R_{t-1}^u(x),x)-U_{t+1}(x)] \\ & +\tilde{\delta}_0(x,\theta_t)\tau_u \int_{R_t^u(x)} [K_{t+1}(n,x)-U_{t+1}(x)]dF(n) \\ & +\tilde{\lambda}_e(s_t^e(R_{t-1}^u(x),x),x,\theta_t)\tau_e \int_{\max\{R_{t-1}^u(x),R_t^u(x)\}} [K_{t+1}(n,x)-\tilde{K}_{t+1}(R_{t-1}^u(x),x)]dF(n)\Big]. \end{aligned} \tag{C42}$$

Subtracting the value of unemployment from this, and imposing the optimality condition $K_t(R^u_{t-1}(x),x) - U_t(x) = 0$, we get:

$$\begin{aligned}
0 &= p_t R^u_{t-1}(x)x - c_e(s^e_t(R^u_{t-1}(x),x))x - bx + c_u(s^u_t(x))x + \frac{1}{1+r}\Bigg[\\
&\quad [1-\delta(x)-\tilde{\delta}_0(x,\theta)][\tilde{K}_{t+1}(R^u_{t-1}(x),x) - U_{t+1}(x)] \\
&\quad +(\tilde{\delta}_0(x,\theta_t) - \lambda_u(s^u_t(x),\theta_t))\tau_u \int_{R^u_t(x)} [K_{t+1}(n,x) - U_{t+1}(x)]dF(n) \\
&\quad +\tilde{\lambda}_e(s^e_t(R^u_{t-1}(x),x),x,\theta_t)\tau_e \int_{\max\{R^u_{t-1}(x),R^u_t(x)\}} [K_{t+1}(n,x) - \tilde{K}_{t+1}(R^u_{t-1},x)]dF(n)\Bigg],
\end{aligned}$$

and integrating by parts, we get:

$$\begin{aligned}
0 &= (1+r)[p_t R^u_{t-1}(x)x - c_e(s^e_t(R^u_{t-1}(x),x))x - bx + c_u(s^u_t(x))x] + \\
&\quad 1[R^u_{t-1}(x) > R^u_t(x)][1-\delta(x)-\tilde{\delta}_0(x,\theta)] \int_{R^u_t(x)}^{R^u_{t-1}(x)} K^y_{t+1}(n,x)dn \\
&\quad +(\tilde{\delta}_0(x,\theta_t) - \lambda_u(s^u_t(x),\theta_t))\tau_u \int_{R^u_t(x)} K^y_{t+1}(n,x)(1-F(n))dn \\
&\quad +\tilde{\lambda}_e(s^e_t(R^u_{t-1}(x),x),x,\theta_t)\tau_e \int_{\max\{R^u_{t-1}(x),R^u_t(x)\}} K^y_{t+1}(n,x)(1-F(n))dn, \qquad \text{(C43)}
\end{aligned}$$

which, together with equation (C39), implicitly defines the reservatin productivity $R^u_{t-1}(x)$.

Similarly, we can solve for the value of the vacancy (imposing zero profits):

$$\begin{aligned}
\frac{(1+r)c}{q(\theta_t)} &= \sum \pi(x)\Bigg(\frac{u_t(x)}{S_t}\lambda_u(s^u_t(x))(1-\tau_u) \int_{R^u_t(x)} [K_{t+1}(n,x) - U_{t+1}(x)]dF(n) \\
+ \quad & \frac{1-u_t(x)}{S_t}\tilde{\delta}_0(x)(1-\tau_u) \int_{R^u_t(x)} [K_{t+1}(n,x) - U_{t+1}(x)]dF(n) \\
+ \quad & \frac{1-u_t(x)}{S_t}(1-\tau_e) \int \tilde{\lambda}_e(s^e_t(\hat{y},x),x) \int_{max(\hat{y},R^u_t(x))} [K_{t+1}(n,x) - \tilde{K}_{t+1}(\hat{y},x)]dF(n)dG_t(\hat{y}|x)\Bigg),
\end{aligned}$$

and using integration by parts, we get:

$$\begin{aligned}
\frac{(1+r)c}{q(\theta_t)} &= \sum \pi(x)\Bigg(\frac{u_t(x)}{S_t}\lambda_u(s^u_t(x))(1-\tau_u) \int_{R^u_t(x)} K^y_{t+1}(n,x)(1-F(n))dn \\
+ \quad & \frac{1-u_t(x)}{S_t}\tilde{\delta}_0(x)(1-\tau_u) \int_{R^u_t(x)} K^y_{t+1}(n,x)(1-F(n))dn \\
+ \quad & \frac{1-u_t(x)}{S_t}(1-\tau_e) \int \tilde{\lambda}_e(s^e_t(\hat{y},x),x) \int\limits_{max(\hat{y},R^u_t(x))} K^y_{t+1}(n,x)(1-F(n))dndG_t(\hat{y}|x)\Bigg), \qquad \text{(C44)}
\end{aligned}$$

which, together with equation (C39) and $S_t(x) = u_t(x)\lambda(s^u_t(x)) + (1-u_t(x))\tilde{\delta}_0(x) + (1-u_t(x))\int \tilde{\lambda}_e(s^e_t(\hat{y},x),x)dG_t(\hat{y}|x)$, and given solutions for $s^u_t(x)$, $s^e_t(y,x)$ and $R^u_t(x)$, can be solved for θ_t.

Solution Algorithm. Given initial conditions $u_t(x)$ and $dG_t(y|x)$ for all x, and assuming that productivity p_t follows a deterministic process and converges to a stationary value after $t+T$ periods and that the economy converges to a steady state after $t+S > t+T$ periods, we can solve for the equilibrium values of θ_{t+s}, $s^u_{t+s}(x)$, $s^e_{t+s}(y,x)$, $R^u_{t+s}(x)$, $u_{t+s+1}(x)$ and $dG_{t+s+1}(y|x)$ for all $s \geq 0$ as follows:

1. Solve for the stationary equilibrium in period $t+S$.

2. Guess a value for S.

3. Guess a sequence of values $\{\theta_{t+s}\}_{s=0}^{S-1}$.

4. Given $\{\theta_{t+s}\}_{s=0}^{S-1}$, use equations (C33), (C35), (C36) and (C39) to solve for the worker decision functions $\{s^u_{t+s}(x), s^e_{t+s}(y,x), R^u_{t+s}(x)\}_{s=0}^{S-1}$. Note that, for y, we solve the decision functions by interpolating linearly between a fixed set of points.

5. Given $\{\theta_{t+s}, s^u_{t+s}(x), s^e_{t+s}(y,x), R^u_{t+s}(x)\}_{s=0}^{S-1}$ and initial conditions $u_t(x)$ and $dG_t(y|x)$, we use the law of motions to solve for $\{u_{t+s}(x), dG_{t+s}(y|x))\}_{s=1}^{S}$. Note that we solve $dG_{t+s}(y|x))\}_{s=1}^{S}$ by interpolating linearly between a fixed set of points.

6. Given $\{s^u_{t+s}(x), s^e_{t+s}(y,x), R^u_{t+s}(x), u_{t+s}(x), dG_{t+s}(y|x)\}_{s=0}^{S-1}$, we use equation (C44) to solve for $\{\tilde{\theta}_{t+s}\}_{s=0}^{S-1}$.

7. Using $\{\tilde{\theta}_{t+s}\}_{s=0}^{S-1}$, we update our guess for $\{\theta_{t+s}\}_{s=0}^{S-1}$ and repeat steps [3.]-[6.] until convergence of $\{\tilde{\theta}_{t+s}\}_{s=0}^{S-1}$ to our guess $\{\theta_{t+s}\}_{s=0}^{S-1}$.

8. We verify that $u_{t+S}(x) = u(x)$ and $dG_{t+S}(y|x) = dG(y|x)$, i.e. we verify that the economy converged to the stationary equilibrium. If not, increase the value of S and repeat steps [3.]-[7.] until $u_{t+S}(x) = u(s)$ and $dG_{t+S}(y|x) = dG(y|x)$.

References

[1] Bagger, Jesper and Rasmus Lentz, 2019. "An Empirical Model of Wage Dispersion with Sorting," The Review of Economic Studies, 86(1): 153-190.

[2] Cahuc, Pierre, Fabien Postel-Vinay, and Jean-Marc Robin, 2006. "Wage Bargaining with On-the-job Search: Theory and Evidence," Econometrica 74(2): 323-364.

[3] Hall, Robert E. and Andreas I. Mueller, 2018. "Wage Dispersion and Search Behavior: The Importance of Non-Wage Job Values," Journal of Political Economy 126(4): 1594-1637.

[4] Sorkin, Isaac, 2018. "Ranking Firms Using Revealed Preference," Quarterly Journal of Economics 133(3): 1331-1393.