

Table 1: Representativeness: JPMCI Data Compared to External Benchmarks

Category	JPMCI (1)	Benchmark (2)	Ratio (1) / (2) (3)	Benchmark Source (4)
Mean Spending ^a				
Nondurables	\$2,317	\$1,671	139%	CE Survey
Nondurables	\$2,317	\$3,490	66%	PCE
Durables	\$395	\$1,280	31%	CE Survey
Durables	\$395	\$1,643	24%	PCE
Mean Income (Pre-tax Direct Deposit + Paper Checks) ^b				
Labor Earnings	\$5,002	\$5,750	87%	SIPP
Total Income	\$6,334	\$6,290	101%	SIPP
Mean Age	41.1	44.3	93%	SIPP
Median Checking Account Balance	\$1,250	\$1,500	83%	SCF
Number of U.S. States	20	50	--	--

Notes: This table compares the representativeness of UI recipients in the JPMCI data that meet the sampling criteria described in Section 2.1 to external benchmarks from the Consumer Expenditure (CE) Survey for 2015, Bureau of Economic Analysis' Table 2.4.5U for 2015 (PCE), the Survey of Income and Program Participation for 2004 (SIPP), and the Survey of Consumer Finances for 2013 (SCF). All income and spending variables are monthly.

a. Definition of nondurable and durable spending from Lusardi (1996). See Section 2.2 for details.

b. Labor income is adjusted for the fact that some earnings are paid by paper check rather than direct deposit (see notes to online Appendix Table 5 for details).

Table 2: Spending Change at UI Exhaustion

		Pre	Pre	Post	Change	Change
		Onset	Exhaustion	Exhaustion	(col 3 - col 2)	(col 4 / col 2)
		\$	\$	\$	\$	%
Spending Type ^a	Category ^b	(1)	(2)	(3)	(4)	(5)
Durable	Home Improvement	48.7	46.5	37.2	-9.4	-20.2%
Other ND	Discount Stores	57.7	58.1	47.1	-11.0	-18.9%
Other ND	Department Stores	19.4	16.5	13.6	-2.9	-17.7%
Durable	Miscellaneous Durables	27.1	26.3	21.8	-4.5	-17.1%
Other ND	Other Retail	148.0	137.0	114.4	-22.6	-16.5%
Strict ND	Food Away From Home	193.4	164.3	138.2	-26.1	-15.9%
Strict ND	Groceries	302.3	293.7	247.4	-46.3	-15.8%
Other ND	Drug Stores	39.5	35.4	30.0	-5.4	-15.3%
Durable	Retail Durables	48.3	43.3	36.7	-6.6	-15.3%
Nondurable	Cash	703.7	584.1	495.9	-88.2	-15.1%
Other ND	Medical Copay	35.4	29.3	25.3	-4.0	-13.6%
Durable	Entertainment	29.4	27.0	23.4	-3.6	-13.4%
Durable	Auto Repair	40.4	36.3	31.6	-4.7	-12.9%
Other ND	Online	42.6	38.8	34.1	-4.7	-12.1%
Strict ND	Transportation	155.6	127.6	114.0	-13.6	-10.6%
Durable	Hotels & Rental Cars	27.0	21.4	19.2	-2.2	-10.3%
Strict ND	Professional & Personal Services	55.4	50.0	45.0	-5.0	-10.0%
Strict ND	Telecom	111.6	106.6	97.4	-9.2	-8.7%
Strict ND	Utilities	190.1	182.4	173.3	-9.2	-5.0%
Strict ND	Flights	32.5	24.5	23.5	-0.9	-3.9%
Nondurable	Miscellaneous Nondurables	308.6	276.6	268.5	-8.1	-2.9%
Durable	Insurance	151.6	159.0	154.6	-4.4	-2.8%
Other Bank Account Outflows						
	Transfer to External Account	356.1	271.6	237.3	-34.3	-12.6%
	Uncategorizable Electronic	635.2	485.4	441.9	-43.6	-9.0%
	Paper Checks	1,057.6	968.9	923.7	-45.2	-4.7%
	Non-Chase Credit Card Bill	436.8	365.2	351.1	-14.1	-3.9%
	Installment Debt	380.9	348.7	335.3	-13.3	-3.8%

Notes: n=27,740 households who exhausted UI benefits and meet the sampling criteria described in Section 2.1. This table decomposes the drop in spending during unemployment into 27 categories. Column 1 is three months prior to the first UI payment, column 2 is the month before UI exhaustion and column 3 is the month after UI exhaustion.

a. Spending categories of strict nondurable, other nondurable, and durable from Lusardi (1996). Cash withdrawals and miscellaneous nondurables are included in the headline nondurables series.

b. See online Appendix B for additional details.

Table 3: Model Estimates

	Standard Model (1)	Standard Model (2)	Heterogeneity in β (3)	Heterogeneity in δ (4)
Number of Types	2 types	2 types	4 types	4 types
Calibrated Consumption Parameters				
Risk Aversion γ^a	2	2	2	2
Naive Hyperbolic Discount Factor β	1.000	--	--	1
Estimated Consumption Parameters				
Monthly Exponential Discount Factor δ	0.9898 (0.0003)	0.9898 (0.0003)	0.9951 (0.0001)	{0.6003, 0.9894} (0.0158, 0.0003)
Naive Hyperbolic Discount Factor β	--	1.000 (0.007)	{0.522, 0.899} (0.025, 0.026)	--
Borrowing Limit \underline{a}	4.5 (0.2)	4.5 (0.2)	6.1 (0.6)	7.8 (0.3)
Impatient/Myopic Population Share	--	--	0.25 (0.01)	0.17 (0.01)
Estimated Search Parameters				
Cost of Job Search k	{9.0, 129.5} (1.8, 42.3)	{9.0, 129.5} (1.8, 42.3)	{4.7, 53.6} (1.0, 20.3)	{4.5, 55.0} (0.8, 12.9)
Convexity of Job Search Cost ξ	1.4 (0.1)	1.4 (0.1)	1.1 (0.1)	1.4 (0.1)
Low Job Search Cost Population Share	0.67 (0.04)	0.67 (0.04)	0.79 (0.03)	0.59 (0.05)
Model Fit				
N Moments	27	27	27	27
N Estimated Parameters	6	7	9	8
Consumption Goodness of Fit	350	350	99	148
Search Goodness of Fit	81	81	86	97
Total Goodness of Fit	431	431	186	246

Notes: This table presents parameter estimates of models of consumption and job search during unemployment. The model is described in Section 4.1 and is fit using equation (8) to the data on spending and job search during an unemployment spell from Figures 3 and 7, respectively. Columns 1 and 2 allow for unobserved heterogeneity in job search costs. Columns 3 and 4 allow for unobserved heterogeneity in time preference parameters by allowing for differences in β and δ respectively. In column 1, β is fixed at 1, while in columns 2 and 3, β is estimated and is constrained to be between 0 and 1. Similarly in column 4, δ is estimated and is constrained to be between 0 and 1. Goodness of fit total may not be sum of components due to rounding. Standard errors of estimated parameters in parentheses.

a. Calibrated from Carroll (1997)

Table 4: Welfare Impact of Changes in UI Generosity

Welfare Change as an Equivalent Increase in Lifetime Income

	Δ Welfare - UI Benefit Increase (1)	Δ Welfare - UI Duration Extension (2)	Difference (col 2 - col 1) (3)	Ratio (col 2 / col 1) (4)
Consumption-Smoothing Gains Only				
JPMCI Nondurables	0.021%	0.082%	0.061%	3.94
Gruber (1997) Food	0.019%	--	--	--
Consumption-Smoothing Gains and Fiscal Externality Loss				
JPMCI Nondurables	-0.023%	0.016%	0.039%	--
Gruber (1997) Food	-0.025%	--	--	--

Notes: We evaluate the welfare impact of budget-neutral tax-financed changes in the generosity of UI benefits as a percentage of lifetime income for CRRA utility with risk aversion of 2. We use a sufficient statistic formula which generalizes the Baily-Chetty formula to allow for finite duration of UI benefits. See Section 5 for details. Rows 1 and 2 show the welfare gains in the absence of a fiscal externality from UI benefits. We compare a UI benefit increase of 1.77 percent of monthly employed income with a one-month extension of UI benefits.

These changes have the same fiscal cost and require a tax increase of 0.14 percent of monthly employed income to fund.

Rows 3 and 4 show the welfare gains with taxes adjusted for the fiscal externality arising from moral hazard in response to changes in UI benefits. Fiscal externalities are the median estimates in the literature review in Schmieder and Von Wachter (2017). We compare a UI benefit increase of 2.03 percent with a one-month extension of UI benefits. These change have the same fiscal cost and require a tax increase of 0.21 percent to fund.

Table 1: Summary Statistics Prior to Unemployment Onset

Category	Detail	Mean (\$) (1)	Median (\$) (2)	Std Dev (\$) (3)	Share > 0 (4)
Total Checking Account Inflows		5,544	4,160	4,257	0.99
Government	Tax Refunds, Social Security (Old Age and Disability), Child Support, Unemployment Insurance, Veterans Benefits, Supplemental Security Income	214	80	722	0.80
Labor	Earnings Paid By Direct Deposit	3,265	2,560	2,898	0.93
Other Income	Cash, Investment Income, Interest, Refunds	148	0	362	0.53
Transfer from External Account	Transfers from Checking, Savings, Money Market, and Investment Accounts	648	0	1,444	0.46
Paper Checks		1,045	120	1,812	0.60
Uncategorized ^a		224	0	1,179	0.57
Total Checking Account Outflows		5,546	4,220	4,152	1.00
Nondurable Spending		2,459	2,060	1,613	1.00
Durable Spending		396	220	460	0.93
Transfer to External Account	Transfers to Checking, Savings, Money Market, and Investment Accounts	354	0	873	0.42
Debt	Mortgage, Home Equity, Auto Loan, Student Loan, Non-Chase Credit Card Bills	762	160	1,265	0.80
Uncategorized ^a + Paper Checks		1,415	780	5,239	0.87

Notes: n= 182,361. This table presents summary statistics three months prior to the onset of UI for households that meet the sampling criteria described in Section 2.1.

a. This category is constructed as the residual of checking account transactions and includes electronic transfers which cannot be assigned to a category.

Table 2: Representativeness: Spending in JPMCI Data Compared to External Benchmarks

	External Benchmarks				
	JPMCI Mean (\$) (1)	CE Survey Mean (\$) (2)	Ratio to CE Survey (3)	PCE Mean (\$) (4)	Ratio to PCE (5)
<u>Nondurable Expenditures</u>					
Drug Stores	13	13	1.01	14	0.93
Flights	32	35	0.92	38	0.86
Food Away From Home	216	251	0.86	460	0.47
Groceries	267	314	0.85	531	0.50
Ground Transportation	170	194	0.87	237	0.72
Medical Copay	36	80	0.46	177	0.21
Professional & Personal Services	78	183	0.42	921	0.08
Retail Nondurables	225	278	0.81	709	0.32
Telecom	113	112	1.01	193	0.59
Utilities	178	211	0.84	210	0.85
<u>Total</u>	1,328	1,671	0.79	3,490	0.38
Cash and Miscellaneous Nondurables ^a	989				
<u>Total (with Cash and Misc Nondurables)</u>	2,317	1,671	1.39	3,490	0.66
<u>Durable Expenditures</u>					
Auto Repair	45	230	0.20	168	0.27
Entertainment	35	149	0.24	334	0.11
Home Improvement	55	213	0.26	276	0.20
Hotels & Rental Cars	28	61	0.47	135	0.21
Insurance	148	276	0.54	233	0.64
Miscellaneous Durables	29	261	0.11	298	0.10
Retail Durables	55	90	0.61	199	0.27
<u>Total</u>	395	1,280	0.31	1,643	0.24
Not in JPMCI ^c		1,250	-	2,888	-
<u>Total (with Not in JPMCI)</u>	395	2,530	0.16	4,531	0.09
<u>Other Bank Account Outflows^d</u>	2,834				

Notes: n = 182,361. This table compares monthly spending by UI recipients that meet the sampling criteria described in Section 2.1 to the Consumer Expenditure (CE) Survey and the Bureau of Economic Analysis' Personal Consumption Expenditures (PCE) from 2015. See online Appendix B.2 for details.

a. Cash and miscellaneous nondurables are classified as nondurable on the basis of payment method. See Section 2.2 for details.

b. This nondurable spending estimate is the sum of the rows above. Because each spending category has been winsorized at the 95th percentile, this estimate is slightly smaller than the estimate when winsorization is applied after summing categories in Appendix Table 1.

c. JPMCI durables spending does not capture pensions and Social Security, health insurance, auto purchases, and shelter.

d. Other bank account outflows include transfers to external accounts (likely saving), debt payments, paper checks, and uncategorizable electronic transactions.

Table 3: Representativeness: Spending in JPMCI Data Compared to the Consumer Expenditure Survey

		External Benchmarks	
	JPMCI Mean (\$)	CE Survey Mean (\$)	Ratio to Benchmark
<u>Nondurable Expenditures</u>			
Alcoholic beverages	8	43	0.19
Apparel and services	59	154	0.38
Drugs	13	35	0.37
Food at home	181	335	0.54
Food away from home	139	251	0.55
Gasoline and motor oil	59	174	0.34
Household operations	14	109	0.13
Medical	26	78	0.33
Miscellaneous	34	73	0.47
Personal care products and services	44	57	0.77
Pets, toys, hobbies, and playground equipment	25	54	0.46
Public and other transportation	24	55	0.44
Reading	1	10	0.10
Tobacco products and smoking supplies	2	29	0.07
Utilities, fuels, and public services	138	324	0.43
<u>Total</u>	767	1,781	0.43
Cash and Miscellaneous Nondurables ^a	989		
<u>Total (with Cash and Miscellaneous Nondurables)</u>	1,756	1,781	0.99
<u>Durable Expenditures</u>			
Education	11	110	0.10
Fees and admissions	20	54	0.37
Household furnishings and equipment	59	152	0.39
Housekeeping supplies	98	55	1.78
Other entertainment supplies, equipment, and services	39	38	1.03
Other lodging	13	61	0.21
Other vehicle expenses	56	230	0.24
Vehicle rental, leases, licenses, and other charges	9	52	0.17
<u>Total Comparables</u>	305	752	0.41
Not in JPMCI ^b		2,186	--
<u>Total (with Not in JPMCI)</u>	305	2,938	0.10

Notes: This table compares monthly spending for a one percent sample of all JPMCI households (not just UI recipients) with at least five monthly bank account outflows to the Consumer Expenditure (CE) Survey from 2015. See online Appendix B.2.3 for details.

a. Cash and miscellaneous nondurables are classified as nondurable on the basis of payment method. See Section 2.2 for details.

b. JPMCI durables spending does not capture pensions and Social Security, health insurance, auto purchases, and shelter.

Table 4: Representativeness: Spending in JPMCI Data Using PCE Category

		External Benchmarks	
	JPMCI Mean (\$)	PCE Mean (\$)	Ratio to Benchmark
<u>Nondurable Expenditures</u>			
Alcoholic beverages purchased for off-premises consumption	8	89	0.09
Clothing and footwear	61	268	0.23
Food and nonalcoholic beverages purchased for off-premises consumption	181	510	0.35
Food services	139	460	0.30
Household maintenance	6	51	0.12
Household utilities	126	224	0.56
Medical	25	176	0.14
Motor vehicle fuels, lubricants, and fluids	59	189	0.31
Personal care products and services	45	172	0.26
Pharmaceutical products	14	44	0.32
Postal and delivery services	5	7	0.71
Professional and other services	17	124	0.14
Public transportation (air)	15	38	0.39
Public transportation (other)	9	33	0.27
Reading	3	75	0.04
Recreation - Other	46	221	0.21
Social services and religious activities	19	114	0.17
Sporting equipment, supplies, guns, and ammunities, and sports and recreational vehicles	9	80	0.11
Telecom	14	193	0.07
Tobacco	2	72	0.03
<u>Total</u>	803	3,140	0.26
Cash and Miscellaneous Nondurables ^a	989		
<u>Total (with Cash and Miscellaneous Nondurables)</u>	1,792	3,140	0.57
<u>Durable Expenditures</u>			
Education	10	206	0.05
Furnishings and durable household equipment	43	208	0.21
Hotels and motels	13	64	0.20
Housing supplies	89	84	1.06
museums	21	120	0.18
repair	52	168	0.31
Other durable goods	4	76	0.05
Other motor vehicle services	10	57	0.18
equipment, media, and services	55	220	0.25
<u>Total Comparables</u>	297	1,203	0.25
Not in JPMCI ^b	-	3,660	-
<u>Total (with Not in JPMCI)</u>	297	4,863	0.06

^aNotes: This table compares monthly spending for a one percent sample of all JPMCI households (not just UI recipients) with at least five monthly bank account outflows to the Bureau of Economic Analysis' Personal Consumption Expenditures (PCE) from 2015. See online Appendix B.2.3 for details.

a. Cash and miscellaneous nondurables are classified as nondurable on the basis of payment method. See Section 2.2 for details.

b. Spending not in JPMCI includes pensions and Social Security, health insurance, auto purchases, and shelter.

Table 5: Representativeness: Income in JPMCI Data Compared to External Benchmarks

Dataset	Sample	Share < Age 21 (1)	Household Income (Median) (2)	Household Income (Mean) (3)	Share in Poverty (4)	Household Earnings (Mean) (5)	Person Earn (Mean) (6)	Share Other Earn > 0 (7)	Others' Earnings (Mean) (8)
SIPP	Employed	0.06	6,019	7,333	0.07	6,800	3,723	0.61	3,077
SIPP	Unemployed	0.22	4,374	5,596	0.16	5,064	2,042	0.56	3,023
SIPP	Receive UI	0.02	5,106	6,290	0.08	5,750	3,273	0.54	2,477
JPMCI	Receive UI		5,142	6,334		5,002			
JPMCI	Exhaust UI		5,392	6,558		5,138			

Notes: All income statistics are monthly, for the 12-month period prior to the onset of unemployment. All variables are in dollars, other than variables explicitly labeled "share."

The first three rows are from the Survey of Income and Program Participation panel (SIPP) and are inflated to 2015 \$ using CPI-U. This survey covered years 2004-2007. "Unemployed" are people with a reported job separation followed by unemployment in the subsequent month. "Receive UI" are people who report positive UI income.

JPMCI data are for September 2013 through June 2016 for UI recipients that meet the sampling criteria described in Section 2.1. We define income as all inflows which are not explicitly categorized as transfers to external bank accounts and we rescale these inflows into pre-tax dollars. We assume an average tax rate (federal income and payroll) of 12 percent below \$6,671, 13 percent below \$11,048, 14 percent below \$15,316, 15 percent below \$19,484, 17 percent below \$23,588, 18 percent below \$29,592, 20 percent below \$37,428, 23 percent below \$50,798, 25 percent below \$69,933, 28 percent below \$117,368, 36 percent below \$257,355, 47 percent below \$510,789, 52 percent below \$824,902 and 53 percent above. We calculate in the Survey of Consumer Finances that 15 percent of labor earnings are paid by paper check or pre-paid debit card. The JPMCI data only show labor income paid by direct deposit and so we adjust the JPMCI estimate upward by 15 percent.

Table 6: Representativeness: Assets in JPMCI Data Compared to External Benchmarks

Data	Sample	Asset Balance	p10	p50	p90	Mean
SCF	Employed	All Liquid Assets	270	4,900	54,000	29,952
SCF	Employed	Checking Account	150	1,500	10,000	4,920
JPMCI	UI Recipient, Pre-Onset	Checking Account	50	1,250	9,450	4,738

Notes: This table compares liquid assets in the 2013 Survey of Consumer Finances (SCF) to UI recipients that meet the sampling criteria described in Section 2.1. Liquid assets include checking and saving accounts, money market accounts, certificates of deposit, savings bonds, non-retirement mutual funds, stocks and bonds. When households have multiple checking accounts in the SCF, we report statistics for "the checking account you use the most." Employed is defined as at least \$15,000 of annual pre-tax labor income in the SCF.

Table 7: Sensitivity of Spending Drop to Sample and Winsorization

Sample	Winsorization	Pre-onset mean	Two-Month Spending Change at Exhaustion	
			Drop	% of Pre-onset mean
Analysis Sample ^a	95th percentile	\$2,459	-\$263	-10.7%
All Valid UI Spells ^b	95th percentile	\$2,487	-\$265	-10.7%
All Valid UI Spells	99th percentile	\$2,650	-\$277	-10.5%
All Valid UI Spells	99.99th percentile	\$2,776	-\$332	-11.9%
All Valid UI Spells	None	\$2,778	-\$335	-12.1%
Labor Income Prior to UI Receipt ^c	95th percentile	\$2,629	-\$253	-9.6%

Notes: This table shows the spending drop at exhaustion under alternative sampling assumptions and winsorization procedures.

a. UI recipients that meet the sampling criteria described in Section 2.1. This includes restricting the sample to households with at least five bank account outflows each month.

b. UI recipients with a single contiguous spell as defined in Section 2.1. This sample includes UI recipients with five or fewer bank account outflows each month.

c. UI recipients with a single contiguous UI spell as defined in Section 2.1 and receive labor income by direct deposit in at least one of the six months prior to UI receipt.

Table 8: Income, Spending, and Borrowing at Onset, During UI Receipt, and Benefit Exhaustion

	Pre-Onset Mean (\$)	Two-Month Change at Onset ^a	Monthly Change During UI Receipt ^b	Two-Month Change at Exhaustion ^c
	(1)	(2)	(3)	(4)
Spending Measures				
Nondurable (% ^d)	2,459	-0.064 (0.001)	-0.0081 (0.0007)	-0.107 (0.003)
Nondurable (\$)	2,459	-158 (3)	-20 (2)	-263 (8)
Strict Nondurable (\$)	1,106	-67 (1)	-6 (0)	-113 (3)
Total Outflows (\$)	5,546	-199 (8)	-97 (3)	-456 (19)
Food (\$)	522	-32.6 (0.7)	1.3 (0.2)	-69.2 (1.7)
Income Measures				
Direct Deposit Labor + UI ^e (\$)	3,265	-470 (6)	-73 (2)	-1,300 (11)
Total Inflows (\$)	5,544	-164 (9)	-169 (3)	-618 (23)
N Checking Account Outcomes		182,361	538,287	27,740
Chase Credit Cards^f				
New Charges (\$)	263	-14 (1)	1 (0.4)	-2 (3)
Revolving Balance (\$)	2,447	23 (6)	21 (3)	54 (16)
Credit Limit (\$)	12,899	110 (9)	44 (4)	42 (20)
N Credit Card Outcomes		77,057	231,689	12,851

Notes: Standard errors are shown in parentheses underneath regression coefficients and are clustered by household.

Sample is households that receive UI and meet the sampling criteria described in Section 2.1.

a. Each observation is a household. Onset is defined as difference from three months before the first UI payment to one month before the first UI payment.

b. Each observation is a household-month.

c. Each observation is a household. The sample is exhautees eligible for 26 weeks of benefits. Exhaustion is defined as the difference from one month before the last UI payment to one month after the last UI payment for benefit exhautees. This two-month time horizon differs from the one-month time horizon that is used in Section 3.1.2 and Figures 2 and 3.

Using that one-month time horizon, we estimate a 12 percent drop in spending at exhaustion.

d. The dependent variable is the outcome variable as a percent of the pre-unemployment-onset mean.

e. This definition of income is lower than the mean for labor earnings in Table 1 because it excludes labor income paid by paper checks and it is post-tax rather than pre-tax.

f. The revolving balance variable captures a stock rather than a flow. For example, a \$23 increase in credit card balance at onset corresponds to spending \$11.50 extra on the card each month.

Table 9: Spending Drop at Onset By Pre-Onset Characteristics

	Spending Change in \$ (1)	Ratio of Spending Drop to Income Drop (2)	p-val vs baseline (3)
Baseline	-158	0.352 (0.011)	--
<u>Demographics and Economic Characteristics</u>			
Annual Income < Median	-149	0.422 (0.017)	< 0.001
One Name on Account	-184	0.404 (0.013)	< 0.001
Shared Account, Other HH Member Employed	-94	0.381 (0.037)	0.155
Shared Account, Other HH Member Not Employed	-192	0.566 (0.033)	< 0.001
Age < Median	-186	0.409 (0.014)	< 0.001
Makes ACH Mortgage Payments	-142	0.283 (0.026)	0.001
UI Benefits / Income in Bottom Tercile	-164	0.320 (0.018)	0.035
UI Benefits / Income in Top Tercile	-149	0.366 (0.019)	0.3
<u>Assets and Liabilities</u>			
Total Assets in Bottom Tercile	-202	0.461 (0.018)	< 0.001
Total Assets in Top Tercile	-110	0.236 (0.019)	< 0.001
Chase Assets in Bottom Tercile	-209	0.489 (0.017)	< 0.001
Chase Assets in Top Tercile	-101	0.210 (0.019)	< 0.001
<u>Other Heterogeneity</u>			
Has Chase Credit Card	-148	0.301 (0.016)	< 0.001
Exhaust in 2015 or Later	-162	0.341 (0.013)	0.179

Notes: This table examines heterogeneity in the spending response to the onset of unemployment by pre-onset characteristics. Onset is defined as the period from three months before the first UI check ($t=-3$) to one month before the first UI check ($t=-1$). Standard errors are in parentheses. Column 1 reports the drop in spending for the subsample of interest. Column 2 reports the ratio of the spending drop as a fraction of the income loss. Column 3 reports the p-value for the null hypothesis that the MPC in the baseline sample is the same as in the MPC subsample. Sample is households that receive UI and meeting the sampling criteria described in Section 2.1.

Table 10: Spending Drop at Exhaustion By Pre-Onset Characteristics

	Spending Change in \$ (1)	Ratio of Spending Drop to Income Drop (2)	p-val vs baseline (3)
Baseline	-259	0.200 (0.009)	--
<u>Demographics and Economic Characteristics</u>			
Annual Income < Median	-298	0.247 (0.012)	< 0.001
One Name on Account	-277	0.223 (0.012)	0.015
Shared Account, Other HH Member Employed	-188	0.145 (0.027)	0.016
Shared Account, Other HH Member Not Employed	-271	0.222 (0.012)	0.019
Age < Median	-310	0.259 (0.014)	< 0.001
Makes ACH Mortgage Payments	-142	0.104 (0.024)	< 0.001
UI Benefits / Income in Bottom Tercile	-188	0.165 (0.022)	0.031
UI Benefits / Income in Top Tercile	-336	0.241 (0.013)	< 0.001
<u>Assets and Liabilities</u>			
Total Assets in Bottom Tercile	-329	0.268 (0.017)	< 0.001
Total Assets in Top Tercile	-186	0.137 (0.015)	< 0.001
Chase Assets in Bottom Tercile	-373	0.304 (0.016)	< 0.001
Chase Assets in Top Tercile	-166	0.122 (0.016)	< 0.001
<u>Other Heterogeneity</u>			
Has Chase Credit Card	-170	0.127 (0.014)	< 0.001
Exhaust in 2015 or Later	-242	0.183 (0.012)	0.020

Notes: This table examines heterogeneity in the spending response to exhaustion by pre-onset characteristics. Exhaustion is defined using one month before the last UI check and one month after the last UI check among UI exhausters. Standard errors are in parentheses. Column 1 reports the drop in spending for the subsample of interest. Column 2 reports the ratio of the spending drop as a fraction of the income loss. Column 3 reports the p-value for the null hypothesis that the MPC in the baseline sample is the same as in the MPC subsample. Sample is households that exhaust UI benefits and meet the sampling criteria described in Section 2.1.

Table 11: Robustness Checks to Alternative Payment Channels at Onset

	Spending Drop at Onset					
			Dollars		Percent	
	% with channel	Pre-onset Spending	Families with this channel	Estimate for all families	Families with this channel	Estimate for all families
	(1)	(2)	(3)	(4)	(5)	(6)
(A) Have Chase Checking Account	100%	2,459	-158	-158	-6.4%	-6.4%
(B) Have Outside Checking Account	28%	1,592	-35	-10	-2.2%	-0.6%
(C) Have Outside Credit Card	64%	989	-14	-9	-1.5%	-0.9%
Sum Over All Bank Accounts (A)+(B)		2,900		-167		-5.8%
Sum Over All Payment Channels (A)+(B)+(C)		3,533		-176		-5.0%

Notes: This table quantifies how nondurable spending changes on outside credit cards and outside checking accounts affect the estimated drop in spending at the onset of unemployment. To approximate outside checking accounts, we examine unlinked checking accounts within Chase for customers that Chase infers are members of the same household. Onset is defined as the period from three months before the first UI check ($t=-3$) to one month before the first UI check ($t=-1$). See Section 3.1.3 for details.

Column 1 estimates the share of UI recipients with each channel. Row B: The McKinsey Consumer Financial Life Survey reports that 28 percent of households had checking accounts at multiple banks.

Row C: We estimate using the SCF that 64 percent of UI recipients with a bank account have an outside credit card.

Column 2 shows our estimate of spending within this payment channel among households that have this payment channel. Row A is households that receive UI and meet the sampling criteria described in Section 2.1. Row B is households in row A that have an unlinked checking account with Chase. Row C is households in row A that have a Chase credit card. In row C, we estimate spending on non-Chase credit cards as spending on Chase credit cards times the ratio of electronic payments on non-Chase credit cards to payments on Chase cards.

Column 3 shows the change in spending. For outside checking accounts we use Appendix Figure 5 and for credit cards we use Appendix Table 7.

Column 4 multiplies the drop for families with the channel (column 3) by the percent of families with each channel (column 1). Column 5 recomputes the drop in spending relative to onset using the denominator in column 2. Column 6 multiplies the drop in column 5 by column 1.

Table 12: Robustness Checks to Alternative Payment Channels at Exhaustion

	Spending Drop at Exhaustion					
			Dollars		Percent	
	% with channel	Pre-onset Spending	Families with this channel	Estimate for all families	Families with this channel	Estimate for all families
	(1)	(2)	(3)	(4)	(5)	(6)
(A) Have Chase Checking Account	100%	2,459	-263	-263	-10.7%	-10.7%
(B) Have Outside Checking Account	28%	1,559	40	11	2.6%	0.7%
(C) Have Outside Credit Card	64%	989	-2	-1	-0.2%	-0.1%
Sum Over All Bank Accounts (A)+(B)		2,891		-252		-8.7%
Sum Over All Payment Channels (A)+(B)+(C)		3,523		-253		-7.2%

Notes: This table quantifies how nondurables spending changes on outside credit cards and outside checking accounts affect the estimated drop in spending at UI benefit exhaustion. To approximate outside checking accounts, we examine unlinked checking accounts within Chase for customers that Chase infers are members of the same household. Exhaustion is defined as the difference from one month before the last UI payment to one month after the last UI payment for benefit exhaustees. See Section 3.1.3 for details.

Column 1 estimates the share of UI recipients with each channel. Row B: The McKinsey Consumer Financial Life Survey reports that 28 percent of households had checking accounts at multiple banks. Row C: We estimate using the SCF that 64 percent of UI recipients with a bank account have an outside credit card.

Column 2 shows our best estimate of spending within this payment channel among households that have this payment channel. Row A is households that exhaust UI and meet the sampling criteria described in Section 2.1. Row B is households in row A that have an unlinked checking account with Chase. Row C is households in row A that have a Chase credit card. In row C, we estimate spending on non-Chase credit cards as spending on Chase credit cards times the ratio of electronic payments on non-Chase credit cards to payments on Chase cards.

Column 3 shows the change in spending. For outside checking accounts we use Appendix Figure 5 and for credit cards we use Appendix Table 7.

Column 4 multiplies the drop for families with the channel (column 3) by the percent of families with each channel (column 1). Column 5 recomputes the drop in spending relative to onset using the denominator in column 2. Column 6 multiplies the drop in column 5 by column 1.

Table 13: Spending Drop Using Alternative Time Horizons

	Spending Drop Compared to Three Months Before UI Onset			
	Pre-Onset Mean	Onset ($t=-1$) ^a	While Receiving UI ^b	Annual ($t=-1,0,\dots,10$) ^c
	(\$) (1)			
(a) Nondurables	2,459	-6.4%	-7.8%	-6.9%
(b) Food ^d	522	-6.3%	-4.9%	-4.3%

Notes: This table computes the spending drop for various time horizons and various spending concepts. In each column, we compute the percent change in spending from three months before UI onset to the given reference period, i.e. $(\text{Spend}_{\text{reference}} - \text{Spend}_{t=-3}) / \text{Spend}_{t=-3}$. Time subscripts are relative to the first month of UI receipt. The reference period for each column is specified in the column-specific notes below. Sample is households that receive UI and meet the sampling criteria described in Section 2.1.

a. $\text{Spend}_{\text{reference}} = \text{Spend}_{t=-1}$. This column reports the average spending drop in the first month of unemployment relative to three months prior to UI receipt.

b. $\text{Spend}_{\text{reference}} = \text{Mean}(\text{Spend}_{t=0}, \text{Spend}_{t=-1}, \dots, \text{Spend}_{t=T})$. T is the last month of UI receipt for a given household in our sample. This column reports the average spending drop while households are receiving UI relative to three months prior to UI receipt.

c. $\text{Spend}_{\text{reference}} = \text{Mean}(\text{Spend}_{t=-1}, \text{Spend}_{t=0}, \dots, \text{Spend}_{t=10})$. This column reports the average spending drop in the year after job loss relative to three months prior to UI receipt.

d. Gruber (1997) estimates a drop in food spending of 6.8 percent. The reference period in the PSID for food spending is ambiguous. If the reference period is unemployment onset, the comparable estimate is 6.3 percent, while if the reference period is an annual time horizon after job loss, then the comparable estimate is 4.3 percent.

Table 14: Spending Decomposition at Unemployment Onset

		Pre Onset	Post Onset	Change in \$	Change in %
		(\$)	(\$)	(2) - (1)	(3) / (1)
Spending Type ^a	Category ^b	(1)	(2)	(3)	(4)
Other ND	Department Stores	20.7	17.8	-2.8	-13.7%
Other ND	Other Retail	156.8	140.3	-16.5	-10.5%
Durable	Hotels & Rental Cars	28.3	25.3	-3	-10.5%
Strict ND	Flights	32.4	29.3	-3.2	-9.8%
Strict ND	Food Away From Home	215.5	194.7	-20.8	-9.6%
Strict ND	Transportation	169.5	154.1	-15.5	-9.1%
Nondurable	Cash	664.5	613.3	-51.1	-7.7%
Other ND	Online	44.0	41.6	-2.4	-5.4%
Other ND	Drug Stores	37.0	35.1	-2.0	-5.3%
Durable	Entertainment	33.5	31.7	-1.8	-5.3%
Other ND	Discount Stores	59.5	56.9	-2.7	-4.5%
Durable	Retail Durables	54.8	52.3	-2.5	-4.5%
Durable	Home Improvement	47.7	45.8	-1.9	-4.0%
Strict ND	Professional & Personal Services	58.0	55.7	-2.3	-4.0%
Durable	Auto Repair	45.1	43.3	-1.8	-3.9%
Strict ND	Groceries	320.8	309.0	-11.9	-3.7%
Strict ND	Telecom	113.3	111.1	-2.2	-1.9%
Strict ND	Utilities	177.5	175.5	-2.0	-1.1%
Nondurable	Miscellaneous Nondurables	280.5	277.8	-2.7	-1.0%
Durable	Insurance	148.4	147.2	-1.3	-0.9%
Durable	Miscellaneous Durables	29.2	29.4	0.2	0.5%
Other ND	Medical Copay	35.0	36.6	1.6	4.4%
Other Bank Account Outflows					
	Non-Chase Credit Card Bill	382.8	364.9	-18.0	-4.7%
	Uncategorizable Electronic	589.1	571.2	-17.9	-3.0%
	Installment Debt	379.4	374.5	-4.9	-1.3%
	Paper Checks	985.6	987.1	1.4	0.1%
	Transfer to External Account	353.8	366.0	12.2	3.4%

Notes: n=182,361 households. This table decomposes the drop in spending at the onset of unemployment into 27 categories. Column 1 is three months prior to the first UI payment and column 2 is one month prior to the first UI payment. Sample is households that receive UI and meet the sampling criteria described in Section 2.1.

a. Spending categories of strict nondurable, other nondurable, and durable from Lusardi (1996). Cash withdrawals and miscellaneous nondurables are included in the headline nondurables series.

b. See online Appendix B for additional details.

Table 15: Model Environment Parameters

Parameter	Value	Data Source
Employed Income	1	JPMCI
Unemployed (1-6 months) Income	0.83	JPMCI
Unemployed (>6 months) Income	0.54	JPMCI
Initial Assets a_0	0.66	JPMCI with SCF ^a
Monthly Interest Rate R	1.0025	Cagetti (2003) ^b
Separation Rate	0.0325	BLS (2014) ^c
Number of Periods ^d	240	

Notes: This table shows the assumptions about the economic environment for the model in Section 4.

a. We estimate total liquid assets at onset by multiplying median checking account balances in JPMCI by the ratio of total liquid assets to checking account balances in the SCF.

b. Following Cagetti (2003), we choose a monthly real interest rate of 0.25 percent, which translates to an annual interest rate of 3 percent.

c. We choose an exogenous separation rate to UI of 2.5 percent in order to match the 11.5 percent of households with an unemployed member during 2014 (Bureau of Labor Statistics, 2014).

d. We consider a time horizon of 240 months, corresponding to a middle-aged worker with 20 years left in her career.

Table 16: Model Target Moments

Months Since First UI Check	Nondurable Consumption		Job-Finding Rate	
	Estimate	Standard Error	Estimate	Standard Error
-5	1.000	--	--	--
-4	1.007	0.001	--	--
-3	1.009	0.001	--	--
-2	0.997	0.001	--	--
-1	0.939	0.001	--	--
0	0.928	0.001	0.199	0.006
1	0.933	0.002	0.238	0.010
2	0.918	0.002	0.223	0.012
3	0.909	0.003	0.200	0.016
4	0.901	0.004	0.207	0.021
5	0.895	0.006	0.282	0.025
6	0.777	0.006	0.273	0.033
7	0.783	0.007	0.260	0.045
8	0.770	0.007	0.197	0.058
9	0.755	0.008	0.210	0.070
10	0.744	0.008	0.131	0.075

Notes: This table reports the moments for the "stay-unemployed" used in equation (8) to fit the models in Section 4. The nondurable consumption moments are depicted in Figure 3 and the job search moments are depicted in Figure 7. For the weight matrix W in equation (8), we use the inverse of the variances implied by the standard errors above.

Table 17: Model-Implied Search Responses to Changes in UI Generosity

	Cost of Extensions				
	BCMC - Benefit Increase	BCMC - Benefit Extension	Relative to Increases (col 2) / (col 1) - 1	ξ	Search Goodness Of Fit
	(1)	(2)	(3)	(4)	(5)
Data: Schmieder and von Wachter (2017) Literature Review					
25th Percentile	1.15	1.14	-1%		
Median	1.32	1.52	15%		
75th Percentile	1.39	1.94	40%		
Model					
Standard Model	1.21	1.45	20%	1.4	81
Heterogeneity in β	1.31	1.57	20%	1.1	86
Heterogeneity in β , $\xi=1.0$	1.32	1.51	14%	1.0	77

Notes: Schmieder and von Wachter (2017) propose a metric which is the ratio of behavioral cost (BC)—the total cost to the government of increasing UI generosity, including the extra spending induced because UI recipients will respond by taking longer to find a job—to the mechanical cost (MC) of increasing generosity absent any change in behavior. They call this statistic the “BCMC” ratio. In this table we present the BCMC ratios from the Schmieder and von Wachter (2017) literature review and those implied by various models we consider for one-month benefit extensions and for increases in the benefit level of the same fiscal cost.

Table 18: Model Robustness

	No heterogeneity in k	Heterogeneity in β	Estimate one β	Heterogeneity in β , fixed ξ
	(1)	(2)	(3)	(4)
Number of Types	1	4	4	4
Calibrated Consumption Parameters				
Risk Aversion γ^a	2	2	2	2
Naive Hyperbolic Discount Factor β	1	--	{--, 1.000}	--
Estimated Consumption Parameters				
Exponential Discount Factor δ	0.9907 (0.0003)	0.9951 (0.0001)	0.9940 (0.0001)	0.9899 (0.0005)
Naive Hyperbolic Discount Factor β	--	{0.522, 0.899} (0.025, 0.026)	{0.551, --} (0.008, --)	{0.450, 1.000} (0.015, 0.025)
Borrowing Limit \underline{a}	4.4 (0.3)	6.1 (0.6)	5.9 (0.3)	7.3 (0.4)
Impatient/Myopic Population Share	--	0.25 (0.01)	0.25 (0.01)	0.19 (0.01)
Calibrated Search Parameters				
Convexity of Job Search Cost ξ	--	--	--	1.0
Estimated Search Parameters				
Cost of Job Search k	30.0 (4.0)	{4.7, 53.6} (1.0, 20.3)	{4.5, 50.0} (0.9, 18.9)	{3.4, 33.5} (0.3, 4.4)
Convexity of Job Search Cost ξ	1.6 (0.1)	1.1 (0.1)	1.1 (0.1)	--
Share	--	0.79 (0.03)	0.70 (0.03)	0.65 (0.04)
Goodness of Fit				
N Moments	27	27	27	27
N Estimated Parameters	4	9	8	8
Consumption Goodness of Fit	458	99	139	117
Search Goodness of Fit	205	86	79	77
Total Goodness of Fit	663	186	218	194

^aNotes: This table presents parameter estimates of models of consumption and job search during unemployment. The model is described in Section 4.1 and is fit using equation (8) to the data on spending and job search during an unemployment spell from Figures 3 and 7, respectively. Standard errors of estimated parameters in parentheses.

Column 1 examines a representative agent model with no heterogeneity in job search costs.

Column 2 reproduces our preferred β -heterogeneity model from Table 3, column 3.

Column 3 re-estimates the β -heterogeneity model, restricting the β parameter to 1 for the high- β types.

Column 4 re-estimates the β -heterogeneity model, restricting the job search cost parameter ξ to 1

In columns 2, 3 and 4, β is constrained to be between 0 and 1.

a. Calibrated from Carroll (1997).

Table 19: Welfare Impact of Changes in UI Generosity with Low and High Risk Aversion

Welfare Change as an Equivalent Increase in Lifetime Income

	Consumption-Smoothing Gains Only		Consumption-Smoothing Gains and Moral Hazard Loss		Ratio (col 2 / col 1)
	UI Benefits ↑ 1.8%	UI Duration ↑ 1 Month	UI Benefits ↑ 2.0 or 1.9%	UI Duration ↑ 1 Month	
	(1)	(2)	(3)	(4)	
Baily-Chetty Approximation					
JPMCI Nondurables, $\gamma=0.999$	0.010%	0.036%	-0.005%	0.024%	3.59
Gruber (1997) Food, $\gamma=0.999$	0.009%		--	--	
Baily-Chetty Approximation					
JPMCI Nondurables, $\gamma=4.0$	0.046%	0.219%	0.023%	0.081%	4.80
Gruber (1997) Food, $\gamma=4.0$	0.042%		--	--	

Notes: We evaluate the welfare impact of budget-neutral tax-financed changes in the generosity of UI benefits as a percentage of lifetime income for CRRA utility for risk aversion parameter values of $\gamma=0.999$ and $\gamma=4.0$. See Section 5 for further details.

Column 1 considers a policy that raises monthly benefits by 1.77 percent and raises taxes during employment by 0.14 percent; this tax revenue is sufficient to finance the increase in benefits if there is no job search distortion from increased UI benefits.

Column 2 considers a policy that extends potential UI benefit durations by one month and raises taxes during employment by 0.14 percent; this tax revenue is sufficient to finance the extension in benefits if there is no job search distortion from UI extensions.

Column 3 considers a policy that raises monthly benefits by 2.00 percent (1.85 percent), and raises taxes during employment by 0.19 percent (0.17 percent) in the models with $\gamma=0.999$ (4.0) respectively; this tax revenue is sufficient to finance the increase in benefits when increased UI levels reduce job search.

Column 4 considers a policy that extends potential UI benefit durations by one month and raises taxes during employment by 0.19 (0.17 percent) in the models with $\gamma=0.999$ (4.0) respectively; this tax revenue is sufficient to finance the extension in benefits when extended UI durations reduce job search.

Table 20: Welfare Impact of Changes in UI Generosity in Structural Models

Welfare Change as an Equivalent Increase in Lifetime Income

	Δ Welfare - UI Benefit Increase (1)	Δ Welfare - UI Duration Extension (2)	Difference (col 2 - col 1) (3)	Ratio (col 2 / col 1) (4)
Consumption-Smoothing Gains Only [Baily-Chetty]				
JPMCI Nondurables	0.021%	0.082%	0.061%	3.94
Gruber (1997) Food	0.019%	--		
Consumption-Smoothing Gains and Moral Hazard Loss [Baily-Chetty]				
JPMCI Nondurables	-0.023%	0.016%	0.039%	--
Gruber (1997) Food	-0.025%	--		
Structural Model Simulation				
Heterogeneity in β , Consumption Gains Only	0.024%	0.059%	0.035%	2.45
Heterogeneity in β	-0.033%	-0.031%	0.003%	--
Heterogeneity in β , fixed $\xi = 1.0$	-0.022%	0.003%	0.025%	--

Notes: We evaluate the welfare impact of budget-neutral tax-financed changes in the generosity of UI benefits as a percentage of lifetime income for CRRA utility with risk aversion of 2 using the Baily-Chetty approximation, and using a structural model with endogenous job search. Rows 1-4 repeat the results in Table 4 and present the Baily-Chetty results without and with moral hazard. Rows 5-7 present the simulation results from our estimated structural models in Appendix Table 18.

In rows 1, 2 and 5, a one-month benefit extension has the same fiscal cost as a 1.77 percent increase in benefits, and requires a tax increase of 0.14 percent to fund.

In rows 3 and 4, a one-month benefit extension has the same fiscal cost as a 2.03 percent increase in benefits, and requires a tax increase of 0.21 percent to fund.

In row 6, a one-month benefit extension has the same fiscal cost as a 1.75 percent increase in benefits, and requires a tax increase of 0.18 percent to fund.

In row 7, a one-month benefit extension has the same fiscal cost as a 1.78 percent increase in benefits, and requires a tax increase of 0.18 percent to fund.

Table 21: Share of Spending Type by Payment Method in DCPC

Payment	Share by Durability			
	Nondurable Share	Durable Share	Consumption Share ^a	Other Share ^b
Cash	75%	17%	92%	8%
Check	32%	62%	94%	6%
Credit Card	83%	16%	99%	1%
Debit Card	79%	19%	98%	2%
Electronic Transfer	34%	59%	93%	7%
Online Pay	38%	54%	92%	8%
Other	54%	40%	93%	7%
Total	58%	37%	95%	5%

Notes: Federal Reserve's 2012 Diary of Consumer Payment Choice (DCPC). We classify payment recipients in the DCPC using the Lusardi (1996) taxonomy.

Note that nondurable and durable shares include some miscellaneous consumption and transactions where some detail is missing. Exact method of allocation is outlined in Appendix B.1.2.

a. This is the sum of nondurable and durable shares.

b. This includes taxes and inter-household transfers.

		Share
Strict ND	1087	20%
Other ND	353	6%
Nondurable	945	17%
Durable	387	7%
Debt	762.2	14%
Uncategorized	1,574.7	29%
Saving	353.8	6%
Total	5462.7	
All Nondurable	2385	