

“Creative Destruction and Subjective Well-Being”

By Philippe Aghion, Ufuk Akcigit, Angus Deaton, and Alexandra Roulet (2016) *American Economic Review*

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APEC PhD Seminar

February 22, 2017

Research Question

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- ▶ Previous work has neglected to consider how the *determinants* of growth affect well-being.
- ▶ Focus on how Shumpeterian creative destruction affects subjective well-being (SWB).

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- ▶ The effect of job creation and job destruction on well-being are positive and negative, respectively.
- ▶ Job destruction has a less negative effect when unemployment benefits are higher.
- ▶ Job creation has more of a positive impact on future well-being for more “forward-looking” individuals.

Data

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- ▶ US Census Bureau: Longitudinal Employer-Household Dynamics (LEHD) - at the MSA level.
- ▶ Gallup: Healthways Well-Being Index - at the individual level.

“Creative Destruction”

- ▶ Main measure (from the BDS): The “job turnover rate” = the sum of job creation and job destruction rates.
 - ▶ Job creation: Sum of all employment gains.
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- ▶ Main measure (from the BDS): The “job turnover rate” = the sum of job creation and job destruction rates.
 - ▶ Job creation: Sum of all employment gains.
 - ▶ Job destruction: Sum of all employment losses.
- ▶ Alternative measure (from LEHD): Separate job creation and job destruction rates
 - ▶ Job creation (destruction) rate = $\frac{\# \text{ started (ended) a job}}{\text{Average employment}}$
 - ▶ Allows for a sectoral breakdown.
 - ▶ Allows for quarterly variation, rather than annual.

“Subjective Well-Being”

- ▶ Cantril ladder of life
 - ▶ *“Please imagine a ladder with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worse possible life for you.”*
 - ▶ (1) *“On which step of the ladder would you say you personally feel you stand at this time?”*
 - ▶ (2) *“Which level of the ladder do you anticipate to achieve in five years?”*

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 - ▶ (2) *“Which level of the ladder do you anticipate to achieve in five years?”*
- ▶ Asked daily via phone interviews of 1,000 randomly selected Americans by Gallup.

“Subjective Well-Being”

- ▶ Alternative SWB measurement - from CDC's Behavioral Risk Factor and Surveillance System (BRFSS)
 - ▶ *“In general how satisfied are you with your life?”*
 - ▶ “Very satisfied”
 - ▶ “Satisfied”
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 - ▶ “Very dissatisfied”
- ▶ The authors state: “We recode these answers so that ‘Very dissatisfied’ corresponds to grade 1 and ‘Very satisfied’ to grade 4”.

The Cardinal Treatment of Ordinal Variables

(Schroder and Yitzhaki, 2017; *European Economic Review*)

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- ▶ Nevertheless, data is typically collected by using some sort of ordinal scale.
- ▶ Some econometric techniques allow for analysis of ordinal variables (i.e. ordered probit/logit models or nonparametric methods)
- ▶ Many techniques rely on methods designed for the analysis of cardinal variables (i.e. comparison of means or OLS)

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Category	(1) Concave	(2) Equal	(3) Convex
“Unhappy”	1	1	1
“Neither, nor”	3	2	3
“Happy”	4	3	7

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Table 1
Gender satisfaction gaps.

Satisfaction domain		Year					
		2007	2008	2009	2010	2011	2012
Health	Gap	-0.076	-0.105	-0.096	-0.076	-0.107	-0.122
	t-test	0.013	0.001	0.002	0.020	0.001	0.000
	Intersection	Yes	No	Yes	Yes	Yes	Yes
Work	Gap	-0.074	-0.020	0.043	0.024	-0.015	-0.062
	t-test	0.056	0.603	0.280	0.566	0.718	0.116
	Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Housework	Gap	-0.009	-0.010	-0.012	-0.038	-0.110	-0.189
	t-test	0.784	0.758	0.708	0.241	0.001	0.000
	Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Income	Gap	0.026	0.059	0.090	0.075	0.018	0.033
	t-test	0.416	0.070	0.005	0.026	0.601	0.309
	Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Dwelling	Gap	0.014	0.054	0.032	-0.024	-0.023	-0.009
	t-test	0.573	0.033	0.206	0.376	0.386	0.727
	Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Leisure	Gap	0.030	0.005	0.010	-0.025	-0.054	-0.077
	t-test	0.325	0.863	0.731	0.429	0.088	0.013
	Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Child care	Gap	0.122	0.068	0.151	0.107	0.100	0.067
	t-test	0.182	0.469	0.126	0.303	0.319	0.483
	Intersection	Yes	Yes	Yes	Yes	Yes	Yes
Overall	Gap	0.014	-0.020	0.040	0.038	0.001	-0.020
	t-test	0.579	0.413	0.105	0.139	0.971	0.416
	Intersection	Yes	Yes	Yes	Yes	Yes	Yes

Note: Differences in average satisfaction between females and males. T-test: Results from two-sided t-test. Intersection: Dummy for presence of intersection. Data: SOEP v29.

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Table 3
Estimates from OLS regressions, original dependent variable.

Dependent variable:	h					
	our estimates				FCF (2004)	
Source:					(1)	(2)
Specification:	(1)		(2)		(1)	(2)
<i>age</i>	-0.033***	(0.005)	-0.042***	(0.005)	-0.03	-0.05
<i>age</i> ²	0.001***	(0.000)	0.001***	(0.000)	0.0005	0.0007
<i>ln</i> (<i>y</i>)	0.332***	(0.018)	0.411***	(0.022)	0.34	0.38
<i>nchildren</i>	-0.015*	(0.008)	-0.015*	(0.009)	-0.07	-0.05
<i>Dpartner</i>	0.087***	(0.018)	0.063***	(0.020)	0.13	0.23
<i>hhealth</i>	0.390***	(0.004)	0.388***	(0.004)	0.54	0.39
<i>D1992</i>	0.000	(.)	0.000	(.)	n.r.	n.r.
<i>D1993</i>	-0.050*	(0.028)	-0.056**	(0.028)	n.r.	n.r.
<i>D1994</i>	-0.086***	(0.028)	-0.097***	(0.028)	n.r.	n.r.
<i>D1995</i>	-0.133***	(0.027)	-0.145***	(0.027)	n.r.	n.r.
<i>D1996</i>	-0.099***	(0.028)	-0.114***	(0.028)	n.r.	n.r.
<i>D1997</i>	-0.247***	(0.028)	-0.264***	(0.028)	n.r.	n.r.
<i>educ</i>			0.020	(0.013)		n.r.
<i>work_hrs</i>			-0.004***	(0.001)		n.r.
<i>Dmale</i>			0.017	(0.020)		n.r.
<i>nadults</i>			-0.070***	(0.011)		n.r.
<i>constant</i>	2.192***	(0.169)	1.990***	(0.178)		n.r.
<i>N</i>	31,228		31,228		30,569	30,569
<i>F</i>	963.415		712.926		nr	nr
<i>r</i> ²	0.253		0.255		0.25	0.26

Note: h denotes original SOEP overall life satisfaction variable, \hat{h} denotes transformed satisfaction. Standard errors in parentheses. "n.r." means not reported. D_X is a dummy for year X . * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Data: SOEP v29.

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Table 4

Estimates from OLS regressions, transformed dependent variable.

Dependent variable:	\tilde{h}			
Specification:	(1)		(2)	
<i>age</i>	-0.023***	(0.003)	-0.018***	(0.003)
<i>age</i> ²	0.000***	(0.000)	0.000***	(0.000)
<i>ln</i> (<i>y</i>)	-0.050***	(0.011)	-0.038***	(0.014)
<i>n</i> _{children}	0.011**	(0.005)	0.007	(0.005)
<i>D</i> _{partner}	0.029***	(0.011)	0.024*	(0.013)
<i>h</i> _{health}	0.082***	(0.002)	0.083***	(0.002)
<i>D</i> ₁₉₉₂	0.000	(.)	0.000	(.)
<i>D</i> ₁₉₉₃	0.014	(0.017)	0.014	(0.017)
<i>D</i> ₁₉₉₄	0.003	(0.017)	0.005	(0.017)
<i>D</i> ₁₉₉₅	-0.024	(0.017)	-0.020	(0.017)
<i>D</i> ₁₉₉₆	-0.038**	(0.017)	-0.034*	(0.017)
<i>D</i> ₁₉₉₇	-0.067***	(0.017)	-0.062***	(0.017)
<i>educ</i>			-0.052***	(0.008)
<i>work_hrs</i>			0.000	(0.000)
<i>D</i> _{male}			-0.003	(0.012)
<i>n</i> _{adults}			0.001	(0.007)
<i>constant</i>	4.503***	(0.105)	4.398***	(0.111)
<i>N</i>	31,228		31,228	
<i>F</i>	112.147		85.400	
<i>r</i> ²	0.038		0.039	

Note: *h* denotes original satisfaction variable, \tilde{h} denotes transformed satisfaction. Standard errors in parentheses. *D*_{*X*} is a dummy for year *X*. **p*<0.1, ***p*<0.05, ****p*<0.01. Data: SOEP v29.

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- ▶ Schroder and Yitzhaki (2017) establish two conditions essential for determining robustness.
- ▶ It is not sufficient to test robustness to a *given* (and perhaps arbitrary) well-being scale.
- ▶ Bottom line: treating ordinal variables like they are cardinal may produce biased estimates.

Econometric Specification

- ▶ $SWB_{i,m,t} = \alpha \times X_{m,t} + \beta \times Y_{m,t} + \delta \times Z_{t,t} + T_t + \epsilon_{i,t}$
 - ▶ $SWB_{i,m,t} = SWB$ for individual i who lives in MSA m in year t .
 - ▶ $X_{m,t}$ is either the job turnover rate and the unemployment rate in MSA m in year t , or job creation and destruction rates separately.
 - ▶ $Y_{m,t}$ are MSA-level controls.
 - ▶ $Z_{i,t}$ are individual-level controls.
 - ▶ T_t are year and month fixed effects.

Prediction 1

Higher job turnover increases well-being more when controlling for unemployment

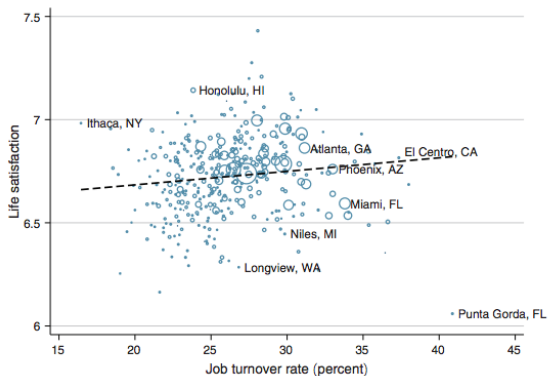


FIGURE 3. SIMPLE SCATTER PLOT

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FIGURE 4. RESIDUAL SCATTER PLOT

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TABLE 2—TEST OF PREDICTION 1

	Current ladder		Future ladder	
	(1)	(2)	(3)	(4)
<i>Panel A. MSA-level analysis</i>				
Job turnover rate	0.599 (0.361)	1.288 (0.410)	1.322 (0.424)	1.726 (0.306)
Unemployment rate		2.727 (0.786)	2.581 (0.823)	0.930 (0.507)
log of income	0.342 (0.0839)	0.195 (0.088)	0.225 (0.106)	0.297 (0.079)
Additional MSA controls			x	x
Observations	363	363	344	344
R ²	0.100	0.198	0.217	0.459
p-value job turnover [1] = job turnover [2]		0.000		
<i>Panel B. Individual-level analysis</i>				
Job turnover rate	0.0676 (0.236)	0.521 (0.237)	0.611 (0.285)	0.984 (0.148)
Unemployment rate		-2.299 (0.443)	-2.168 (0.502)	-0.0857 (0.298)
MSA-level log of income	-0.187 (0.048)	-0.285 (0.046)	-0.263 (0.051)	-0.0424 (0.038)
Additional MSA controls			x	x
Individual controls (incl. income)	x	x	x	x
Year and month fixed effects	x	x	x	x
Observations	556,300	556,300	461,054	450,908
R ²	0.103	0.104	0.103	0.095
p-value job turnover [1] = job turnover [2]		0.000		
<i>Panel C. Panel analysis</i>				
Job turnover rate	0.678 (0.0970)	0.787 (0.105)	0.249 (0.142)	0.234 (0.140)
Unemployment rate		-2.238 (0.301)	-1.743 (1.054)	-1.074 (1.057)
log of income	0.410 (0.0301)	0.360 (0.0307)	0.412 (0.0373)	0.192 (0.0390)
MSA fixed effects			x	x
Additional MSA controls	x	x	x	x
Year and quarter fixed effects	x	x	x	x
Observations	4,884	4,884	4,884	4,884
R ²	0.189	0.203	0.325	0.256
p-value job turnover [1] = job turnover [2]		0.041		

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 - ▶ The authors state: “Moving from an MSA which is at the twenty-fifth percentile in terms of its level of creative destruction to an MSA at the seventy-fifth percentile is associated with an increase in the current ladder of life of 0.06 points.”

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 - ▶ BUT... What if the ladder of life is not linear (i.e. what if it is concave or convex)?

Prediction 2

Higher job creation increases & higher job destruction decreases well-being

TABLE 3—TEST OF PREDICTION 2

	Current ladder		Future ladder	
	(1)	(2)	(3)	(4)
<i>Panel A. MSA-level analysis</i>				
Job creation rate	5.486 (0.978)	5.567 (1.015)	3.588 (0.825)	3.103 (0.682)
Job destruction rate	-3.586 (0.838)	-3.433 (0.870)	-0.158 (0.702)	0.144 (0.668)
log of income	0.277 (0.077)	0.293 (0.094)	0.221 (0.061)	0.324 (0.073)
Additional MSA controls		x		x
Observations	363	344	363	344
R ²	0.218	0.246	0.149	0.460
<i>Panel B. Individual-level analysis</i>				
Job creation rate	1.098 (0.395)	1.274 (0.445)	1.068 (0.206)	0.944 (0.220)
Job destruction rate	-0.791 (0.274)	-0.702 (0.306)	0.926 (0.197)	0.987 (0.225)
MSA log of income	-0.197 (0.046)	-0.173 (0.048)	-0.0408 (0.031)	-0.0382 (0.038)
Additional MSA controls		x		x
Individual controls (incl. income)	x	x	x	x
Year and month fixed effects	x	x	x	x
Observations	556,300	461,054	544,228	450,908
R ²	0.103	0.103	0.094	0.095
<i>Panel C. Panel analysis</i>				
Job creation rate	2.276 (0.316)	1.213 (0.357)	1.690 (0.293)	1.155 (0.349)
Job destruction rate	-0.617 (0.274)	-0.466 (0.314)	-0.647 (0.249)	-0.460 (0.285)
log of income	0.416 (0.0299)	0.416 (0.0371)	0.266 (0.0304)	0.195 (0.0389)
MSA fixed effects		x		x
Additional MSA controls	x	x	x	x
Year and quarter fixed effects	x	x	x	x
Observations	4,884	4,884	4,884	4,884
R ²	0.195	0.325	0.145	0.257

Prediction 2

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- ▶ Question: How do you interpret these magnitudes?
 - ▶ The authors state: “A one standard deviation increase in the job creation rate is associated with an increase in the current ladder of life of slightly more than a half standard deviation.”
 - ▶ Similarly: “A one standard deviation increase in the job destruction rate is associated with a decrease in the current ladder of life of 0.4 standard deviations.”

Prediction 3

Higher job destruction decreases well-being less with more unemployment benefits

TABLE 4—TEST OF PREDICTION 3

	Current ladder			
	(1)	(2)	(3)	(4)
<i>Panel A. MSA-level analysis</i>				
Job turnover rate	0.524 (0.362)	0.662 (0.378)		
Job turnover × UI generosity	0.989 (0.422)	0.897 (0.416)		
Job destruction rate			-3.661 (0.789)	-3.536 (0.816)
Job destruction × UI generosity			2.357 (1.105)	2.369 (1.113)
UI generosity	-0.288 (0.114)	-0.253 (0.113)	-0.167 (0.128)	-0.137 (0.128)
Additional MSA controls		x		x
Observations	363	344	363	344
R ²	0.116	0.136	0.237	0.262
<i>Panel B. Individual-level analysis</i>				
Job turnover rate	0.0845 (0.230)	0.209 (0.262)		
Job turnover × UI generosity	0.675 (0.310)	0.670 (0.357)		
Job destruction rate			-0.794 (0.272)	-0.720 (0.300)
Job destruction × UI generosity			0.620 (0.329)	0.673 (0.372)
UI generosity	-0.198 (0.085)	-0.183 (0.096)	-0.212 (0.083)	-0.200 (0.094)
Individual controls (incl. income)	x	x	x	x
Year and month fixed effects	x	x	x	x
Additional MSA controls		x		x
Observations	556,300	461,054	556,300	461,054
R ²	0.103	0.103	0.104	0.103

Prediction 4

Higher job turnover increases future well-being more for more “forward looking” individuals

TABLE A11: TEST OF PREDICTION 4

VARIABLES	(1)	(2)	(3)	(4)
	Future ladder		Ladder difference	
<i>Panel A: Interaction with Age</i>				
Job creation rate	1.071 (0.207)	0.949 (0.221)	-0.005 (0.347)	-0.343 (0.369)
Job creation × Age	0.024 (0.014)	0.028 (0.016)	0.023 (0.015)	0.027 (0.015)
Age	-0.0328 (0.003)	-0.0350 (0.003)	0.0621 (0.004)	0.0562 (0.004)
Additional MSA controls		x		x
Individual controls	x	x	x	x
Year and Month F.E.	x	x	x	x
Observations	544,228	450,908	543,817	450,554
R-squared	0.094	0.095	0.071	0.071
<i>Panel B: Interaction with Education</i>				
Job creation rate	1.033 (0.209)	0.919 (0.222)	-0.0343 (0.355)	-0.346 (0.376)
Job creation × Education	0.137 (0.072)	0.181 (0.080)	0.242 (0.104)	0.290 (0.110)
Education	0.0595 (0.013)	0.0535 (0.015)	-0.0201 (0.019)	-0.0263 (0.021)
Additional MSA controls		x		x
Individual controls	x	x	x	x
Year and Month F.E.	x	x	x	x
Observations	544,228	450,908	543,817	450,554
R-squared	0.093	0.094	0.068	0.068
<i>Panel C: Interaction with Income</i>				
Job creation rate	1.094 (0.208)	0.967 (0.222)	-0.0189 (0.351)	-0.357 (0.372)
Job creation × Log income	0.557 (0.177)	0.655 (0.192)	0.836 (0.264)	1.031 (0.263)
Log income	0.224 (0.030)	0.200 (0.033)	-0.212 (0.041)	-0.245 (0.045)
Additional MSA controls		x		x
Individual controls	x	x	x	x
Year and Month F.E.	x	x	x	x
Observations	544,228	450,908	543,817	450,554
R-squared	0.093	0.094	0.070	0.070



Discussion

- ▶ In light of the Schroder and Yitzhaki (2017) paper, how much do you trust these empirical results?
- ▶ Are any of these results surprising to you?
- ▶ Do you have any external validity concerns?