CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

DOES SOCIAL SECURITY SERVE AS AN ECONOMIC STABILIZER?

Laura D. Quinby, Robert Siliciano, and Gal Wettstein

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Center for Retirement Research at Boston College
Hovey House
140 Commonwealth Avenue
Chestnut Hill, MA 02467
Tel: 617-552-1762 Fax: 617-552-0191
https://crr.bc.edu

All of the authors are with the Center for Retirement Research at Boston College. Laura D. Quinby is a senior research economist, Robert Siliciano is a research economist, and Gal Wettstein is a senior research economist. The research reported herein was pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Retirement and Disability Research Consortium (RDRC). The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the federal government, or Boston College. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the contents of this report. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply endorsement, recommendation or favoring by the United States Government or any agency thereof.

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Abstract

In times of economic distress, both individuals and localities can benefit from stable sources of income. While a large literature documents the benefits that individuals enjoy from guaranteed income such as Social Security, less attention has been given to the stabilizing force of Social Security at the community level. Intuitively, if many people are insulated from recessions through stable Social Security income, they will continue to demand local goods and services, propping up local employment and earnings. This paper uses the *American Community Survey* to estimate the extent to which Social Security benefits stabilize local economies, by examining how the relationship between a county's economic outcomes and those of its surrounding counties vary with the share of county income from Social Security.

The paper found that:

- Earnings and employment fluctuations in counties with larger shares of income from Social Security were less correlated with the state's unemployment rate than counties where Social Security made up a small share of income.
- In counties with more Social Security income, employment and earnings in industries that sell locally were also less correlated with the state's unemployment rate.

The policy implications of the findings are:

- Social Security may be valuable as a stabilizer for the local economy, above and beyond its direct value to beneficiaries.
- Therefore, changes to benefit generosity and structure may have implications for the robustness of local labor markets, particularly in industries that cater to local demand.

Introduction

In times of economic distress, both individuals and localities can benefit from stable sources of income. A large literature documents the benefits that individuals enjoy from guaranteed income such as Social Security.[1] Less attention has been given to the stabilizing force of Social Security at the community level.[2] That is, if many people are insulated from recessions through stable Social Security income, they will continue to demand local goods and services, propping up local employment and earnings.[3] Thus, Social Security may help mitigate the harm done by recessions.

This project uses data from the *American Community Survey* and *Decennial Censuses* to estimate the moderating effect of Social Security benefits on local economies during the business cycle. Specifically, regression analysis relates a county's employment and earnings to its state's unemployment rate (excluding the county in question), allowing for this relationship to vary with the share of county income from Social Security benefits.[4]

The analysis finds that a higher share of income from Social Security benefits is associated with more stability. Specifically, Social Security income is associated with a weaker relationship between the county's employment and earnings and unemployment in surrounding counties. All industries that sell to local consumers see similar stabilization patterns.

Distinguishing the effects of OASI income from those of a merely larger retiree population is difficult, since the two are so closely related. However, this distinction is important in light of the rapidly aging U.S population and recent work demonstrating that older populations are associated with slower economic growth (Maestas, Mullen, and Powell 2016). Decomposing the effect into these two channels nevertheless suggests that the number of retirees, rather than the generosity of benefits, is associated with the increased stability. Hence, while older localities may experience slower growth, they nevertheless benefit from more moderate business cycles.

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[1] For example, see Mitchell et al. (1999), Munnell, Wettstein, and Hou (2019), and Wettstein et al. (2021).
[2] Ghilarducci, Saad-Lessler, and Fisher (2012) compare the stabilizing effect of Social Security to 401(k)s in terms of how much they offset GDP growth. Konig and Myles (2013) analyze the "fiscal multiplier" of Social Security benefits through a microsimulation model and find it to be around $2.
[3] For example, see Fishback and Kachanovskaya (2010), Shoag (2010), Chodorow-Reich et al. (2012), Nakamura and Steinsson (2014), and Serrato and Wingender (2016). Furthermore, the magnitude of Social Security benefits is larger relative to the average local income where income is lower, due to the progressivity of benefits.
[4] This measure of leave-out state unemployment is distinct from other notions of stability, such as the total variance of income or the size of the local multiplier. Throughout this paper, we use "stability" as shorthand for a low correlation in business cycles with surrounding counties.

The rest of the paper proceeds as follows. The first section describes a well-developed literature on the stabilizing role that various social insurance programs – particularly unemployment insurance – play during recessions. The second and third sections discuss the data and methodology used for the empirical analysis. The fourth section presents regression results on the relationship between county business cycles and the share of county income coming from Social Security. The final section concludes that counties with higher shares of Social Security income are associated with more macroeconomic stability.

Background

Many government programs prop up local economies during recessions. Some, like unemployment insurance (UI), pay benefits to individuals who are directly hurt by the economic downturn. Others – like the 2008 tax rebates during the Great Recession or the COVID-19 economic impact payments – provide financial assistance to all households regardless of need, with the intent of stimulating demand that will in turn create new jobs.[5] Underlying all these policies is the notion that each dollar of government spending will boost the economy by an amount known as the "fiscal multiplier" where the demand generated by a spending increase creates additional spending by the supplier.[6]

To what degree these different programs actually succeed at stabilizing the economy remains a subject of intense interest. Understandably, a large literature on this topic focuses on policies that are means-tested or explicitly counter-cyclical – such as UI or the Supplemental Nutrition Assistance Program (SNAP) – as well as those enacted in response to major recessions (such as the American Recovery and Reinvestment Act of 2009 or the recent rounds of COVID-19 relief).[7]

Less often discussed is the role that a consistent, steady source of income provides. Social Security provides a stable stream of benefits to older adults and people with disabilities through three programs: Old-Age and Survivors Insurance (OASI); Supplemental Security Income (SSI); and Disability Insurance (SSDI). This paper focuses on benefits for older adults

[5] Transfers to vulnerable groups is another such motive that is generally beyond the scope of this paper. Targeted transfers are a primary motivation for Social Security, rather than macroeconomic stabilization.
[6] For an example of this line of thinking, Furman and Summers (2020) argue that policymakers should take advantage of current low interest rates to boost the economy through deficit spending.
[7] For recent examples, see Bitler, Hoynes, and Iselin (2020); Bitler, Hoynes, and Kuka (2017); Di Maggio and Kermani (2016); Moffitt (2013); Chodorow-Reich et al. (2012); Conley and Dupor (2012); and Wilson (2012).

because they constitute 81 percent of Social Security's outlays, and also because DI and SSI payments are known to respond to the business cycle.[8] Social Security benefits are generally left out of studies on automatic stabilizers, since OASI is largely acyclical, rather than counter-cyclical.[9]

OASI benefits do not depend on the concurrent state of the local labor market. The benefits replace a percentage of average wage-inflation-adjusted pre-retirement earnings, with a progressive replacement rate.[10] Since benefits are paid as an inflation-indexed annuity, retirees are guaranteed a basic real income regardless of macroeconomic conditions.

This paper explores whether counties with a larger share of income from Social Security have less severe business cycles than other counties in the state. The next section describes the data and empirical methodology used to test the hypothesis.

Data

This project uses the *Decennial Census* and *American Community Survey* (ACS) to study the interaction of macroeconomic fluctuations and Social Security benefits by county. The long-form Decennial Census and – since 2005 – the ACS both survey a representative subset of U.S. households to collect information about labor market outcomes and demographics. This analysis uses the ACS for the years 2005-2018, and the *Decennial Censuses* from 1990 and 2000.

We aggregate individual-level data up to the county level to construct the sample. County-level unemployment, employment, and earnings are constructed from current individual employment status and earnings for residents ages 18 to 65.[11] OASI benefits are calculated as any income from Social Security when the beneficiary is at least 62, the early claiming age.[12] In contrast to earned income, the analysis retains Social Security income at the previous year's

[8] See https://www.ssa.gov/ssi/text-understanding-ssi.htm for details on the SSI program. Individuals with disabilities are also sometimes eligible for SSI benefits.
[9] See McKay and Reis (2016).
[10] Specifically, the Primary Insurance Amount replaces a fraction of Average Indexed Monthly Earnings, which adjusts past earnings for wage inflation and averages over the work life, capped at the taxable maximum.
[11] For county-level earned income, we use the next year's value because the ACS asks about respondents' income in the previous year. Similarly, real county income is deflated using the Consumer Price Index from the previous year before being averaged.
[12] This approach is similar to Munnell, Soto, Triest and Zhivan (2008). The ACS measures total income from all Social Security programs; however, the vast majority of Social Security expenditures for beneficiaries 62 and over are for OASI.

level, as new beneficiaries may have responded to economic conditions and deceased beneficiaries do not appear in the next year's survey.

Our analysis restricts the sample to counties identified in the ACS or the Census public microdata files. Some counties – particularly those with low populations – are incorporated in geographic units that span multiple counties and therefore are not included in the analysis. Identifiable counties are included whenever they appear, which may not cover all the years in the sample. Each year our sample covers around 12 percent of U.S. counties, which contain around 60 percent of the U.S. population.

Additionally, we drop the oldest 5 percent of counties to remove retirement destinations. Almost all of these counties are located in Florida, though half of the identified Florida counties remain. Retirement communities may behave differently from other counties for two reasons. First, the local economy targets retirees and therefore tends to have a quite different economy from a county with a mixed-age population. Second, the pre-retirement income of the retirees is unrelated to the income of current workers, limiting the ability to interpret benefits through a replacement rate lens.

State-level unemployment is aggregated directly from the individual-level data, rather than the county-level sample. Individuals in the Census and ACS who are not matched to a county are all still matched to the state, and therefore included in the state-level employment statistics. Hence, the state's unemployment level is properly observed, even though not every county in a given state appears in our county-level dataset. For each county, we calculate the unemployment rate in the remainder of the state, subtracting the county's labor force and employment from the state's.

Two measures of a county's macroeconomic state are used: the county's employed population and the log of earned income of that county. Employment and earnings are used rather than the unemployment rate and per-capita income to remove any bias that might arise from migration effects. Specifically, research has shown that workers – particularly younger workers – tend to move from counties with low income and high unemployment to counties with high income and low unemployment (Blanchard and Katz 1992). These migrations would bias the estimates of stabilization from Social Security income downward when using per capita measures. Table 1 displays descriptive statistics for the main variables in the analysis.

Methodology

Regression analysis is conducted relating a county's macroeconomic performance, relative to its state, to the share of income in that county coming from Social Security and various controls. The main analysis is based on OLS regressions of the following form:

$$y_{c,t} = \beta_0 + \beta_1 U_{s-c,t} + \beta_2 \bar{Y}_c + \beta_3 SSS_{c,t} + \beta_4 \left(U_{s-c,t} * SSS_{c,t}\right) + \beta_5 \left(U_{s-c,t} * \bar{Y}_c\right) + \boldsymbol{\beta_6 X_{c,t}} + \sigma_c + \tau_t + \varepsilon_{c,t}, \quad (1)$$

where $y_{c,t}$ is the macroeconomic outcome for county *c* in year *t*. As noted, this outcome is alternatively the number of employed workers ages 18 to 65 or the log of total earnings for workers ages 18 to 65.

$U_{s-c,t}$ is the unemployment rate of state *s* in year *t*, excluding county *c* to avoid state unemployment being driven by county-level outcomes.[13] $SSS_{c,t}$ is the Social Security share of county income for county *c* in year *t*, and $\bar{Y}_c$ is the average real earned income in county *c* in logs over all years.

Additional controls are included in $\boldsymbol{X_{c,t}}$, a vector of time-varying county characteristics, such as educational attainment of the working-age population, the share of foreign-born workers, and the racial composition of the workforce. Lastly, the regression contains a vector of year fixed effects, τ_t, and county fixed effects σ_c.

Standard errors for this analysis are clustered at the county level, and observations are weighted by county-year population. Some specifications also include the interaction between the Social Security share and a linear time trend, $SSS_{c,t} * t$, controlling for possible differing growth rates in older counties.[14]

The coefficient β_4 represents whether Social Security income is associated with a more or less stable business cycle. Together, we measure the macroeconomic sensitivity of county *c* to the macroeconomics conditions of the rest of state s by $\beta_1 + \beta_4 SSS_{c,t} + \beta_5 \bar{Y}_c$, capturing the total impact of $U_{s-c,t}$. An increase in unemployment in state *s* (excluding county *c*) by one percentage point is associated with an increase in employment in county *c* of $\beta_1 + \beta_4 SSS_{c,t} + \beta_5 \bar{Y}_c$ (under the employment specification) log points. Estimates closer to 0 (that is,

[13] Note that some reverse causality concerns remain. For example, an increase in earnings reduces the denominator of $SSS_{c,s,t}$. This concern is addressed in later specifications where the log of benefits is used.
[14] Maestas, Mullen, and Powell (2016).

larger) in either specification, employment or earnings, imply that county *c* is more stable than typical counties.

Industry-level Stabilization

To examine the channels of observed stabilization, our analysis turns to the macroeconomic stability of individual industries. Such stabilization would only show up for businesses, like retailers, that sell to local markets rather than businesses, like manufacturers, that export to national or international markets.

We group similar industries by their industry codes, and repeat our regression analysis for each industry group *i*:

$$y_{i,c,t} = \beta_{i,0} + \beta_{i,1}U_{s-c,t} + \beta_{i,2}\bar{Y}_c + \beta_{i,3}SSS_{c,t} + \beta_{i,4}\left(U_{s-c,t} * SSS_{c,t}\right) + \beta_{i,5}\left(U_{s-c,t} * \bar{Y}_c\right) + \boldsymbol{\beta_{i,6}X_{c,t}} + \sigma_{i,c} + \tau_{i,t} + \varepsilon_{i,c,t}, \quad (2)$$

where $y_{i,c,t}$ is the macroeconomic outcome for county *c* in year *t* within industry *i*. The two outcomes are total employed workers ages 18 to 65 in industry *i*, and the total earned income (in logs) of workers ages 18 to 65 in industry *i*. Compared to regression (1), all coefficients are industry-dependent even though variables, such as state unemployment $U_{s-c,t}$, Social Security income share $SSS_{c,t}$, average county income $\bar{Y}_c$, the controls, and fixed effects, remain unchanged.[15]

Stabilization Across the Business Cycle

This analysis tests whether the stabilization of OASI benefits differed between the Great Recession and the surrounding expansions. Stabilization may differ between recessions, where it means fewer people lose their jobs, and expansions, where it means slower growth. To decompose the main effect into these two channels, we introduce an indicator r_t denoting whether the year is 2007, 2008, 2009, or 2010, which interacts with the Social Security income share and average county income. The business cycle analysis uses an OLS regression of the following form:

[15] Both the Social Security income share $SSS_{c,t}$ and average county income $\bar{Y}_c$ are demeaned, which allows the coefficient $\beta_{i,1}$ on state unemployment $U_{s-c,t}$ to be interpreted as the stability of industry *i* in an average county.

$$y_{c,t} = \beta_0 + \beta_1 U_{s-c,t} + \beta_2 \bar{Y}_c + \beta_3 SSS_{c,t} + \beta_4 (\bar{Y}_c * r_t) + \beta_5 (SSS_{c,t} * r_t) + \beta_6 (U_{s-c,t} * SSS_{c,t}) + \beta_7 (U_{s-c,t} * \bar{Y}_c) + \beta_8 (U_{s-c,t} * SSS_{c,t} * r_t) + \beta_9 (U_{s-c,t} * \bar{Y}_c * r_t) + \boldsymbol{\beta_{10} X_{c,t}} + \sigma_c + \tau_t + \varepsilon_{c,t}. \quad (3)$$

In addition to county earnings and employment, $y_{c,t}$ represents earnings and employment without manufacturing in a second set of specifications.

The coefficient β_8 represents the difference in stabilization between the Great Recession and the surrounding expansions. A positive value of β_8 conveys that Social Security benefits have larger stabilization effects during a recession than during an expansion, while a negative value means any stabilizing benefits are concentrated in expansions. The coefficient β_6 represents the stabilization from Social Security income in the expansions.

Decomposition of the Stabilization

The value of Social Security income in a county is mechanically determined by two factors: the share of retirees in the local population and the benefits received by those retirees. Because of the progressivity of the benefit formula, individuals in lower-income counties receive a higher average replacement rate from Social Security (Munnell, Soto, Triest and Zhivan 2008). This replacement rate pattern could lead to the benefits themselves having an independent effect. To decompose the stabilization effect of Social Security into share of retirees in the population, on the one hand, and benefit levels on the other, we estimate a second set of regressions.

First, this analysis repeats the main regression (1) with a different measure of county-level Social Security income.

$$y_{c,t} = \beta_0 + \beta_1 U_{s-c,t} + \beta_2 \bar{Y}_c + \beta_3 \log(OASI_{c,t}) + \beta_4 (U_{s-c,t} * \log(OASI_{c,t})) + \beta_5 (U_{s-c,t} * \bar{Y}_c) + \boldsymbol{\beta_6 X_{c,t}} + \sigma_c + \tau_t + \varepsilon_{c,t}. \quad (4)$$

Compared to (1), this regression replaces the county income share from Social Security, $SSS_{c,t}$, with the logged total income from Social Security, log ($OASI_{c,t}$). The coefficient β_4 again captures the Social Security stabilization in the county.

The new measure, log ($OASI_{c,t}$), decomposes into the share of retirees and the average benefits per retiree, as given by the following identity.

$$\log(OASI_{c,t}) = \log(R_{c,t}) + \log\left(\frac{OASI_{c,t}}{R_{c,t}}\right),$$

where $R_{c,t}$ is the number of retirees in county *c* in year *t*.

The decomposition analysis proceeds with the following OLS regression:

$$y_{c,t} = \beta_0 + \beta_1 U_{s-c,t} + \beta_2 \bar{Y}_c + \beta_3 \log(R_{c,t}) + \beta_4 \log\left(\frac{OASI_{c,t}}{R_{c,t}}\right) + \beta_5 (U_{s-c,t} * \log(R_{c,t})) + \beta_6 \left(U_{s-c,t} * \log\left(\frac{OASI_{c,t}}{R_{c,t}}\right)\right) + \beta_7 (U_{s-c,t} * \bar{Y}_c) + \boldsymbol{\beta_8 X_{c,t}} + \sigma_c + \tau_t + \varepsilon_{c,t}. \quad (5)$$

Mechanically, the baseline comparison in regression (4) is just regression (5) with the conditions that $\beta_3 = \beta_4$ and $\beta_5 = \beta_6$. The stabilization effect from retirees is given by β_5, while the stabilization effect of more generous Social Security benefits is given by β_6.

Results

This section first tests for our measure of stabilization across both outcomes, employment and earnings, and discusses those results. Next, it estimates the equations for the two measures by industry groups. It then tests for a difference in stabilization between the Great Recession and the surrounding expansions. Finally, it decomposes the impact of Social Security income into benefit generosity and number of beneficiaries.

The Stabilizing Effects of Social Security Income

Table 2 reports the OLS results of regression (1), estimating the relationship between statewide unemployment and county-level macroeconomic variables, and how it varies with Social Security benefits as a share of county income. Columns 1 and 3 look at county employment while columns 2 and 4 use county earned income. Columns 3 and 4 include the Social Security income share interacted with a linear time trend as well. A one-percentage point increase in the share of a county's income from Social Security decreases the impact of a one-percentage point increase in the rest of the state's unemployment rate by 0.18 percent on county employment and 0.3 percent on county earned income (based on Columns 1 and 2, respectively). In both cases, a higher share of Social Security income is associated with more stability.[16]

[16] The stabilization on earnings may differ from the stabilization on employment through several channels. On one hand, when low-income workers are more likely to be laid off (or more likely to be hired) the marginal employed worker has lower income than the average employed worker. Hence, fluctuations in employment have smaller impacts on total earnings, leading to a lower stabilization estimate for the latter. On the other hand, earnings can also adjust when firms respond by cutting compensation rather than with layoffs (alternatively, when firms respond with bonuses and raises rather than new hiring). The earned income measure includes not only wages, which may be downwardly sticky, but also more cyclical factors such as bonuses, business income, commissions, and tips. The

Social Security income may be important in offsetting the instability of poor counties. In each specification in Table 2, higher county income is associated with higher county stability, whether on employment or earnings. Across all specifications, a one-percentage-point increase in real income decreases the impact of a one-percentage-point state unemployment shock by around 0.01 percentage points. These results suggest that the presence of retirees helps low-income counties maintain stable economies, in addition to providing them income.[17]

Estimates of the stabilization from Social Security are lower when including a time trend for the income share. From Maestas, Mullen, and Powell (2016), we hypothesized that old counties, defined here as those with higher shares of Social Security income, would grow more slowly. At the same time, given the years in our sample, unemployment rates broadly decrease from the peak of the Great Recession in 2010 to the end of the sample. The main specification may pick up this relationship in the stabilization estimates (columns 1 and 2). When the time trend is introduced, the impact on earnings remains significant, but the impact on employment loses significance.

The Stabilization Effects of Social Security Income by Industry

Table 3 presents the results of OLS regression (2) for employment and Table 4 presents the results of regression (2) for earnings, each broken down by industry groups. The financial services category includes real estate, banking and, insurance. The other services category contains local services such as salons, car repair, and dry cleaning. Manufacturing is excluded because demand for manufactured goods is not necessarily local.

Industries that sell locally all appear similarly stabilized by the presence of Social Security income. Such industries include construction (1), retail and entertainment (2), healthcare (3), education (4), financial services (5), and other services (6). The results show that a one-percentage-point increase in the income share of Social Security reduces the impact on employment and earnings of a one-percentage-point increase in state unemployment by approximately 0.3 percentage points across industries. The stabilization persists even across industries which are inherently more or less stable. For example, education is very stable in

extent to which Social Security income stabilizes these factors raises the stabilization on earnings above the stabilization on employment.

[17] Similar results obtain when the unit of analysis is state, and the prevailing unemployment rate is given by the leave-one-out unemployment of the Census region. See Appendix.

response to unemployment shocks while construction is the most unstable sector. However, both are similarly stabilized by Social Security income. Overall, these results are consistent with a story where the stability of Social Security income leads to more stable demand from retirees.

Stabilization Effects in Booms versus Busts

This section reports the difference in stabilization across recessions and expansions, which determines the character of the marginal workers. In recessions, the marginal employment decision is whether or not to fire a worker. In expansions, the marginal employment decision is whether or not to hire an additional worker.

Table 5 shows the results of OLS regression (3) which interacts the stabilization variables with a dummy for the Great Recession (years 2007-2010). The stabilizing effect of Social Security looks quite similar during the recession and the expansion. However, bisecting the sample into two periods leads to a loss of statistical significance.[18] On the other hand, when removing manufacturing from the employment and earnings variables in columns 3 and 4 respectively, the stabilization results return to statistical significance.[19] Again, the impact during recession and expansion is virtually identical.

Decomposing the Stabilization Effect: Age versus Benefit Generosity

This section examines two components of a county's Social Security income: the number of beneficiaries and the amount each beneficiary receives in OASI benefits. For this decomposition, we first replace the county's share of Social Security income with the log of total Social Security income. Note that the control for log average real income makes the total similar to the share, because it holds constant the denominator of the share.

Table 6 shows the results of this functional form change. Both Social Security income and total income are associated with more stabilization. Controlling for time trends based on Social Security income share reduces the estimates of the stabilizing effect from Social Security; however, the effect is still significant for both earnings and employment.

[18] The regressions in Table 5 all include the income share of Social Security-based time trend. Results without this control are shown in Table A.1.
[19] When estimated only on manufacturing, OASI share seems *destabilizing*.

Table 7 shows the results of the decomposition into the population share of those at least 62 years old, and the share of benefits per person for this group.[20] In all four columns, the impact of a county's population ages 62 and older is stabilizing and statistically significant. A one-percentage-point increase in the age 62+ population share reduces the impact of a one-percentage-point increase in state unemployment on employment by 0.01 percentage points and on earnings by 0.03 percentage points.

The amount of benefits per eligible person, however, has no statistically significant stabilization effect. Were it only the total amount of money from Social Security that stabilized an economy, the stabilization coefficients β_5 and β_6 would be equal, and both benefit generosity and eligible population would have equal stabilization effects. But, they are clearly different.[21]

Conclusion

Conceptually, the stable nature of Social Security benefits insulates recipients from macroeconomic conditions on a personal level. Workers whose income and employment depends on the local job market may reduce their spending in response to negative shocks, lowering demand for goods and services in a given county. However, retirees have no such fluctuations in their OASI benefits and may maintain local spending regardless of economic conditions. At a macro-finance level, the Social Security OASI program smooths national income by providing stable spending with cyclical borrowing. The payroll tax financing implicitly borrows from expansions to spend more in recessions at a national level, and borrows from counties in a relative boom to spend in counties in a relative bust.

This study shows evidence that a county's share of Social Security income is associated with a relatively smaller relationship between the macroeconomic fluctuations in a given county and the remainder of its state. Furthermore, in industries where demand is local – such as retail, healthcare, and entertainment – employment and earnings were similarly stabilized by a higher share of Social Security benefits in total county income. This stabilization was statistically indistinguishable between the Great Recession, when the employment margin was fewer firings, and the surrounding expansions, when the employment margin was hiring.

[20] Due to data limitations, we measure beneficiaries by eligibility, rather than their actual claiming date, which can be later than 62.

[21] Retirees may stabilize local demand due to other non-labor income besides OASI benefits, such as pensions and other savings. Neither would be impacted by local labor demand shocks.

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Table 1. *Summary Statistics*

	Mean	S.D.	Min	Median	Max	N
County total employed	755,313	1,029,203	35,678	390,553	4,825,467	6,556
County total earned income (in millions)	$40,554	$53,725	$1,260	$20,822	$279,830	5,369
State avg. unemployment (%)	5.00	2.00	2.00	5.00	11.00	6,539
County share OASI income	0.05	0.02	0.01	0.05	0.21	6,556
Share white	0.69	0.16	0.15	0.70	0.99	6,556
Share high school graduate or higher	0.65	0.06	0.31	0.66	0.84	6,556
Share foreign born	0.17	0.11	0.00	0.15	0.49	6,556
Share over 66	0.12	0.03	0.03	0.12	0.36	6,556

Source: Authors' estimates from the *American Community Survey*.

Table 2. *Relationship Between OASI Income/Total Income and Stability of Earnings and Employment*

	Main specification		OASI-time controls	
	(1)	(2)	(3)	(4)
	Employed	Earnings	Employed	Earnings
State unemployment	- 0.14***	- 0.13***	- 0.12***	- 0.11**
	(0.03)	(0.05)	(0.04)	(0.05)
County share OASI income	-3.29***	-5.91***	264.16***	390.50***
	(0.77)	(0.82)	(78.04)	(92.78)
State unemployment X county share OASI income	**0.18*** **	**0.30*** **	**0.07**	**0.12** **
	(0.05)	(0.07)	(0.05)	(0.06)
State unemployment X (log) avg. real total income	0.01***	0.01**	0.01***	0.01*
	(0.00)	(0.00)	(0.00)	(0.00)
Year X county share OASI income			-0.13***	-0.20***
			(0.04)	(0.05)
Constant	12.86***	24.04***	12.57***	23.83***
	(0.20)	(0.16)	(0.21)	(0.16)
Foreign born	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes
R-squared	1.00	1.00	1.00	1.00
Observations	6,539	5,355	6,539	5,355

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the *American Community Survey*.

Table 3. *Relationship Between OASI Income/Total Income and Employment Stability, by Industry*

	(1)	(2)	(3)	(4)	(5)	(6)
	Construction	Entertainment and retail	Health care	Education	Finance and insurance	Other services
State unemployment	- 0.06***	-0.00	-0.00	0.00	-0.02***	-0.01**
	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
County share OASI income	-6.00***	-2.59***	-1.66*	-3.16***	-2.55**	-3.08***
	(1.03)	(1.00)	(0.98)	(0.87)	(1.12)	(0.93)
State unemployment X county share OASI income	**0.19**	**0.18****	**0.28*****	**0.24*****	**0.17**	**0.21*****
	(0.13)	(0.08)	(0.07)	(0.08)	(0.11)	(0.07)
State unemployment X avg. real total income	0.03***	0.02**	0.02***	0.01	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Constant	10.09***	10.58***	10.41***	10.33***	10.16***	11.00***
	(0.28)	(0.21)	(0.25)	(0.19)	(0.30)	(0.21)
Foreign born	Yes	Yes	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
County share OASI X year	No	No	No	No	No	No
R-squared	0.99	0.99	0.99	0.99	0.99	1.00
Observations	6,539	6,539	6,539	6,539	6,539	6,539

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the *American Community Survey*.

Table 4. *Relationship Between OASI Income/Total Income and Earnings Stability, by Industry*

Variables	(1) Construction	(2) Entertainment and retail	(3) Health care	(4) Education	(5) Finance and insurance	(6) Other services
State unemployment	-0.65***	-0.33**	-0.01	0.00	-0.02***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
County share OASI income	-10.78***	-5.59***	-4.84***	-6.66***	-8.08***	-8.91***
	(1.46)	(1.44)	(1.11)	(1.07)	(1.38)	(1.35)
State unemployment X county share OASI income	**0.38****	**0.38**	**0.20****	**0.37*****	**0.36*****	**0.36*****
	(0.16)	(0.24)	(.09)	(0.10)	(0.11)	(0.10)
State unemployment X (log) avg. real total income	0.03**	0.02	0.01	0.00	.02*	0.00
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	20.58***	19.28***	21.47***	21.04***	20.88***	21.77***
	(0.36)	(0.41)	(0.29)	(0.21)	(0.24)	(0.26)
Foreign born	Yes	Yes	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
County share OASI X year	No	No	No	No	No	No
R-squared	0.98	0.98	0.99	0.99	0.99	0.99
Observations	6,539	6,539	6,539	6,539	6,539	6,539

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the *American Community Survey*.

Table 5. *Relationship Between OASI Income/Total Income and Stability of Earnings and Employment during the Great Recession*

	All industries		No manufacturing	
	(1)	(2)	(3)	(4)
	Employed	Earnings	Employed	Earnings
State unemployment	-0.14***	-0.11**	-0.16***	-0.12**
	(0.04)	(0.05)	(0.04)	(0.06)
State unemployment X recession	0.03	-0.01	0.03*	0.00
	(0.02)	(0.03)	(0.02)	(0.03)
County share OASI income	260.13***	381.72***	272.31***	368.47***
	(78.87)	(93.23)	(74.71)	(95.87)
County share OASI income X recession	0.52	-0.16	0.38	0.04
	(0.41)	(0.45)	(0.43)	(0.49)
State unemployment X county share OASI income	**0.09**	**0.08**	**0.15****	**0.14****
	(0.06)	(0.07)	(0.06)	(0.07)
State unemployment X (log) avg. real total income	0.01***	0.01*	0.01***	0.01*
	(0.00)	(0.00)	(0.00)	(0.01)
State unemployment X county OASI income X recession	-0.08	0.07	-0.04	0.08
	(0.06)	(0.08)	(0.06)	(0.08)
State unemployment X (log) avg. real total income X recession	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Year X county share OASI income	-0.13***	-0.19***	-0.14***	-0.19***
	(0.04)	(0.05)	(0.04)	(0.05)
Constant	12.58***	23.84***	12.35***	23.76***
	(0.21)	(0.15)	(0.20)	(0.15)
Foreign born	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes
County share OASI X year	Yes	Yes	Yes	Yes
R-squared	1.00	1.00	1.00	1.00
Observations	6,539	5,355	6,539	5,355

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. *Source:* Authors' estimates from the *American Community Survey*.

Table 6. *Relationship Between OASI Income/Total Income and Stability of Earnings and Employment without and with Time Trend*

	Main specification		OASI-time control	
	(1)	(2)	(3)	(4)
	Employed	Earnings	Employed	Earnings
State unemployment	-0.12***	-0.10**	-0.12***	-0.14***
	(0.03)	(0.04)	(0.03)	(0.04)
OASI income (log)	-0.09**	-0.30***	15.97***	31.19***
	(0.04)	(0.05)	(3.89)	(5.26)
State unemployment X OASI income (log)	**0.01*** **	**0.02*** **	**0.01** **	**0.01*** **
	(0.00)	(0. 00)	(0. 00)	(0. 00)
State unemployment X (log) avg. real total income	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0. 00)	(0. 00)
Year X county share OASI income			-0.01***	-0.02***
			(0.00)	(0.00)
Constant	12.33***	22.79***	12.28***	23.31***
	(0.20)	(0.19)	(0.20)	(0.20)
Foreign born	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes
R-squared	1.00	1.00	1.00	1.00
Observations	6,539	5,355	6,539	5,355

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the *American Community Survey*.

Table 7. *Relationship Between Share of Population 62+ and Benefit Amount and Stability of Earnings and Employment*

	Main specification		OASI-time control	
	(1)	(2)	(3)	(4)
Variables	Employed	Earnings	Employed	Earnings
State unemployment	-0.07	0.17**	-0.10	0.08
	(0.09)	(0.08)	(0.09)	(0.07)
Share 62+ (log)	-0.02	-0.30***	0.25**	0.31***
	(0.07)	(0.08)	(0.10)	(0.10)
State unemployment X share 62+	**0.01*** **	**0.03*** **	**0.01*** **	**0.03*** **
	(0.00)	(0.01)	(0.00)	(0.00)
Log total OASI per-capital 62+	-0.01	0.05	0.23**	0.55***
	(0.06)	(0.06)	(0.10)	(0.07)
State unemployment X log total OASI per-capital 62+	**0.01**	**-0.01**	**0.01**	**-0.00**
	(0.01)	(0.01)	(0.01)	(0.01)
State unemployment X (log) avg. real total income	0.00	-0.01*	0.00	-0.00
	(0.00)	(0. 00)	(0. 00)	(0. 00)
Year X county share OASI income			-0.00***	-0.00***
			(0.00)	(0.00)
Constant	12.57***	22.60***	10.30***	17.87***
	(0.60)	(0.52)	(0.94)	(0.64)
Foreign born	Yes	Yes	Yes	Yes
Race	Yes	Yes	Yes	Yes
Education	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes
State-year fixed effects	No	No	No	No
R-squared	1.00	1.00	1.00	1.00
Observations	6,539	5,355	6,539	5,355

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the *American Community Survey*.

Appendix

State-Level Analysis

For robustness, we repeat the main analysis at the state level, rather than the county level. Rather than looking at the containing state's macroeconomic conditions, this analysis uses the containing Census region *r*'s macroeconomic conditions. For this analysis, the following regression is estimated:

$$y_{s,t} = \beta_0 + \beta_1 U_{r-s,t} + \beta_2 \bar{Y}_s + \beta_3 SSS_{s,t} + \beta_4 \left(U_{r-s,t} * SSS_{s,t}\right) + \beta_5 \left(U_{r-s,t} * \bar{Y}_s\right) + \boldsymbol{\beta_6 X_{s,t}} + \sigma_s + \tau_t + \varepsilon_{s,t}, \quad (6)$$

where $y_{s,t}$ is the macroeconomic outcome for state *s* in year *t*, measuring, alternatively, the number of employed workers ages 18 to 65 or log total labor earnings for workers ages 18 to 65. $U_{r-s,t}$ is the unemployment rate of Census region *r* in year *t*, excluding state *s* to avoid regional unemployment being driven by state-level outcomes. $SSS_{s,t}$ is the Social Security share of state income for state *s* in year *t*, and $\bar{Y}_s$ is the average real earned income in state *s* over the sample, in logs. $\boldsymbol{X_{s,t}}$, is a vector of time-varying state characteristics, such as educational attainment of the working-age population, the share of foreign-born workers, and the racial composition of the workforce. Lastly, the regression contains a vector of year fixed effects, τ_t, and state fixed effects σ_s. Standard errors for this analysis are clustered at the Census region level, and observations are weighted by state-year population. Earnings variables are nominal and logged so the year fixed effects absorb inflation. Similarly, year fixed effects absorb national-level population growth.

Table A1. *State-Region Results*

	(1)	(2)
	Employed (log)	Earnings (logs)
Region unemployment	-0.33	-0.38*
	(0.21)	(0.21)
State share OASI income	-4.02*	-8.46***
	(2.27)	(1.77)
Region unemployment X state share OASI income	**0.40**	**0.43***
	(0.26)	(0.23)
Region unemployment X (log) avg. real total income	0.03	0. 03*
	(0.02)	(0.02)
Constant	14.40***	25.91***
	(0.54)	(0.71)
Foreign born	Yes	Yes
Race	Yes	Yes
Education	Yes	Yes
Year fixed effects	Yes	Yes
State fixed effects	Yes	Yes
R-squared	1.00	1.00
Observations	833	686

Notes: Standard errors in parentheses. *** p<0.01, * p<0.1.
Source: Authors' estimates from the *American Community Survey*.

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