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Original Paper

Social Spending and Long-term Economic Performance in the US

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Abstract

In this paper, we study the effects of social spending on long-term economic performance in the USA from 1949 to 2019 using vector auto-regressive models. We break down social spending into six programs to identify the economic effects of different social programs. Overall, social spending has a positive impact on private saving but an adverse effect on the unemployment rate. Due to its dominant distortionary impact on the labor market, social spending decreases GDP. However, these effects are minimal and are primarily short-term. The economic implications of the different social spending programs on the economy are similar but different in magnitude. The impact of social security and medical care spending on GDP is not significant. In turn, the adverse effects of veteran benefits and unemployment insurance on GDP are dominated by the short-term impact. In contrast, the effects of public assistance are more evenly distributed, and the adverse effects of other social assistance are exclusively long-term. Overall, the message is that although social spending adversely affects economic performance, these effects are small and primarily short-term. As such, the quest for increased social protection and improved social welfare does not seem to come at a significant economic cost. This attests to the sustainability of such policies.

Keywords

Social Spending, Macroeconomic Effects, VAR Models, USA

1. Introduction

The share of social spending in total public spending in the United States has consistently increased over the last several decades. More recently, during the COVID pandemic, several public transfer schemes were introduced, and in its aftermath, the calls for increased social spending continue to dominate the political arena. Currently, President Biden's agenda, 'The Build Back Better Framework,' includes expanded social spending on childcare, eldercare, and healthcare as crucial components. Opponents of the plan note the dangers of increasing federal budget deficits or the tax burden on the economy regarding

long-term public budget solvency and economic performance. The focus of current political debates is on itself a recurring theme [for a similar debate at the turn of the century, see Feldstein & Samwick, 1997 and Gwartney, Holcombe, & Lawson, 1998, for example]. Currently, however, with the financial crisis that began in 2008 and the COVID pandemic, the magnitude of the underlying problems has dramatically increased.

Social spending provides crucial aid to vulnerable populations: for example, improving recipients' education and health outcomes, thereby improving the productivity of the whole population. Nevertheless, because social spending like social security and unemployment insurance is external to the market and mainly financed through a pay-as-you-go system, there is a pertinent question as to the inefficiencies such programs may cause in the capital and labor markets, and consequently, as to the potentially adverse effects on long-term economic performance. Overall, the relationship between social spending and aggregate economic performance is complex, and the empirical evidence is mixed. Arguments for social spending harming or boosting output coexist.

On the side that social spending negatively affects GDP, two primary arguments lay on its distortionary effects on the labor market. First, empirical analysis suggests that social spending decreases labor supply [see Ballard, 1990 and Conway, 1997, for example]. The specific reasoning relates to how people quit the labor market based on the social retirement benefits. For example, the age eligibility of social security and Medicare sets an artificial time for people to quit the labor market and creates a smaller working population [see Rust & Phelan, 1997; Mastrobuoni, 2009 and Seibold, 2021, for example]. In turn, social security motivates older workers to retire during economic downturns [see Coile & Levine, 2007, for example]. Second, social spending may increase the unemployment rate. Empirical study finds that extended unemployment insurance contributes to an increase in long-term unemployment [see Farber & Valletta, 2015, for example]. Indeed, it has been suggested that the relatively high long-term unemployment in European countries compared with the U.S. is due to the difference in welfare generosity [see Mortensen & Pessaries, 1999 and Marimon & Zlibotti, 1999, for example]. The adverse labor supply effects are most evident in the cases of unemployment insurance and workers' compensation [see Krueger & Meyer, 2002, for example].

Furthermore, social spending's distortionary effects lay on its financing mechanism. As in many developed countries, the U.S. social security and medical care are financed by a pay-as-you-go system. This system creates financial unsustainability concerns as it relies heavily on payroll taxes and generates an accumulated implicit debt [see Pereira & Andraz, 2015, for example]. Higher taxes to finance social spending decrease workers' disposable income and decrease private savings [see Feldstein, 1974, for example]. If the tax burden falls on producers, it increases the cost of labor, which discourages them from creating new jobs or even retaining the current ones. Thus, higher social spending may lead to labor and capital market distortions and adverse effects on economic performance [see Pereira & Andraz, 2015, for example].

Meanwhile, some arguments suggest that social spending may stimulate the economy. Firstly, social expenditures on health and retirement are counter-cyclical, so they are critical economic stabilizers [see Darby & Melitz, 2008, for example]. Secondly, social spending on health, education, and housing reduces poverty, which boosts productivity and increases human capital while at the same time reducing income inequality [see Barrientos, 2012 and Mayer, Lopoo, & Groves, 2016, for example]. As such, social spending has expansionary effects on GDP [see Furceri & Zdzienicka, 2012, for example]. Thirdly, social spending that promotes labor participation is associated with higher economic growth [see Blank, 2002 and Arjona, Ladaique, & Pearson, 2002, for example.]

Finally, some studies suggest that the relationship between social spending and GDP is too weak to draw conclusions because they cannot find a general pattern between the two variables across different countries or because the relationship between the two is not statistically significant [see Czech & Tusinska, 2016 and Cammeraat, 2020, for example.]

These two seemingly contradictory lines of thought and conclusions could be complementary. First, they suggest that social spending can affect the economy through multiple channels. Each channel transmits effects that can be negative or positive. However, it is still to be determined which effect is dominant. Second, they highlight that social insurance programs (like Social Security, Medicare, and unemployment insurance) and public assistance programs (food stamps, housing vouchers, and disaster relief) may have completely different effects on the economy because of the ways of financing and respective targeted populations.

The current literature mainly focuses on one aspect of social spending (social security, Medicare, unemployment insurance) or only on the aggregate level (social spending or public spending) and invariably on programs with relatively short time horizons. Very few studies holistically compare the effects of different social programs on long-term economic performance. It is necessary to fill this gap for two reasons. First, social spending is a broad term that includes a diverse body of policies. Second, the welfare system in the U.S. has undergone several reforms in the last century in response to social events and business cycles. Categorizing social spending as a whole may only yield limited results. Veteran benefits and unemployment insurance were two leading spending components in the mid-20th century due to the Roosevelt recession and World War II. Currently, with the demographic shift towards an aging population, social security, and medical care are the two major types of social spending within larger social expenditures, and the two components are expected to keep growing in the near future.

This paper focuses on the empirical evidence related to the interactions between social spending and economic performance in the long term using a relatively long time horizon, 1949-2019. Specifically, it analyzes empirically how social insurance spending programs affect GDP, unemployment, and private savings using vector autoregressive (VAR, hereafter) models. It considers aggregate social spending and six different subcategories (social security, unemployment insurance, veteran benefits, public assistance, medical care, and other social insurance) to identify the effects of various types of social spending on economic performance.

In terms of its scope, this paper is closely related to Furceri and Zdzienicka (2012), which breaks social spending into nine categories. It differs, however, in terms of the methodological approach. Focusing on dynamic effects, it provides a much longer time frame and investigates how different social spending affects not just GDP but also the capital and labor markets. In terms of its approach, this paper closely follows Pereira and Andraz (2015), which analyzes the long-term effects of social security spending in EU countries and the United States. This paper, however, extends the original dataset periods to account for the impacts of the 2008 financial crisis and breaks down social spending into six categories for a new disaggregated analysis. Using VAR methodology for disaggregate social spending analysis, this study investigates if different social benefits programs affect saving and labor markets differently.

In more general terms, this paper fits into the broader literature that uses the VAR approach to estimate fiscal multipliers. One persistent challenge in this field is to identify the effect of fiscal effects on GDP. Blanchard and Perotti (2002) first developed the technique of Cholesky decomposition to separate contemporaneous effects from long-term effects, while Pereira (2012) developed the analysis in the direction of studying the impacts of social spending and infrastructural spending. This is the approach followed in this paper. Meanwhile, other econometrics approaches were developed to estimate fiscal multipliers, such as the structural VAR approach [see Ramey, 2011; Leeper et al., 2013; Bouakez, Chihi, & Normandin, 2014, for example] and the narrative approach [see Ramey & Shapiro, 1988; Romer & Romer, 2010; Barro & Redlick, 2011 and Ramey, 2011, for example.]

The paper is organized as follows: Section 2 introduces the data sources and provides basic information about the data. Section 3 contains preliminary empirical analysis, including unit root and cointegration tests, the specification and estimations of the VAR models, and a discussion and presentation of the associated impulse-response functions. Section 4 provides a detailed analysis of the empirical effects of social spending on economic performance. It does so at the aggregate level and for different types of social spending. It considers the intertemporal and short-term nature of the results. Finally, Section 5 provides summary and concluding remarks.

2. Data Sources and Stylized Facts

2.1 The Aggregate Data

In this paper, we consider private savings as the indicator for changes in financial markets, the unemployment rate as the indicator for changes in the labor market, and GDP as a measure of economic performance. Social spending includes a variety of programs, as will be detailed below. All observations are annual and cover the period from 1948 to 2019. Data are obtained from the National Income and Product Accounts (2021) database from the Bureau of Economic Analysis [NIPA-BEA, hereafter]. The dataset provides nominal values, which we converted into real terms using the GDP deflator, also obtained from NIPA-BEA, and 2012 as the base year. In turn, the unemployment rate, measured as a percent of the labor force, is from the Bureau of Labor Statistics (2021).

Table 1. Descriptive Statistics for Social Spending and Economic Performance

Mean by decades	1950s	1960s	1970s	1980s	1990s	2000s	2010s	Total
Social Spending (% GDP)	3.68	4.96	8.29	9.52	10.83	11.77	14.48	8.93
Private Saving (% GDP)	10.66	11.95	12.16	9.91	7.81	6.13	9.10	9.68
Level (billions of dollars)								
Social Spending	1.02	2.04	4.84	7.41	11.54	17.13	24.89	9.84
Private Saving	2.96	4.89	7.03	7.64	8.26	8.86	15.60	7.73
Unemployment Rate (%)	4.51	4.78	6.24	7.28	5.76	5.54	6.24	5.74
GDP	27.68	40.72	57.99	78.04	106.61	144.88	172.07	87.81
Growth Rate								
Social Spending	6.03	7.59	7.57	3. 80	4.40	5.52	2.18	5.38
Private Savings	6.01	4.75	3.58	0.37	0.60	8.12	3.83	3.65
Unemployment Rate	4.50	-3.88	7.52	-0.08	-1.79	10.06	-8.67	1.93
GDP	4.25	4.52	3.24	3.12	3.23	1.92	2.25	3.16

Sources: U.S. Bureau of Economic Analysis, Bureau of Labor Statistics

In Table 1, we present summary statistics for these variables. Social spending accounts, on average, for 8.9% of GDP for the sample period. In the 1950s, social welfare programs started and represented just 3.7% of the GDP. Social spending grew rapidly in the following decades. By the 2010s, it accounted for 14.5% of GDP. In turn, on average, private savings account for 9.7% of GDP. The share of private savings to GDP was 10.7% in the 1950s, and it gradually dropped to 6.1% in the 2000s, only to increase again to 9.1% by the 2010s. The unemployment rate was at its lowest point in the 1950s, at 4.5%, and peaked in the 1980s at 7.3%. The average unemployment rate for the sample period is 5.7%. Finally, the GDP growth rate for the sample period is 3.2%. However, the growth rate was above 4.0% before the 1970s and dropped to around 2.0% after the 1990s.

2.2 Breakdown of Social Spending

Data on social spending are from Table 3.12 of the NIPA-BEA database and include federal and state/local expenditures. We consider six categories of social benefits based on functionality and the nature of financing: social security, medical care, veteran benefits, unemployment insurance, public assistance programs, and other social insurance. See Table 2 for details of what is included in each category and Table 3 for summary statistics.

Table 2. Social Benefits Expenditure by Type

Main Category	Federal Distribution	State and Local Distribution	Funding Sources
Social Security	Social Security		Federal Payroll Tax
Medical Care	Medicare	Medicaid and other medical care	Federal Payroll Tax, Medicare Premium
Veteran Benefits	Pension and disability; readjustment; other		Annual appropriations bill through Congress
Unemployment Insurance	For state, railroad, and federal employees. emergency unemployment compensation		Federal and State Payroll Tax
Public Assistance	Supplemental Nutrition Assistance Program Black lung benefits Supplemental security income Direct Relief Refundable tax credits Other[1]	Family assistance Supplemental security income General assistance Energy assistance Education Employment and training Other[2]	Mainly through Federal annual congressional appropriations, but some programs are financed through specific taxation and administrate by the state. For example, Black Lung Benefits are financed through taxation on coal and mine industry
Other Social Insurance Expenses	Railroad Retirement Pension benefit guaranty Veteran life insurance Workers' compensation Military medical insurance	Temporary disability insurance Workers' compensation	The main category---works' compensation benefits is typically issued to employers and administrated by state government. Federal and state collaboration is involved.

Source: U.S. Bureau of Economic Analysis

Notes.

1. Consists largely of payments to nonprofit institutions; aid to students; payments for medical services for retired military personnel and their dependents at nonmilitary facilities; disaster relief; workers' compensation benefits for federal employees (FECA); Payments from the September 11 Victims' Compensation Fund; additional unemployment benefits, COBRA premium subsidies, and one-time payments to recipients of Social Security, SSI, Veterans Pensions, and Railroad Retirement benefits established by the American Recovery and Reinvestment Act of 2009; and health insurance co-payment and cost-sharing benefits established by the Patient Protection and Affordable Care Act.

2. Consists of expenditures for food under the supplemental program for women, infants, and children; foster care; adoption assistance; and payments to nonprofit welfare institutions. Also consists largely of veterans' benefits, Alaska dividends, and crime-victim payments.

Social security benefits include old age, survivors, and disability insurance programs administered by the federal government and financed through payroll taxes. The social security system has undergone several significant reforms during the sample period. Old-age insurance started in 1940. The program was broadened to include disability insurance in 1956. In 1972, the benefits became inflation-adjusted, and delayed retirement credits were introduced. In 1983, social security coverage became compulsory for federal civilian and nonprofit organization employees. Overall, social security is the most significant component of social spending. It represented over 40% of social spending throughout the 1980s. Its share decreased to 32.7% in the 2010s.

Medical care spending includes Medicare, Medicaid, other medical assistance, and state-run child health care programs. Medicare and Medicaid started in 1965 to provide health insurance to people aged 65 and older and low-income, respectively. These programs are financed primarily through payroll taxes. The share of medical care in social expenditures has increased rapidly. In the 2000s, medical care outpaced social security to become the largest social sending category, accounting for about 43.9% of social benefits spending.

Veteran benefits include pension and disability insurance, readjustments, and other veteran compensation benefits. It is a national health insurance program to support adjustment from military to civilian life. The spending on veteran benefits has dropped as a share of social spending from 24.8% in the 1950s to 3.4% in the 2010s.

Unemployment insurance includes state unemployment insurance, unemployment insurance for railroad and federal employees, and emergency unemployment insurance. These are federal and state programs financed chiefly through payroll taxes. The share of unemployment insurance in overall social spending has decreased from 11.9% in the 1950s to 2.4% over the last decade.

Public assistance consists of all social support programs that are not insurance-based, including supplement nutrition programs, black lung benefits, and direct relief. Those programs target low-income households and are financed by general taxation. The share of public assistance spending has been relatively stable over the years, accounting for 15-20% of social spending.

Finally, other social insurance includes all social insurance programs, excluding social security, Medicare, and unemployment insurance. These narrowly targeted programs, such as railroad retirement, only cover some of the population. The share of other social insurance spending has gradually decreased through the sample years, accounting for just 1.5% in the 2010s.

Table 3. Descriptive Statistics for Social Benefits

	1950s	1960s	1970s	1980s	1990s	2000s	2010s	Total
Level (Billions of Dollars)								
Social Spending	1.02	2.04	4.84	7.41	11.54	17.13	17.13	9.84
Social Security	0.31	0.98	2.12	3.31	4.47	5.88	8.13	3.50
Medical Care	0.011	0.20	0.95	2.02	4.34	7.30	10.95	3.58
Veteran Benefits	0.24	0.24	0.36	0.28	0.26	0.39	0.85	0.37
Unemployment Insurance	0.13	0.16	0.32	0.34	0.35	0.54	0.57	0.34
Public Assistance	0.21	0.31	0.88	1.19	1.77	2.63	4.01	1.53
Other Social Insurance	0.12	0.15	0.21	0.28	0.34	0.39	0.38	0.26
% of Social Spending								
Social Spending	100	100	100	100	100	100	100	100
Social Security	29.03	48.44	43.76	44.73	38.87	34.64	32.66	38.88
Medical Care	10.50	8.22	19.37	27.01	37.34	42.54	43.89	25.63
Veteran Benefits	24.80	12.07	7.72	3.84	2.29	2.29	3.39	8.06
Unemployment Insurance	11.91	8.36	6.52	4.63	3.13	3.05	2.37	5.71
Public Assistance	20.80	15.28	18.26	16.09	15.36	15.20	16.17	16.73
Other Social Insurance	12.31	7.48	4.38	3.68	3.00	2.28	1.53	4.95
Growth Rate								
Social Spending	6.03	7.59	7.57	3. 80	4.40	5.52	2.18	5.38
Social Security	28.85	7.58	7.61	3.44	3.00	3.47	3.47	8.22
Medical Care	28.55	38.79	9.31	7.16	7.05	5.89	3.16	13.63
Veteran Benefits	-3.08	2.11	2.01	-2.85	1.54	6.11	8.24	1.92
Unemployment Insurance	11.34	-2.82	17.91	2.76	3.98	26.94	-14.58	7.40
Public Assistance	-0.61	7.77	8.83	2.37	3.93	7.32	1.14	4.50
Other Social Insurance	29.75	3.42	3.37	3. 37	0.04	2.65	-1.56	5.78

3. Preliminary Empirical Results

3.1 Unit Roots and Cointegration Tests

We use the Augmented Dickey-Fuller procedure [ADF, hereafter] to test for unit roots. We performed this test first on log-level variables and then on growth rates. We allowed for a constant term and a deterministic trend in both cases. In level terms, social security and medical care show evidence of stationarity, while most variables are not stationary. In growth rates, only veteran benefit is not stationary. This evidence suggests that stationarity in growth rates is a good approximation for all variables.

We investigate the possibility of cointegration among GDP, unemployment rate, private savings, and aggregate social benefit variables, as well as among the three macroeconomic variables and each of the six disaggregated categories of benefits spending. We use the Engle-Granger procedure, which is less vulnerable to small sample bias in favor of finding cointegration than the Johnsen test [see Gonzalo & Lee, 1998, for example]. The Engle-Granger procedure has two steps. First, it regresses one variable on the rest of the variables to evaluate the long-term relations between them. Second, it conducts an ADF unit root test on the residuals. In each case, there are five types of specification: no trend specification, a constant term, a constant and a linear trend, a constant, a linear trend and a dummy for 2008, and constant, linear trend and dummies for 2008 and 1982. The 1982 dummy reflects the major social security reform that occurred that year, while the 2008 dummy reflects the start of the financial crisis.. Overall, there is very little evidence in favor of cointegration, both at the aggregate level and for each social spending category.

3.2 VAR Specification and the Corresponding Impulse Response Functions

As we have established as a good approximation that all variables are stationary in growth rates and not cointegrated, we now estimate the different VAR models in growth rates. We select the optimal lag length for the VAR models based on the Bayesian Information Criteria [BIC, hereafter]. We consider several VAR specifications, including first and second-order models and the alternatives of no deterministic component, a constant term, a constant and a trend, and constant and trend plus dummies of 1982 and 2008. They indicate that the VAR specification with one lag, a constant term, a trend, and no dummies is the best specification for the models with total social spending and the models for all subcategories except for 'other social insurance.' In this case, the best specification is a VAR model with two lags, a constant and a trend, and a dummy for 2008.

The impulse response functions associated with the estimated VAR models are the primary device we use to evaluate the effects of social spending on economic performance. The impulse response functions display the responses of all variables within the model to a one-unit shock in a given variable. While the shock itself is exogenous, all of the responses to the shock are endogenous and reflect the contemporaneous correlations among residuals and the dynamic interactions among the different variables. We set the time horizon to 20 years to capture the long-term impacts. In addition, we use the accumulated impulse response functions to calculate the sum of changes in growth rate, which integrates variables from growth rates to levels. Finally, we calculate the standard deviation bands for the impulse response functions to determine the estimates' statistical significance. We use one standard deviation bands, corresponding to a 68% posterior probability standard in the literature [see Sims & Zha, 1999, for example.]

3.3 Identifying and Measuring the Effects of Exogenous Shocks on Social Spending

We first consider the long-term effects of social spending using the Cholesky decomposition to orthogonalize the covariance matrix of the estimated residuals. The Choleski decomposition allows us to isolate the impact of exogenous shocks in the social spending variables through the appropriate ordering

of the variables in the system. We consider social spending followed by the other variables, which implies that shocks in social spending affect the rest of the variables contemporaneously. Still, shocks in the other variables will not affect contemporaneous social expenditures. Overall, this strategy allows us to measure both the short-term and intertemporal effects of shocks in social spending. We then consider the impact of social expenditures, assuming there are no contemporaneous correlations among the estimated VAR residuals. Therefore, the effects of social spending are generated exclusively through the lag terms in the VAR models. These impulse response functions represent the inter-temporal effects of a shock while ignoring the contemporaneous effects. We use these two impulse response functions to compute three effects: long-term, intertemporal, and short-term, which is the difference between the previous two.

We compute the elasticities of the different variables with respect to changes in the social spending variable as the ratio of the accumulated change in the economics variables to the accumulated change in social spending. They represent the long-term accumulated percentage change in one given variable for a one percent increase in social spending. In turn, the marginal products are the level changes in each variable per one billion dollars change in social spending. We calculate the marginal products as the average ratio of the corresponding variables to social benefits over the last decade times the corresponding elasticity. Including the spending ratio over a decade allows us to control for business cycle effects.

To test the significance of long-term elasticity, we consider the lower and upper bounds of elasticity based on the impulse response results with two standard deviation error bands. For accuracy concerns, this paper defines the estimates with error bands that contain zero as being non-statistically significant. Based on this criterion, most elasticities are significantly different from zero. Specifically, the elasticities of private savings are positive and statistically significant for all spending categories except for medical care. In turn, the elasticities of the unemployment rate are positive and statistically significant for all cases except for social security and medical care. Finally, for GDP, the elasticities are negative and statistically significant again for all cases except for social security and medical care.

In Table 4, we present the total long-term elasticities of private savings, unemployment, and GDP with respect to total social spending and the different subcategories of social expenditures. The table includes the total long-term effects and their decomposition into effects on impact and intertemporal effects. The short-term effects capture the effects of social spending on economic variables on impact. The intertemporal effects assume no correlation in the residuals to exclude the immediate effects of social expenditures on the economy. The intertemporal results measure how economic variables respond to the increase in social spending through the lag term of the VAR model, excluding the effects on impact. Finally, the long-term effects are the sum of the short-term and intertemporal effects.

4. On the Effects of Social Spending on Economic Performance

4.1 On the Effects of Aggregate Social Spending

Aggregate social spending affects private saving positively. For a one percent increase in social expenditures, private saving increases by 0.342%. The short-term and long-term elasticities are very close: 0.342 and 0.360, which suggests that the demand side effects on impact are strongly dominant. Based on the marginal product, private saving increases by 0.215 billion dollars for a one billion increase in social spending.

The effects of social spending on unemployment are statistically significant and positive. In the short run, the unemployment rate increases by 1.86% with a 1% change in social spending. Taking the average unemployment rate from the most recent decade as a benchmark, 1% additional increases in social spending will shift the unemployment rate from 6.52% to 6.64%. In the long run, the unemployment rate will increase to 6.66%. As the short-term elasticity is smaller than the long-term elasticity, the distortionary effects of social spending on the labor market occur primarily in the short term.

Eventually, social spending negatively affects GDP. For a one percent increase in social expenditures, GDP decreases by 0.106% in the short run and by 0.131% in the long run. The bulk of the effects, again, are short-term effects. For one billion increases in social spending, GDP overall decreases by 0.908 billion. The negative impact on GDP indicates that social spending distorts the labor market more than encourages saving. The adverse effects of social spending are transmitted from the labor market to GDP, while the positive impacts on capital markets are not large enough to compensate.

4.2 On the Effects of Individual Social Spending Programs

The relationship between social spending and economic performance shows interesting differences across the six categories of social spending.

Let us consider first the two most significant components of social spending. Social security spending positively affects private savings. Notably, the intertemporal elasticity of social security on private savings is much higher than the short-term elasticity. For a one percent increase in social security spending, private saving increases by only 0.064%.

However, the effects on unemployment and GDP are not statistically different from zero. In turn, the impact of shocks on medical care spending is small and insignificant for all three variables in consideration.

Veteran benefits increase private savings and the unemployment rate at the same time. In the long term, the accumulated elasticity of private savings is 0.384%, and that of the unemployment rate is 1.044%. The elasticity of GDP is negative and robust at -0.089%, indicating the relative strength of the unemployment effects. The intertemporal effects for all economic variables are relatively small compared to the short-term effects, meaning that the effects on impact tend to dominate, even though the dynamic effects are also significant.

Table 4. Elasticities and Marginal Products with Respect to Shocks in Social Spending

	Elasticity			Marginal Product		
	Total	**Inter-temporal**	**Short-term**	**Total**	**Inter-temporal**	**Short-term**
Private Saving						
Total Social Benefits	0.342	-0.017	0.360	0.215	-0.011	0.225
Social Security	0.340	0.276	0.064	0.659	0.535	0.124
Medical Care	-	-	-	-	-	-
Veteran Benefits	0.384	-0.078	0.462	7.298	-1.488	8.786
Unemployment Insurance	0.216	0.031	0.185	5.213	0.755	4.458
Public Assistance	0.545	0.631	-0.086	2.138	2.473	-0.335
Other Social Insurance	0.555	-0.004	0.559	22.626	-0.159	22.784
Unemployment Rate						
Total Social Benefits	2.096	0.236	1.860	0.005	0.001	0.005
Social Security	-	-	-	-	-	-
Medical Care	-	-	-	-	-	-
Veteran Benefits	1.044	0.255	0.789	0.083	0.020	0.063
Unemployment Insurance	0.474	0.081	0.656	0.048	0.008	0.066
Public Assistance	0.960	0.592	0.368	0.016	0.010	0.06
Other Social Insurance	1.085	0.014	1.071	0.185	0.002	0.182
GDP						
Total Social Benefits	-0.131	-0.025	-0.106	-0.908	-0.175	-0.733
Social Security	-	-	-	-	-	-
Medical Care	-	-	-	-	-	-
Veteran Benefits	-0.089	-0.033	-0.056	-18.622	-6.842	-11.780
Unemployment Insurance	-0.031	0.004	-0.035	-8.308	1.077	-9.386
Public Assistance	-0.070	-0.044	-0.026	-3.017	-1.889	-1.128
Other Social Insurance	-0.103	-0.152	0.049	-46.502	-68.344	21.842

- Represents values that are not statistically different from zero.

As to shocks in unemployment insurance spending, they also increase both private savings and the unemployment rate. The long-term accumulated elasticity of private savings is 0.216%, and that of the unemployment rate is 0.474%. In turn, the elasticity of GDP is negative at -0.031. Again, unemployment

effects tend to dominate. In turn, and as in the previous case, the short-term effects of unemployment insurance dominate the overall impact.

Public assistance positively affects private savings and the unemployment rate. Regarding the long-term accumulated elasticities, other social insurance spending increases private savings by 0.545%, increases the unemployment rate by 0.96%, and decreases GDP by 0.07%. Once again, unemployment dominates the overall effects on economic performance. Unlike other social spending programs, however, the intertemporal elasticity of public assistance is larger than the short-term elasticity across all economic variables. It indicates that the effects of public assistance are spread throughout time, and the effects on impact are relatively less relevant.

Finally, other social insurance positively affects private savings and the unemployment rate. For a one percent increase in 'other social insurance,' the private saving increases by 0.555%, the unemployment rate drops by 1.085%, and GDP decreases by 0.103% in the long run. Once again, the intertemporal effects are trivial compared to the short-term effects on impact.

4.3 Comparing the Effects across Different Programs

We now consider the results from the perspective of each of the three economic variables affected by shocks in social spending. The results coincide qualitatively across different social spending programs. Indeed, most types of social spending affect private savings positively and labor markets negatively, negatively affecting GDP. The exceptions where effects are not statistically significant are social security and medical care spending.

Regarding private savings, we find that all programs increase private savings or have no effects on saving instead of discouraging it. The typical explanation for the adverse impact on savings is that the support of strong welfare programs disincentives people to save. However, welfare programs also provide people with more disposable income in times of risk, so they do not need to draw their savings for medical expenses or unemployment. The four categories of public assistance, social security, unemployment insurance, and veteran benefits increase savings. In turn, the intertemporal effects of social security and public assistance are very significant compared to the effects on impact. At the same time, for the remaining programs, the results are more evenly distributed between their short-term and long-term components.

Since all social benefits programs have positive long-term elasticity for unemployment, the distortionary effects of social spending on the labor market are apparent. Veteran benefits and other social insurance have the highest unemployment rate elasticity among all programs. In turn, the effects of unemployment insurance and public assistance have very different dynamic patterns. The intertemporal elasticity is higher than the short-term elasticity for public assistance but the opposite for unemployment insurance.

Overall, social spending discourages GDP growth. Medical care and other social insurance have effects on the GDP that are not statistically significant. The impacts of unemployment insurance, veteran benefits, public assistance, and 'other social insurance' are negative and statistically significant. Except for public assistance, short-term elasticity is generally larger than the intertemporal effects.

5. Concluding Remarks

In this paper, we study the effects of social spending on long-term economic performance in the United States from 1949 to 2019 using vector auto-regressive models. We break down social spending into six programs to identify the specific economic effects of different social programs. Overall, we find that social spending has a positive impact on private savings but an adverse effect on unemployment. Due to its dominant distortionary effects on the labor market, social spending decreases GDP. However, these effects are minimal and are primarily short-term. The economic impacts of the different social spending programs on the economy are similar but different in magnitude. The effects of social security and medical care spending on GDP are not significant. In turn, the adverse effects of veteran benefits and unemployment insurance on GDP are dominated by the short-term impact.

In contrast, the effects of public assistance are more evenly distributed, and the adverse effects of other social assistance are exclusively long-term. Overall, the message is that although social spending has a negative impact on economic performance, these effects are small and primarily short-term. The policy implication is that the quest for increased social protection and improved social welfare does not seem to come at a significant economic cost.

A disaggregated analysis across six social spending categories paints a more diverse picture. Although the results are qualitatively similar, there are important quantitative differences and significant differences in the intertemporal patterns of the results. The elasticities of economic variables to various social spending programs have different magnitudes, indicating that they impact the economy differently. Because programs differ by financing scheme and functionality, the paper cannot locate the determining factors for the difference in effects. However, while the literature suggests that welfare programs based on pay-as-you-go systems served as labor taxes and are more distortionary to the economy, there is no evidence in this paper that those programs' effects on the unemployment rate and GDP are more significant. Unemployment insurance and public assistance both have positive elasticity of the unemployment rate, but the latter is based on general taxation.

Interestingly, the effects of unemployment insurance on unemployment are relatively stable over time, but the impact of public assistance on unemployment increases in the long run. Unemployment insurance is a short-time-stimulating measure, so the result is reasonable. However, the high unemployment rate elasticity for public assistance contradicts the literature that suggests public assistance can address poverty and increase labor productivity in the long run. It points towards the explanation that more people become chronic welfare recipients under the program. It could be that working-oriented public assistance programs do not dominate the whole spending or that the policies are ineffective in addressing poverty and alleviating the productivity of low-income families. Social security and medical care have the least distortionary effects on the economy for disaggregated programs, while unemployment insurance and public assistance have the most distortionary effects.

Compared to the literature, this paper yields results similar to Pereira and Andraz's (2015) study in the United States. The consistent results suggest that the overall relationship between social spending and the

economy has not shifted due to the financial crisis of 2008 or change in the most recent decade. Meanwhile, it finds that though social spending discourages GDP growth, the magnitude of the adverse effects is small across all spending programs. The results align with the literature arguments that social spending distorts the economy. Still, it also suggests that the relationships could be more apparent, corresponding to Cammeraat's (2020) and Czech and Tusinska's (2016) remarks.

One innovative approach this paper contributes is to break down social spending into six disaggregate programs and analyze their economic effects. It identifies unemployment insurance and public assistance as significantly affecting the unemployment rate. Furthermore, it finds that the distortionary impact of public assistance is amplified in the long run compared to unemployment insurance. The two programs are similar in providing economic security to households living below certain income thresholds. However, they target different populations, and the support duration differs. Unemployment insurance supports people within the workforce and has a much shorter duration. This finding suggests that short-term subsidies are less likely to distort the economy in the long run. The policy implication is that short-term social insurance that protects people in economic downturns is more economically efficient compared with long-term government aid.

Meanwhile, the results suggest that the distortionary effects of social security and medical care are the smallest. Contrary to Feldstein's finding (1974), this paper identifies that social security does not decrease private saving but encourages it. Meanwhile, this paper identifies that spending on healthcare does not slow down the economy, which is in line with Furceri and Zdzienicka's (2012) findings. While social spending and medical care are the two most significant social spending categories, their effect on the economy is relatively mild compared to unemployment insurance and public assistance. The critical difference between those two programs and unemployment insurance/public assistance is that the former is a universal support system while the latter explicitly targets people with economic difficulty. These results may suggest that welfare programs in place to support everyone in society are incorporated into people's decision-making process and, therefore, less likely to change people's saving or working choices. Companies also consider the cost of social security and medical care as the fixed cost of operation. Therefore, they are unlikely to change management strategies based on the two programs. However, short-term measurements like unemployment insurance and some public assistance programs are not included in people's long-term life plans, so their appearance is more likely to change people's decision to quit or join the labor force.

Based on the empirical results, this paper suggests that the current call for social spending expansion, embodied in 'the Build Back Better Plan,' will negatively affect the labor market and potentially slow GDP growth. However, not every component of the policy agenda will have similar distortionary effects on the economy. Specifically, the increase in public spending on healthcare will have a limited impact, while the effects of prolonged unemployment benefits and stimulus bills will be very pervasive. Designing policies that do not directly interfere with the labor market is essential. Since most social spending programs are financed through payroll taxes, a shrinking labor force will harm the long-term

solvency of social spending funds. Supporters of the plan may argue that the tax increase for corporations and high-income individuals will offset the deficit. However, this financing solution has distortionary effects on the economy, which is beyond the scope of this paper but deserves further investigation in the future.

It is proper to conclude with some words of caution as to some possible limitations of this study. First, it does not explicitly consider the effects of different financing mechanisms or targeted populations. One potential approach is to sort social spending by its way of funding rather than functionality. Second, the magnitude and composition of social expenditures change considerably during the timespan of the chosen data set in response to various political reasoning. While the paper does not find any evidence of structural breaks, this matter should be further investigated. Third, because some disaggregate welfare programs like veteran benefits and other social insurance are too small in scale, the values estimated for their marginal products may be artificially large. Finally, this paper evaluates social spending programs from the market efficiency perspective, but this is not the only standard to evaluate welfare policies. For example, it may be argued that social welfare exists to address systematic inequality or to guarantee basic economic security for every family.

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