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On the Impact of Social Spending on Long-term Economic Performance in the USA

Jiayong Lu
William & Mary

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by

Jiayong Lu

Accepted for Honors

Alfredo M Pereira

6F39E9E214684E4...

Professor Alfredo M. Pereira, Director

Jennifer Mellor

F4FBCCC24F0144B...

Professor Jennifer M. Mellor

Reya Farber

1C16314C5F0F439...

Professor Reya Farber

Williamsburg, VA
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On The Impact of Social Spending
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Jiayong Lu[1]

Abstract

This paper analyzes the dynamics of social spending and long-term economic performance in the United States from 1949-2019 using vector autoregression models. It breaks down social spending to six disaggregate programs to identify if different social programs have similar effects on economy. Overall, the study finds that social spending increases private saving and unemployment rate. Due to its dominant distortionary effects on the labor market, social spending decreases GDP. These effects are mostly short-term effects. The economic effects of the different social spending programs on economy are similar in direction but different in magnitude. The effects of social security and medical care 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, while the effects of public assistance are more evenly distributed, and the adverse effects of other social assistance are exclusively long-term.

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1 Introduction

The share of social spending in the public budget in the United States, in particular, social security and Medicare spending has consistently increased over the last several decades. More recently, during the COVID-19 pandemic, several public transfer schemes were put in place to support households. In addition, the calls for increased social spending continue to dominate the political arena. Currently, President Biden is promoting his political agenda known as 'The Build Back Better Framework', of which expanded social spending on childcare, eldercare, and healthcare are crucial components. Opponents of the plan note that the danger in increasing federal budget deficits and the tax burden on the economy, with inevitable implications in terms of long-term public budget solvency and economic performance. The focus of current political debates is in itself a recurring theme [for a similar debate at the turn of the century see, for example, Feldstein and Samwick (1997) and Gwartney, Holcombe and Lawson (1998)]. Currently, however, with the financial crisis that began in 2008 and the COVID pandemic, the magnitude of the underlying problems has been greatly increases.

In economics thinking, there is always a potential conflict between government intervention and the functioning of the free market. Social spending provides crucial aid to vulnerable populations: for example, improving recipients' education and health outcomes thereby improves the productivity of the whole population. Yet, because social spending like social security and unemployment insurance is external to the market and mostly 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, it can be said that the relationship between social spending and aggregate economic performance is complex and the empirical evidence mixed. Arguments for social spending harming or boosting output coexist. **Table 1**, which is not meant to be exhaustive, presents a summary of the empirical evidence discussed below on the economic effects of social spending.

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, for example, Ballard (1990,) and Conway (1997)]. The specific reasoning is related 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, for example, Rust and Phelan (1997), Mastrobuoni (2009) and Seibold (2021)]. In turn, social security motivates elder workers to retire during economic downturns [see, for example, Coile and Levine (2007)]. Second, social spending may increase the unemployment rate. Empirical study finds that extended unemployment insurance contributes to an increase in long-term unemployment [see, for example, Farber and Valletta (2013)]. 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, for example, Mortensen and Pissarides (1999) and Marimon and Zlibotti (1999). The negative labor supply effects are most evident in the cases of unemployment insurance and workers' compensation [see, for example, Krueger and Meyer (2002)].

Furthermore, social spending's distortionary effects lay on its financing mechanism. As in many developed countries, the U.S. social security and medical care is financed by a pay-as-you-go system. This system creates financial unsustainability as the current operation is highly reliant on payroll taxes and accumulates debt responsibility for future government [see, for example, Pereira and Andraz (2015)]. High taxes that are imposed on individuals to finance social spending decreases workers' disposable income and decreases private saving. Empirically, the emergence of social security deprives families of disposable income to invest in private pensions, which reduces private saving [see, for example, Feldstein (1974)]. If the tax burden falls on producers, it increases the cost of labor, which discourages producers to keep the current employment scale or create new jobs. Thus, the higher the social spending, the more it will distort the labor market and capital market, which slows down economic growth [see, for example. Pereira and Andraz (2015)].

Meanwhile, some arguments suggest that social spending may stimulate the economy. Firstly, social expenditures on health and retirement are counter-cyclical so they are important economic stabilizers [see, for example, Darby and Melitz (2008)]. 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, for example, Barrientos (2012) and Mayer, Lopoo and Groves (2016)]. As such, social spending has expansionary effects on GDP [see, for example, Furceri and Zdzienicka (2012)]. Thirdly, social spending that promotes labor

participation is associated with higher economic growth [see, for example, Blank (2002) and Arjona, Ladaique, Pearson (2003).]

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, for example, Czech and Tusinska (2016) and Cammeraat (2020)].

It could be argued that these two seemingly contradictory lines of thought and conclusions could in fact 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 unclear which effect dominant. Second, they highlight the fact 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 population.

In fact, 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 very 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 most major types of social spending within larger social expenditure, 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 saving using vector autoregressive (VAR, hereafter) models. It considers aggregate social spending and also six different subcategories within (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 to study their effects on the overall economy. 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 market 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 both EU countries and the United States (2015). 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 develop the technique of Cholesky decomposition to separate contemporaneous effects from long-term effects while Pereira (2012, 2015) develops 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, for example, Ramey (2011), Leeper et. (2013), Bouakez, Chihi and Normandin (2014)] and the narrative approach [see for example, Ramey and Shapiro (1998), Romer and Romer (2010), Barro and Redlick (2011), and Ramey 2011)].

The paper is organized as the following: Section 2 introduces the data sources and provides some basic information about the key variables. 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 both 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 a summary and concluding remarks.

2 Data Sources and Stylized Facts

2.1 The Aggregate Data

This paper considers private saving as the indicator for changes in the capital market due to social spending and the unemployment rate as the indicator for changes in the labor market due to social spending. GDP is used to measure the overall economic performance. Social expenditure includes a spectrum of social protection schemes including social security and Medicare; the details of which will be discussed in the next section.

All observations are in annual terms and cover the period of 1948-2019. The data for the United States' social benefits expenditure and economic performance were drawn from the National Income and Product Accounts database from the Bureau of Economic Analysis [BEA, hereafter]. The dataset includes nominal values for GDP, private savings, and social benefits expenditure, all in billions of current dollars. All values are converted to real terms using 2012 as the base year, using as deflators the price indexes for GDP also from the National Income and Product Accounts of the BEA. In turn, the unemployment rate, measured as a percent of the labor force, is obtained from the Bureau of Labor Statistics.

Table 2 presents the summary statistics for private saving and social benefits spending, measured as a percentage of GDP. It also provides summary statistics for all four variables in level and growth rate term by decades. The growth rate is calculated as the average of the annual growth rate per decade.

Social benefits expenditure accounts for 8.93% of GDP on average. In the 1950s, social welfare programs were just starting to be established in the United States, so they only shared 3.68% of GDP. Social spending experienced rapid expansion in the following decades. In the 2010s, it accounted for 14.48% of GDP on average. The growth rate of social spending outpaces the growth of the overall economy. The average growth rate of social benefit is 5.38%, which is about 2% greater than the growth rate of GDP and private saving. The growth rate of social spending slowed down after the 1980s, mainly because the structure of social benefits became stable and did not undergo any major reform after 1983.

On average, **private savings** account for 9.68% of GDP. The share of private saving to GDP was 10.66% in the 1950s. The share of private savings to GDP contracted by half experiences from the 1970s to 2000s. It gradually dropped to the lowest value 6.13% in 2000s and then rose up to 9.10% in 2010s. In the level terms, private saving is always increasing. On average, people save 7.73 billion of dollar annually. The average growth rate of private saving is similar to the GDP growth rate. However, the standard deviation of the growth rate of private savings is much greater than the growth rate of social spending and GDP, indicating this variable is more fluctuating in comparison.

The Unemployment Rate was at its lowest point in 1950s (4.51%) and reached its peak at 1980s (7.28%). The average unemployment rate by decades is 5.74%. There is no obvious trend in term of the change in unemployment rate. It fluctuates between 4.5% to 7.3% in the studied time span.

GDP increases rapidly in level term. In the 1950s, the real GDP is only 27.68 billion of dollar in average, but it accounts for 172.72 billion of dollar today. GDP growth rate is gradually decreasing by decades. In average, the GDP growth rate is 3.16%. However, the growth rate was above 4% before 1970s. It dropped to be around 2% after 1990s.

The unemployment rate, the growth rate of GDP, and the growth rate of private savings are all subjected to the business cycle. Within the sample period, two major recessions occurred in 1980s and 2008, which can be potential structural breakpoints.

2.2 Breakdown of Social Benefits

The social benefits data is drawn from Table 3.12 of National Income and Products Accounts of the BEA database. It accounts for the annual domestic social benefits spending both at the federal level and state/local levels. This study breaks down social benefits into six separate categories, which are social security, medical care, veteran benefits, unemployment insurance, public assistance programs, and other social insurance. The base of categorization is functionality and the financing mechanism. Social security, medical care, and unemployment insurance are primarily financed through payroll taxes while veteran benefits and public assistance are primarily financed through general tax. See **Table 3** for details of what is included within each category.

Table 4 presents the statistics of each spending category. The summary statistics include the share of general social spending (calculated as percentage of aggregate social spending), level term (in billions of dollars), and growth rate by decades.

Social security benefits include old-age, survivors, and disability insurance benefits that are distributed by the federal government. The social security system has undergone several reforms during the sample period, which caused the spending to change significantly across time. Old-age insurance started distribution 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 employees and non-profit organization employees. As the type of social benefits with the biggest expenditure share, social security occupied over 40% of total social benefits spending from the 1960s to 1980s but its share decreased to 32.66% in the 2010s. Overall, social security is the dominant expenditure among all social spending. Social security and medical care are mainly funded through both employers and employees' payroll taxes, and the current rate is 6.2% for each party.

Medical care includes Medicare benefits, Medicaid, other medical assistance, and child health care programs administered by the state. Medicare is the dominant category of medical care spending. It was enacted in 1965 to offer Americans aged 65 and older national health insurance. In the same year, Medicaid was established, and it provided medical assistance for people with low incomes and resources. Since then, the share of medical care in social expenditures has rapidly expanded. In the 2000s, medical care spending outpaces social security and becomes the highest expenditure category. The average growth rate of 13.63% is the highest growth rate among the six categories. In recent decades, medical care accounts for 43.89% of social benefits spending.

Veteran benefits include pension and disability insurance, readjustment benefits, and other compensation benefits for veterans. The veteran benefits were established to support soldiers' adjustment from military to civilian life after WWII and Korean War. The spending ratio of veteran benefits has decreased after wartime. It dropped from 24.80% in the 1950s to 3.39% in the 2010s, indicating that social spending for veterans is a small segment of social benefits today.

Unemployment Insurance includes state unemployment insurance, unemployment insurance for railroad employees and federal employees, and emergency unemployment insurance.

Emergency unemployment insurance is a direct cash transfer to families facing unemployment during a major economic recession. Therefore, emergency unemployment insurance spending varies year by year based on economic conditions and political decisions. General unemployment insurance is administrated by federal and state governments together and financed through compulsory payroll taxes paid by employers. Similar to veteran benefits, the share of unemployment insurance in overall social spending is decreasing. It accounted for 11.91% of social spending in the 1950s but now it only accounts for 2.37% of spending in the recent decades.

Public assistance consists of all social support programs that are not insurance-based, including supplement nutrition programs (known as food stamps), black lung benefits, and direct relief. Those spending typically directly target low-income households. Public assistance is primarily funded through annual congressional appropriation. The share of public assistance spending is relatively consistent over the years, accounting for 15-20% of social spending.

Other social insurance includes all social insurance programs excluding social security, Medicare, and unemployment insurance. Those insurance programs are administrated on relatively small scales and do not cover the general population; an example, railroad retirement, is a program that provides retirement benefits to workers in the railroad industry. The share of other social insurance spending is gradually decreasing through the sample years, and only accounts for 1.53% of social spending in the 2010. This trend is due to the fact that some programs are closed or replaced by the general social security programs.

3 Preliminary Empirical Results

3.1 Unit Roots

The first step is to use the Augmented Dickey-Fuller procedure [ADF, hereafter] to test for a unit root in the variables. The stationarity of variables is important for constructing VAR models. ADF tests are based on the following regressions:

$$\Delta y_t = \alpha + \beta y_{t-1} + \delta t + \zeta_1 \Delta y_{t-1+} \zeta_2 \Delta y_{t-2} + \cdots + \zeta_k \Delta y_{t-k} + \varepsilon_t$$

where k is the number of lags specified. α identities if the variable moves with drift and δ identifies if the variable moves with a trend. The null hypothesis for these tests is that the log of the series has a unit root.

ADF test is first performed on variables in log-level with a constant term. If H_0 is not rejected, it then tests for a unit root with a deterministic trend. If the series remains non-stationary, it tests for a unit root in growth rate and growth rate with a trend. **Table 5** presents the unit root results for all variables in four settings. In level terms, social security and medical care show evidence of stationarity while most of variables are not stationary. In the growth rate, only veteran benefit is not stationary. Therefore, it is necessary to convert all variables into growth rate form, but it is unclear if a trend term is necessary.

3.2   Cointegration

The presence of a cointegrating relationship among the variables implies that several non-stationary variables have a long-term equilibrium and can form a stationary linear combination. It is important to verify that no cointegration exists between variables before building VAR models to exclude the possibility of mistaking spurious correlations as true relationship between variables.

This paper uses the Engle-Granger test to exam if cointegration exists among the relevant variables. This test is less vulnerable to small sample bias in favor of finding co-integration compared to the Johnsen test [see, for example, Gonzalo and Lee (1988)]. The Engle-Granger procedure has two steps. First, it regresses one variable on the rest of variables to evaluate the long-term relations between them. The estimated residuals are computed as follows:

$$\hat{u}_t = y_t - \hat{\delta}_0 - \hat{\delta}_1 x_{1t} - \hat{\delta}_2 x_{2t} - \cdots - \hat{\delta}_k x_{kt}$$

Second, it conducts an ADF unit root test on the residuals. The underlining promise is that if cointegration holds, an equilibrium equation between variables and the residual of that equation should be stationary.

This study investigates 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 disaggregate categories of benefits spending. The lag term within the test is selected based on BIC. In each case, there are five types of specification: no trend

specification, a constant term, a constant term & linear trend, constant & linear trend & a dummy for 2008, and constant & linear trend & dummies for 2008 and 1982. The 1982 dummy is based on the major social security reform that occurred in 1982 and has been tested in models previously by Pereira and Andraz (2014). The 2008 dummy takes account of the financial recession that occurred in 2008. The test results are presented in **Table 6.** Overall, there is very little evidence in favor of the existence of cointegration, both at the aggregate level and for each of the social spending categories. Only the category of other social insurance shows some evidence of cointegration. Accordingly, the results validate the assumption of no-cointegration for the following empirical analysis.

3.3   VAR specification

As all variables are shown to be stationary in growth rate and not cointegrated, the next step is to estimate the different VAR models. The generic VAR model of order p can be written as:

$$z_t = a + \sum_{i=1}^{p} A_i\, z_{t-i} + e_t, \qquad e_t \sim IID(0,\Sigma)$$

where z_t is a column vector (4x1) of observations on the current values of all variables in growth rates, a is a column vector (4x1) of deterministic components, and A_i are (4x4) square matrices of parameters. In turn, e_t is a column vector (4x1) of random errors with zero mean, time-independent variance, with zero autocorrelation, but assumed to be contemporaneously correlated with one another, such that their covariance matrix Σ, is not necessarily zero for $j{\neq}k$, that is:

$$\Sigma = E\!\left(e_t e_t^{'}\right) = \begin{bmatrix} \sigma_1^2 & \sigma_{12} & \sigma_{13} & \sigma_{14} \\ \sigma_{21} & \sigma_2^2 & \sigma_{23} & \sigma_{24} \\ \sigma_{31} & \sigma_{32} & \sigma_3^2 & \sigma_{34} \\ \sigma_{41} & \sigma_{42} & \sigma_{43} & \sigma_4^2 \end{bmatrix}.$$

The optimal lag length for the VAR models is selected based on the use of Bayesian Information Criteria [BIC, hereafter]. The tested potential VAR specifications include first and second order and in both cases the alternatives of no deterministic component, a constant term, a

constant and a trend term, and constant and trend plus dummies of 1982 and 2008. The BIC analysis for both aggregate and disaggregate social spending variables is conducted.

The BIC results are presented in **Table 7.** They indicate that the VAR specification with one lag, a constant term, and a trend, but with no dummies is the best specification for the models with aggregate social spending as well as the models for all subcategories except for 'other social insurance'. For the VAR model with 'other social insurance', the best specification is a VAR model with two lags, a constant and a trend, and a dummy term for 2008.

3.4   Impulse Response Functions

The impulse response functions associated with the estimated VAR models are the main post-estimation device to evaluate the effects of social spending on economic performance. The impulse response examines the responses of all variables within the model to a one-unit shock of certain variables. The shock is considered exogenous, and all responses are endogenous. This strategy can separate the relationship between variables from noise. This paper sets the time horizon to be 20 units to capture the long-term impacts. Meanwhile, it uses the accumulated impulse response function because it can yield the sum of changes in growth rate across twenty-time terms, which integrates variables from growth term to level (in log form). Finally, the standard deviation bands for the impulse responses are calculated in this step to testify the statistical significance of the estimates. This paper uses one standard deviation bands, which correspond to 68% posterior probability that is standard in the literature (Sims & Zha 1999).

3.5   Identifying shocks in social spending

Two types of impulse response calculation methods are employed to identify the short-term and long-term effects of one-unit social spending shock. The paper first measures the long-term effects using Cholesky impulse. The approach is to orthogonalize the covariance matrix of the residuals using Cholesky decomposition. Because the error terms in the VAR model are correlated, the effects of social spending on the economy are transmitted through both the error term and the lag term. Therefore, both short-term effects and the intertemporal effects are included in the estimation. Meanwhile, the unique residual decomposition can isolate the effects of the shock through the ordering of the variables in the system. The ordering of the model is social spending–private saving–GDP–the unemployment rate. Based on the order, a one-unit shock on

social spending will impact all four variables. However, as private saving is the next variable, the changes in private saving will affect GDP and unemployment rate but not social benefits spending. The order ensures that the response to social spending is not contaminated by other contemporaneous innovations. Meanwhile, the ordering of the three economic variables is not important; because the paper assumes that the innovation in social spending leads changes in other variables, the estimated effect of social spending is unaffected by the ordering of economics variables. This approach assumes that the shock on social spending will affect the rest of the variables but the changes in other variables will not affect social spending.

The second approach is to set the impulse to one standard deviation of the residuals. This step assumes that there is no correlation in VAR residuals. When one unit shock is an impulse on social spending, the rest of the variables do not react in the first-time unit. Therefore, the effects of social spending only transmit through the lag term. This approach yields identical results as reversing the ordering of the original Cholesky composition. Eventually, the impulse response produced represents the inter-temporal effects of the shock. Deducting residual impulse from original Cholesky impulse results yields the short-term effects of the shock.

3.6   Measuring the effects of shocks in social spending

This paper uses estimations from the above two types of impulse response function to compute three types of elasticity and marginal products of economics variables: long-term, intertemporal, and short-term. Elasticity is computed as the ratio of accumulated change in one given economics variable to the accumulated change in the social spending program at the 20th time unit. For example, the elasticity of private saving to aggregate social spending is:

$$Eij = \frac{accumulated \ \% \ change \ in \ economic \ variable \ i}{accumulated \ \% \ change \ in \ social \ spending \ variable \ j}$$

The long-term elasticity includes the interactions between different variables while the short-term elasticity only contains the direct feedback of a given variable to the shock. The total long-term elasticity represents the long-term accumulated percentage change in one given variable for a one percent increase in social spending.

Meanwhile, the marginal products are the level changes in each of the three variables based on one unit (in billions of dollars) innovation of social benefits. The marginal products are

calculated as the average ratio of the corresponding variables to social benefits in the recent decade times corresponding elasticity. For example, the marginal product of private saving to aggregate social spending is:

$$MPij = \frac{average\ economic\ variable\ i}{average\ social\ sppening\ variable\ j} * Eij$$

Including the spending ratio of the most recent timespan can help to control the business cycle effects.

The total long-term elasticities of private savings, unemployment, and GDP with respect to total social spending as well as the different subcategories of social spending are present in **Table 9**. The table includes the total long-term effects as well as their decomposition into effects on impact and intertemporal effects. The short-term effects capture the immediate effects of social spending on economic variables. The intertemporal effects assume no correlation in the residuals to exclude the immediate effects of social spending on economy. The intertemporal effects measure how economic variables respond to the increase in social spending through the lag term, so the effects are intertemporal. Finally, the long-term effects are the sum of the short-term effects and the intertemporal effects.

To test for the significance of long-term elasticity, **Table 8** contains the lower and upper bounds of elasticity based on the impulse response results with two standard deviation error bands. For accuracy concern, this paper defines that 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 saving 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 all negative and statistically significant again for all cases except for social security and medical care.

4 On the effects of social spending on economic performance

4.1 On the effects of aggregate social spending

Aggregate social spending positively affects **private saving**. For one percent increases in social spending, private saving increases by 0.342%. The short-term and long-term elasticity 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 one billion increases in social spending.

The effects of social spending on **unemployment** are statistically significant and positive. In the short run, the unemployment rate will increase by 1.86%. 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 long-term elasticity, the distortionary effects of social spending on the labor market occur mostly in the short term.

Eventually, social spending negatively affects **GDP**. For a one percent increase in social spending, GDP decreases by 0.106% in the short run and decreases 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 effect on GDP indicates that social spending distorts the labor market more compared with encouraging saving. The negative effects of social spending transmit from the labor market to GDP while the positive effects on capital markets cannot counteract.

4.2 On the effects of individual social spending programs

The relationship between social spending and economic performance are heterogeneous in terms of magnitude among the six different categories of social spending.

First, **social security** positively affects private savings. It is worth noting that the intertemporal elasticity of social security on private saving is much higher than the short-term elasticity. Private saving increases by only 0.064% in the short run. Private saving increases by

0.34% in the long run for a one percent increase in social spending. Based on the impulse response graphs, the effects of social security are not significant for all economic variables. Based on the elasticity error bands, the effects of social security are robust for the private market but insignificant for the labor market. It leads to a non- significant impact on GDP.

Medical care has trivial effects on all economic variables even though it shares a large proportion of social spending. Based on the error bands from imposing response graphs and elasticity, effects are small and not significant across all categories.

Veteran benefits increase private savings and the unemployment rate at the same time. Because veteran benefits are not strongly related to the business cycle and its proportion in the whole welfare spending shrinks significantly in the recent decades, the marginal calculation scheme may be misled. Elasticity can capture the dynamic more accurately. In terms of long-term elasticity, private saving increases by 0.384%, and the unemployment rate increases by 1.044%. The elasticity of GDP is negative and robust, even though the magnitude is only 0.089%. The intertemporal elasticity for all economics variables is small, so the short- and long-term elasticity are similar, indicating the effects of veteran benefits are consistent over time.

Unemployment insurance also increases both private savings and the unemployment rate. The elasticities are robust for both effects. In terms of long-term elasticity, unemployment insurance increases the original unemployment rate by 0.474%. In terms of long-term marginal product, a one-unit increase in unemployment insurance increases private saving by 5.213 billion dollars. In response to the change in capital and labor market, GDP decreases by 8.308 billion in the long run for 1 billion increases in social spending. The short-term effects of unemployment insurance dominate the overall effects. The marginal product of unemployed insurance on GDP is larger in the short-term frame, indicating that the economy is sensitive to this type of welfare program.

Public assistance positively affects private savings and the unemployment rate. However, its marginal products suffer the same methodological issues with veteran benefits and should be dismissed. In terms of long-term elasticity, other social insurance increases private saving by 0.545%, increases the unemployment rate by 0.96%, and decreases GDP by 0.07%. All the elasticities are robust. Unlike other social spending programs, the intertemporal elasticity of public assistance is bigger than short-term elasticity across all economics variables. It indicates that public

assistance has a more durable effects on the overall economy, and the short-term response only occupies a small fraction of the overall effects.

Finally, **other social insurance** has positive effects on private saving and unemployment rate. For one percent increases in other social insurance, the private saving increases by 0.555%, unemployment rate drops by 1.085%, and GDP decreases by 0.103% in the long run. The intertemporal effects are trivial in comparison to short-term effects. The marginal products are dismissed because the numerical value of other social insurance is too small in comparison to private saving and GDP, which biasing the marginal product results.

4.3   Comparing the effects across different programs

This section provides a holistic discussion about the results. First, the elasticity and marginal products in this paper have a consistent direction: social spending negatively affects the labor market. Social spending has a positive effect on private savings. Finally, it has a negative effect on GDP.

Regarding **private saving**, this paper finds that all programs increase private saving or have no effects on saving instead of discouraging it. The typical explanation for negative effects on saving 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. Public assistance, social security, unemployment insurance, and veteran benefits are the four categories that clearly increase saving. Meanwhile, based on the intertemporal elasticity and short-term elasticity, this paper finds that the effects of social security and public assistance are durable as their effects on private saving increases significantly over time. For the rest of programs, the effects are relatively similar between short-term and long-term.

Since all social benefits programs have positive long-term elasticity for **unemployment,** the distortionary effects of social spending on labor market are clear. Among all programs, veteran benefits and other social insurance have the highest unemployment rate elasticity. However, considering they share only 3.39% and 1.53% of overall social spending respectively in average in 2010s, the elasticity offers little implications for current policy. Meanwhile, unemployment insurance and public assistance have very different interaction dynamics with labor market. The

intertemporal elasticity is higher than the short-term elasticity for public assistance, but the relationship is reverse for unemployment insurance. It suggests that unemployment insurance increase unemployment rate quickly while the distortionary effects of public assistance last longer.

Overall, social spending seems to discourage **GDP growth**, but the evidence is not significant enough. Medical care and other social insurance are the two categories that exhibit trivial positive effects on GDP while the rest all discourage economic growth. The effects of unemployment insurance, veteran benefits, public assistance, and other social insurance are statistically significant. The short-term elasticity is generally bigger than the intertemporal effects with the exception of public assistance. Each category has a relatively small long-term elasticity, which also suggests that the relationship between social spending and GDP can be too weak to be captured.

The elasticities of economic variables to various social spending programs have different magnitude, indicating that they have different impacts on the economy. Because programs differ by both financing scheme and functionality, the paper cannot locate the determining factors for the difference in effects. However, while the literature suggests that welfare programs that are 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 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 effects of public assistance on unemployment increase 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 with 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 the policies are ineffective in addressing poverty and alleviating productivity of poor families.

Meanwhile, social security and medical care have the least distortionary effects on the economy, though they occupy the largest share of total social spending. The two programs have negative elasticity on unemployment even though the results are not significant. One potential

explanation for this result is that most people who receive social security or medical care have already quitted the labor market, so they are not included in the unemployment rate.

Overall, this paper finds that social spending on the whole has distortionary effects on the economy mainly through the labor market channel. For disaggregate welfare programs, social security and medical care have the least distortionary effects on the economy while unemployment insurance and public assistance have the most distortionary effects.

5 Concluding Remarks

This paper analyzes the dynamics of social spending and long-term economic performance using aggregate data from 1949-2019 and VAR models. Parallel to the existing literature, it finds that social spending increases private saving and unemployment rate. Overall, social spending decreases GDP, indicating that its effects on labor market dominants over the effects on capital market.

In comparison to the literature, this paper yields result that are similar to Pereira and Andraz's study in the United States (2015). The consistent results suggest that the overall relationship between social spending and the economy does not shift 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 negative effects is small across all spending programs. The results are in line with the literature arguments that social spending distorts the economy, but it also suggests that the relationships are not obvious, which corresponds to Cammeraat (2020) and Czech &Tusinska (2016)'s remark.

One innovative approach this paper contributes is to break down social spending to six disaggregate programs and analyze their effects on economy. It identities unemployment insurance and public assistance as both significantly affecting the unemployment rate. Furthermore, it finds that the distortionary effect of public assistance is amplified in the long run compared to unemployment insurance. The two programs are similar in terms of 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 subsidy is less likely to distort economy in the long run. The policy implication is that a short-term social insurance that

protects people in economic downturns is more economically efficient compared with long-term government aids.

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 rather clearly 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 findings (2012). While social spending and medical care are the two biggest social spending categories, their effect on the economy is relatively mild in comparison to unemployment insurance and public assistance. The key difference between those two programs and unemployment insurance/public assistance is that the formers are universal support system while the latter specifically targets people with economic difficulty. These results may suggest that welfare programs that are in place to support everyone in society are incorporated in people's decision-making process and therefore less likely to change people's saving or working choices. Companies also consider cost for social security and medical care as the fixed cost of operation and 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 labor force.

Based on empirical analysis, 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 down GDP growth. However, not every component of Biden's policy agenda will have similar distortionary effects on the economy. Specifically, the increase in public spending on healthcare will have limited effects while the effects of prolonged unemployment benefits and stimulus bills will be very pervasive. It is important to design policies that do not directly interfere with the labor market. Since the majority of social spending programs are financed through payroll taxes, a shrinking labor force will harm the long-term solvency of social spending funds. The supporters for the plan may argue that the spending deficit will be offset by the tax increase for corporations and high-income individuals. Yet, this financing solution has its own 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 the different targeted population. One potential approach is to sort social spending by its way of funding rather than functionality. Second, the magnitude and composition of social spending changes greatly during the timespan of the chosen data set in response to various political reasonings. While the paper does not find any evidence of structural breaks, this is a matter that 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 perspective of market efficiency, but this is not the only standard to evaluate welfare policies. For example, sociologists may argue that social welfare exists to address systematic inequality or to guarantee basic economic security for every family. There is a gap in evaluating welfare policies between different social science discipline, and it will be beneficial for future scholars from different backgrounds to discuss their opposite views, methodologies, and underlining assumptions.

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Table 1. Literature Review

Research Subject	In-text citation	Argument	Empirical Results
Aggregate Social Spending	Furceri & Zdzienicka 2012	By targeting low-income individuals, an increase in social spending increases private consumption. Social spending on health can rise human capital and increases investment in the health sector	Social spending has expansionary effects on GDP and the multiplier is about 0.6 in the short term. (Among spending subcategories, social spending on health and on unemployment benefits have the greatest effects.) [this paper breakdown social spending into nine different policy areas and analyze their effects] Social spending has no effects on investment.
	Mayer, Lopoo, Groves 2016		Social spending has positive effects on addressing income inequality. The way of distribution does not change the direction of the effects.
	Arjona, Ladaique, Pearson 2002		Social protection expenditure reduces output through the effect is not large. Active spending(spending that promotes labor market participation) is associated with higher growth.
	Ballard 1990, Conway 1997		Welfare spending negatively affects labor supply.
Social Security	Feldstein 1974	Emergence of social security may alleviate the need for private saving. Meanwhile, it may encourage people to save and retire at an early age.	Depress private saving by 30-50 percent.
	Coile & Levine 2007	Social security serves as an effective form of unemployment insurance for older workers and motivates older workers to retire at economic downturn	Retirements only increase in response to an economic downturn once workers become SS-eligible
	Rust & Phelan 1997; mastrobuoni 2009; seibold 2021	the age eligibility of social security and Medicare sets the artificial time for people to quit the labor market and creates a smaller working population	The peak retirement point is the normal retirement age set by Social Security.

Research Subject	In-text citation	Argument	Empirical Results
Medicare			
Veteran Benefits			
Unemployment Insurance	Farber & Valletta 2013		Extended unemployment insurance contributes to increase in long-term unemployment rate
	Krueger & Meyer 2002	Unemployment insurance and work compensation lead to short-run variation in wages with mostly a substitution effect.	Unemployment insurance prolonged the length of time employees spend out of work.
	Mortense& Pissaride 1997; Marimon& Zlibotti 1999	The relatively high long-term unemployment rate in European countries compared with the U.S. is due to the difference in welfare generosity.	
Public Assistance	Blank 2002	In 1980s and 1990s, benefits for working low-income families increased and for welfare recipients falls, which pushed people to find employment and leave the rolls. It should help boost the labor supply.[public assistance program becomes work-oriented] *Children and single-mother are mostly affected by public assistance programs.	As the public-assistance becomes more work-oriented, there were a decline in caseloads and increase in labor participation rate for single mothers with young children.
	Neumann, Fishback, Kantor 2010		Increases in work relief spending during the Second New Deal decreased private employment, suggesting a crowding out effects. (work relief provides public employment while direct relief provides cash transfer – the later has no effect on labor market)
Other Social Insurance			

Table 2. 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

Table 3. Social Benefits Expenditure by Types

Main Category	Federal Level Distribution	State and Local Level 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.

Table 4. 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

Table 5. Unit Root Test

Variable	Log	Log with Trend	Growth Rate	Growth with Trend
Private Saving	-	-	***	***
Unemployment Rate	*	-	***	***
GDP	-	-	***	***
Total Social Benefits	-	-	***	***
Social Security	***	***	***	***
Medical Care	***	-	**	***
Veteran Benefits	-	-	-	-
Unemployment Insurance	-	**	***	***
Public Assistance	-	-	***	***
Other Social Insurance	-	*	***	***

* p<0.05, ** p<0.01, *** p<0.001 (Null Hypothesis: the given variable has unit root)

Table 6 Engle-Granger Cointegration Test Results

Dependent Variable	Total Social Benefits	Private Saving	Unemployment	GDP
None	-	-	-	*
Constant	-	-	-	-
Constant, Trend	-	-	-	-
Constant, Trend, 2008 dummy	-	-	-	-
Constant, Trend, 2008&1982 dummies	-	-	-	-
	Social Security	**Private Saving**	**Unemployment**	**GDP**
None	-	-	-	-
Constant	-	-	-	-
Constant, Trend	-	-	-	-
Constant, Trend, 2008 dummy	-	*	-	-
Constant, Trend, 2008&1982 dummies	-	**	-	-
	Medical Care	**Private Saving**	**Unemployment**	**GDP**
None	-	-	-	-
Constant	-	-	-	-
Constant, Trend	-	-	-	-
Constant, Trend, 2008 dummy	-	-	-	-
Constant, Trend, 2008&1982 dummies	-	-	-	-
	Veteran Benefit	**Private Saving**	**Unemployment**	**GDP**
None	-	*	-	-
Constant	-	*	-	-
Constant, Trend	-	*	-	-
Constant, Trend, 2008 dummy	-	-	-	-
Constant, Trend, 2008&1982 dummies	-	-	-	-
	Unemp. Insurance	**Private Saving**	**Unemployment**	**GDP**
None	-	-	**	-
Constant	-	-	**	-
Constant, Trend	-	-	**	-
Constant, Trend, 2008 dummy	-	-	*	-
Constant, Trend, 2008&1982 dummies	-	-	*	-

	Public Assistance	**Private Saving**	**Unemployment**	**GDP**
None	-	-	-	-
Constant	-	-	-	-
Constant, Trend	-	-	-	-
Constant, Trend, 2008 dummy	*	-	*	*
Constant, Trend, 2008&1982 dummies	*	-	*	*

	Other Social	**Private Saving**	**Unemployment**	**GDP**
None	**	*	**	**
Constant	**	-	*	**
Constant, Trend	**	-	*	**
Constant, Trend, 2008 dummy	**	-	*	**
Constant, Trend, 2008&1982 dummies	**	-	-	-

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 7 Model Specification: Bayesian Information Criterion

	VAR(1)					VAR(2)				
	N	C	CT	CT 2008	CT 1982 2008	N	C	CT	CT 2008	CT 1982 2008
Total Social Benefits	27.09	26.87	**26.71***	26.82	27.01	27.07	27.17	27.14	27.15	27.35
Social Security	28.20	28.06	**27.93***	28.00	28.20	28.46	28.53	28.42	28.44	28.66
Medical Care	29.98	29.85	**29.72***	29.82	30.07	29.86	29.90	29.80	29.79	30.03
Veteran Benefits	27.03	26.75	**26.67***	26.74	26.95	27.03	27.03	26.99	26.96	27.20
Unemployment Insurance	29.03	28.96	**28.87***	28.96	29.19	29.22	29.33	29.28	29.30	29.52
Public Assistance	28.09	27.95	**27.86***	27.96	28.12	28.47	28.58	28.53	28.52	28.69
Other Social Insurance	31.08	30.99	30.89	30.99	31.21	27.36	27.44	27.38	**27.36***	27.60

*Indicates the specification with lowest BIC value.

Figure 1. Economic Effects of Shocks in Aggregate Social Spending

Accumulated Response of fGPS to GSB

Accumulated Response of fGUN to GSB

Accumulated Response of GGDP to GSB
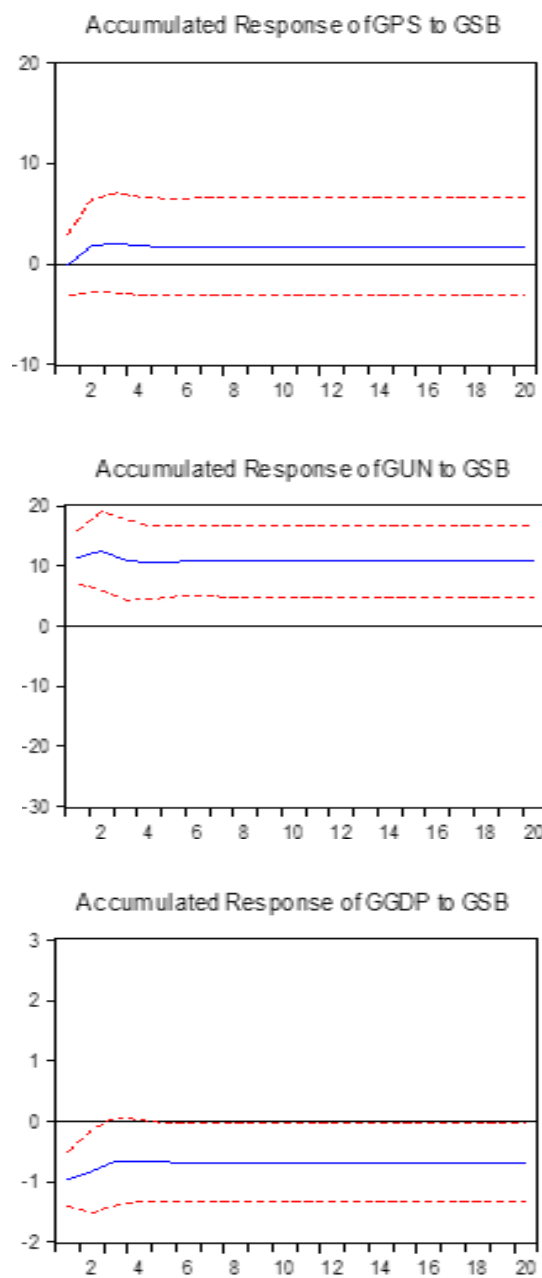
Figure 2. Economic Effects of Shocks in Social Spending at a Disaggregate Level

a. Social Security
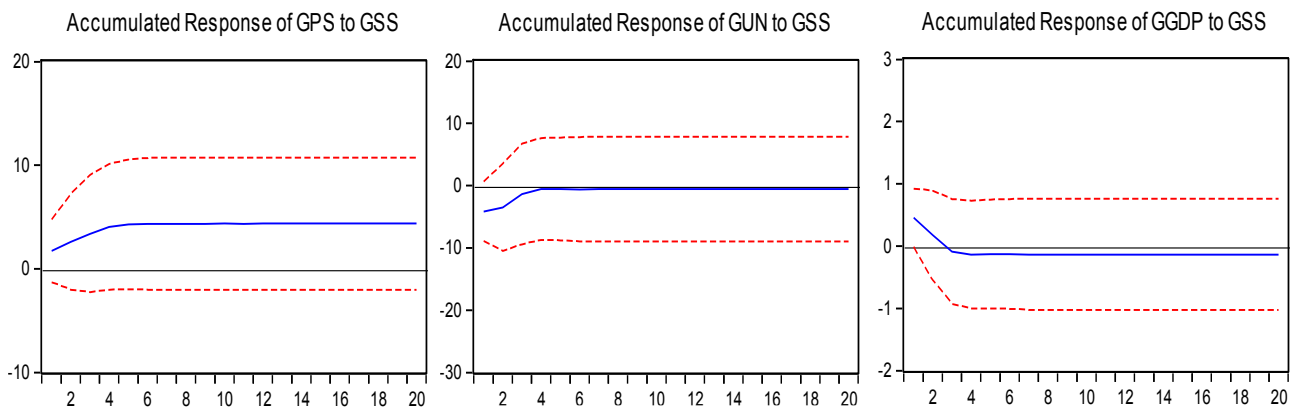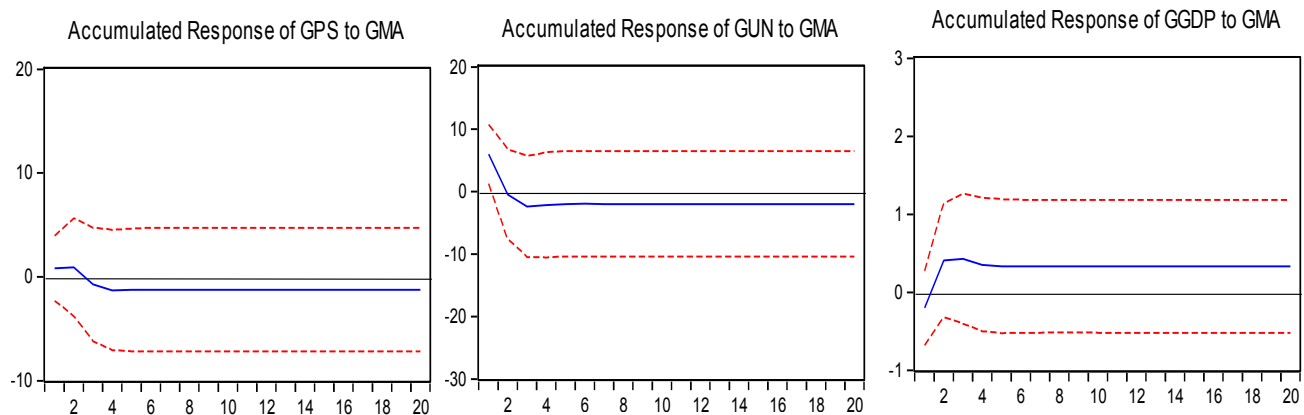
Accumulated Response of GPS to GSS

Accumulated Response of GUN to GSS

Accumulated Response of GGDP to GSS

b. Medical Care

Accumulated Response of GPS to GMA

Accumulated Response of GUN to GMA

Accumulated Response of GGDP to GMA

c. Veteran Benefits

Accumulated Response of GPS to GVE
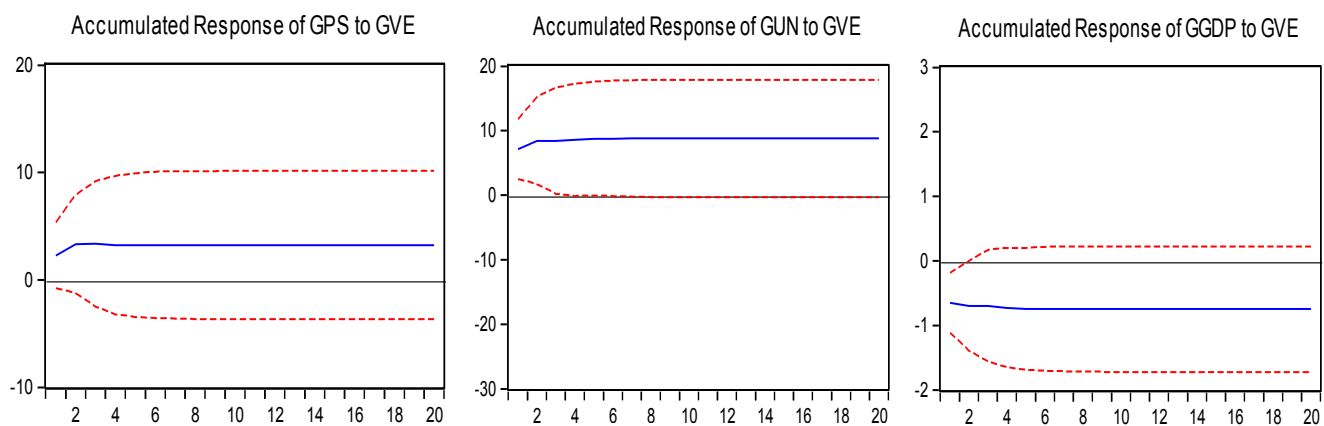
Accumulated Response of GUN to GVE

Accumulated Response of GGDP to GVE

Figure 2. Economic Effects of Shocks in Social Spending at a Disaggregate Level (Cont'd)

d. Unemployment Insurance

Accumulated Response of GPS to GUI

Accumulated Response of GUN to GUI

Accumulated Response of GGDP to GUI

e. Public Assistance

Accumulated Response of GPS to GPU

Accumulated Response of GUN to GPU

Accumulated Response of GGDP to GPU

f. Other Social Insurance

Accumulated Response of GPS to GOS

Accumulated Response of GUN to GOS

Accumulated Response of GGDP to GOS
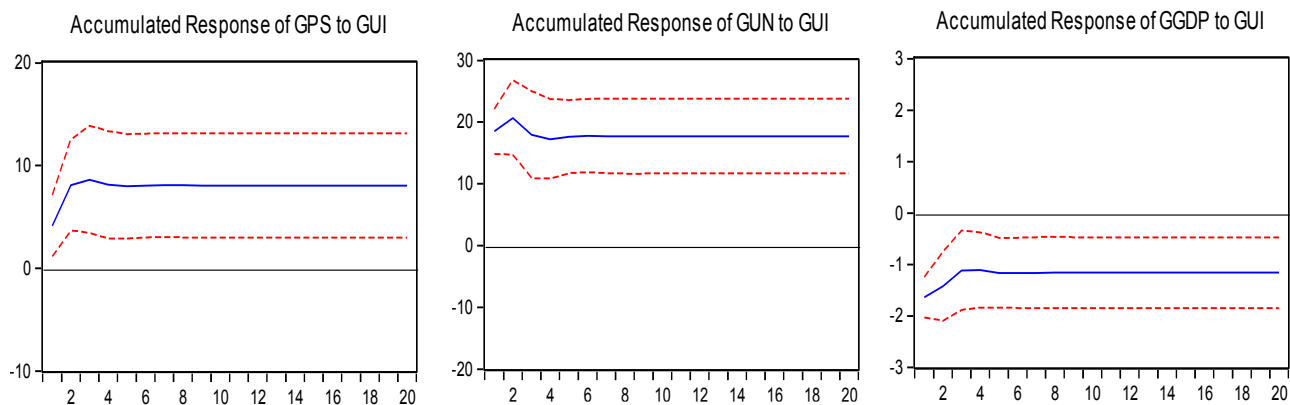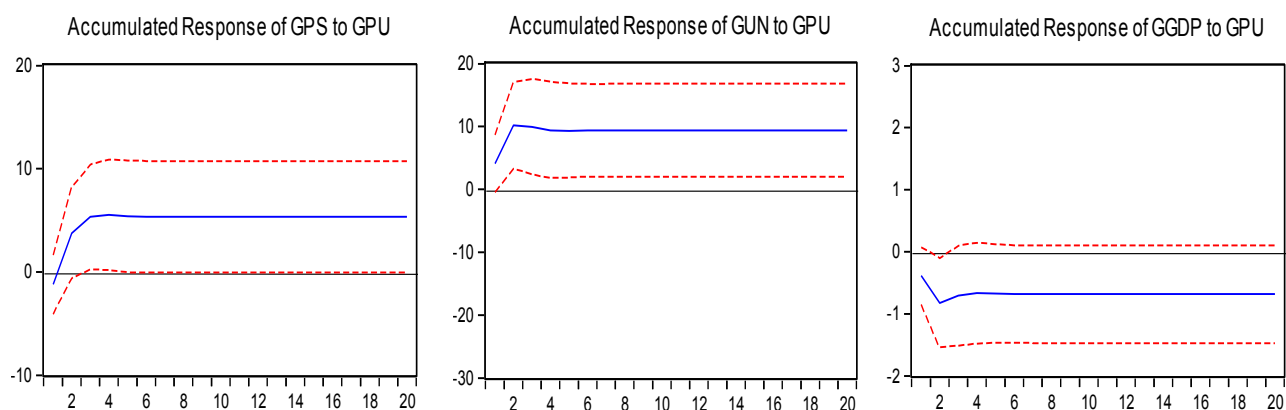
Table 8. Total long-term elasticities with respect to shocks in social spending: error bounds

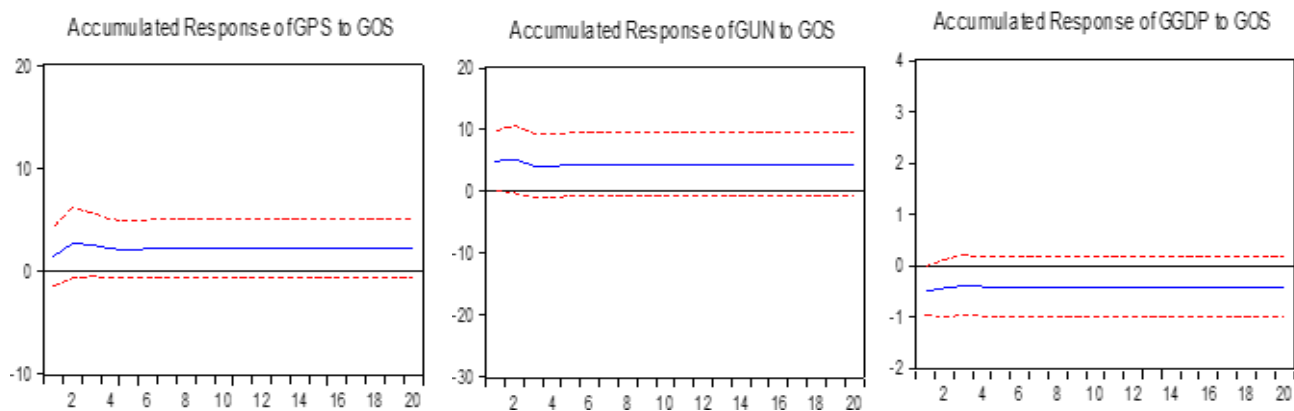| Variable	Private Saving			Unemployment Rate			GDP		
	Lower Bound	Elast.	Upper Bound	Lower Bound	Elast.	Upper Bound	Lower Bound	Elast.	Upper Bound
Total Social Spending	-0.14	**0.34***	0.70	1.80	**2.10***	2.31	-0.23	**-0.13***	-0.06
Social Security	0.11	**0.34***	0.49	-0.46	**-0.04**	0.24	-0.06	**-0.01**	0.02
Medical Care	-0.14	**-0.01**	0.08	-0.24	**-0.05**	0.08	-0.01	**0.01**	0.02
Veteran Benefits	-0.03	**0.38***	0.65	0.64	**1.04***	1.30	-0.19	**-0.09***	-0.03
Unemployment Insurance	0.18	**0.22***	0.24	0.47	**0.47***	0.48	-0.05	**-0.03***	-0.02
Public Assistance	0.32	**0.55***	0.70	0.70	**0.96***	1.15	-0.13	**-0.07***	-0.03
Other Social Insurance	0.23	**0.56***	0.86	0.50	**1.08***	1.56	-0.20	**-0.10***	-0.03

*Represents values of the total long-term elasticity which are statistically different from zero.

Table 9. Elasticities and marginal products with respect to shocks in social spending

	Elasticity			Marginal Product		
	Total Long-term	**Intertemporal**	**Short-term**	**Total Long-term**	**Intertemporal**	**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.