Stabilization Effects of Social Spending: Empirical Evidence from a Panel of OECD Countries Overcoming the Financial Crisis in the United States

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STABILIZATION EFFECTS OF SOCIAL SPENDING: EMPIRICAL EVIDENCE FROM A PANEL OF OECD COUNTRIES

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by Davide Furceri

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ABSTRACT/RÉSUMÉ

Stabilization Effects of Social Spending: Empirical Evidence from a Panel of OECD Countries Overcoming the Financial Crisis in the United States

The aim of this paper is to assess the ability of social spending to smooth output shocks and to provide stabilization. The results show that overall social spending is able to smooth about 16 percent of a shock to GDP. Among its subcategories, social spending devoted to Old Age and Unemployment are those that contribute more to provide smoothing. Moreover, the stabilization effects of social spending are significantly larger in those countries where the size of social spending is higher. The empirical results are economically and statistically significant and robust.

JEL classification: E0; E6

Keywords: Fiscal Policy; Social Spending; Output Stabilization

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Les effets de stabilisation des dépenses sociales : étude empirique sur un échantillon de pays de l'OCDE

L'objectif de ce document est d'évaluer la capacité des dépenses sociales à lisser les chocs sur la production et stabiliser l'économie. Les résultats montrent que le total des dépenses sociales est capable de lisser environ 16 pour cent d'un choc sur le PIB. Au sein des différentes sous catégories, les dépenses sociales relatives aux pensions et au traitement du chômage sont celles qui contribuent le plus au lissage. Par ailleurs, les effets de stabilisation des dépenses sociales sont significativement plus grandes dans les pays où la taille des dépenses sociales est plus élevée. Les résultats empiriques sont économiquement et statistiquement significatifs et robustes.

Classification JEL : E0 ;E6

Mots clés : politique budgétaire ; dépenses sociales ; stabilisation de production

STABILIZATION EFFECTS OF SOCIAL SPENDING: EMPIRICAL EVIDENCE FROM A PANEL OF OECD COUNTRIES

By Davide Furceri[1]

1. Introduction

1.   The macroeconomic literature on automatic stabilizers; smoothing and risk sharing mechanisms has mostly concentrated on the role played by taxes; transfers and unemployment benefits[2].

2.   In contrast; very few works have analyzed the role of total social spending and its categories in smoothing output fluctuations. The first work on this issue is Arreaza et al. (1998). Using a panel of OECD countries; the authors assess the ability of several components of government spending (including total social spending) in absorbing GDP shocks. Using the same approach for European countries; Afonso and Furceri (2008) assess the ability of different fiscal variables to provide stabilization in an enlarged monetary union. However; Darby and Melitz (2008) are the first to deeply analyze the pattern of government social spending over the cycle. The authors; using detailed and disaggregated data of government social spending for OECD countries; find that several components of social spending works as automatic stabilizers; with an elasticity of total social spending to output gap (changes) equal to 0.5. Their results; which might seem in contrast with some of the macroeconomic literature; accords with works in the labor and health economics literature[3].

3.   Starting from this result; this paper provides additional evidence on the connection between social spending and the economic cycle. While Darby and Melitz (2008) assess the responsiveness of

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[2] See, for example, Afonso and Furceri (2008); Arreaza et al. (1998); Asdrubali et al. (1996); Auerbach and Feenberg (2000); Blanchard and Perotti(2002); Buti et al. (2003); Farina and Tamborini (2004); Galí and Perotti (2003); Goodhart and Smith (1993); Giorno et al. (2002); Hammond and von Hagen (1995); Mélitz and Zumer (2002); Obstfeld and Peri (1998); Perotti (2002); Sachs and Sala-i-Martin (1991); Sorensen and Yosha (1998); von Hagen (1998).

[3] See, for example, Bound and Burkhauser (1999); Black et al. (2002); Boone and van Ours (2002) Autor and Duggan (2003); Beatty et al. (2000); Coile and Levine (2006); Holmulund (2004); Johansson et al. (2006); Ruhm (2006); Ruhm and Black (2002); TapiaGranados (2005).

social spending to the cycle; the aim of our work is to quantify the amount of shocks to GDP smoothed by social spending.

4.   In particular; using the approach proposed by Arreaza et al (1998); we analyze the ability of social spending to smooth output shocks and to provide stabilization. We also quantify the amount of risk sharing provided by government spending in nine different social policy areas: Old Age; Survivors; Incapacity Related; Health; Family; Active Labor Market; Unemployment; Housing and Others social policy areas.

5.   The results of the paper suggest that overall social spending is able to smooth about 16 percent of a shock to GDP. Among its subcategories; social spending devoted to Old Age and Unemployment are those that provide more smoothing (5 percent respectively). Moreover; the stabilization effects of social spending are significantly larger in those countries where the size of social spending is higher. The empirical results are economically and statistically significant; and robust.

6.   The rest of the paper is organized as following. The next section describes the data and provides some descriptive statistics of social spending. Section 3 presents the empirical methodology. Section 4 will discuss the main results. Finally; section 5 summarizes the main finding.

2. Data

7.   Data are taken from OECD databases. Data for income variables are taken from the National Accounts dataset while data for social spending are taken from the Social and Welfare statistics. The availability of social spending variables shorten the estimation period from 1980 to 2003; while availability of data for Domestic National Income shorten the country sample to 23 (See Annex 1 for data availability).

8.   Total social spending contributes to a significant share of government expenditure and of GDP. On average; about 46 percent (21) of total government spending (GDP) is represented by social spending (Table 1).

9.   Among the different policy areas in which social spending is allocated; it is possible to see that Old Age and Health are by far the largest components of social expenditure. In particular; on average; Old Age and Health represent respectively 14.5 and 12.5 percent of total government spending. Interestingly; the third largest category is Incapacity Related spending; while spending in Unemployment; Active Labor Market Programme and Housing are much lower. A significant share is also devoted to Family related spending.

10.   Analyzing the behavior of total social spending among countries; we can observe that it differs internationally (Figure 1). In particular; while in some countries (such as Austria; Belgium; Denmark; Finland; France Germany; Italy; Netherlands; Norway and Sweden) social spending is systematically above the average (about 21 percent of GDP); in other countries (such as Japan; Korea; Mexico; United States) it is systematically below.

11.   In contrast; there are no large differences across countries over time. In fact; for most of the countries in the sample (exceptions are represented by Netherland; New Zealand and Slovak Republic) social spending (as GDP share) shows an upward trend.

12.   This descriptive analysis suggests that the differences are mainly among countries. Thus; it will be also important to assess the amount of smoothing provided by social spending for each of the countries in the sample.

3. Empirical Strategy

13.   In order to quantify the ability of social spending to absorb shocks to GDP; we follow the approach proposed by Asdrubali et al. (1996) and used by Arreaza et al. (1998) and Afonso and Furceri (2008) to quantify the amount of smoothing provided by fiscal variables. In detail; we decompose GDP into different national income aggregates all closely tied to GDP: Gross National Product (GNP); Net National Income (NI); Domestic Net National Income (DNI); and Total (private and public) Consumption (C+G):

GDP-GNP = *international income transfers (factor income flows);*   (1)
GNP-NI   = *capital depreciation;*
NI-DNI   = *net international tax and transfers;*
DNI –(C+G) = *total saving.*

Moreover disaggregating the last equality in (1) we have:
DNI –(DNI+G)= government spending   (2)
DNI +G –(C+G) = private saving

Let us consider the following chain equation between GDP and total consumption:

$$GDP_i = \frac{GDP_i}{GNP_i} \cdot \frac{GNP_i}{NI_i} \cdot \frac{NI_i}{DNI_i} \cdot \frac{DNI_i}{(DNI+G)_i} \cdot \frac{(DNI+G)_i}{(C+G)_i} \cdot (C+G)_i \tag{3}$$

14.   If a shock hits the economy of one country; modifying the value of the GDP; the economic system will smooth the shock if some counter-cyclical factor can perform this task. Thus; if only GDP varies after the shock; while the other aggregates remain unchanged; then full stabilization has been obtained. If GDP varies and GNP remains unchanged; on the other hand; stabilization is achieved in the first stage by the international net transfers of income factors. Conversely; if GNP varies and NI remains constant; then cyclical smoothing is provided by the capital depreciation. Finally; if total consumption also changes; it means that a share of the shock is not smoothed.

15.   In principle; all these factors (except capital depreciation) have a counter-cyclical smoothing effect. The first aggregate expresses the international transfers of income earned by foreign entities in each country. The second aggregate is the capital depreciation; usually calculated as a constant part of the total amount of capital. Thus; since the capital-to-output ratio is typically counter-cyclical; depreciation constitutes a large fraction of output in recessions and a smaller fraction in boom periods. This results in a higher cross-sectional variance of NI with respect to GNP. The third aggregate is based on the mutual insurance between the countries. The fourth aggregate represents the amount of shocks to GDP absorbed by government spending. Finally; the fifth represents consumption smoothing.

16.   In particular; from equation (3) it is possible to derive[4] the following system of independent equations:

$$\Delta \log GDP_{i,t} - \Delta \log GNP_{i,t} = \alpha^m + \beta^m \Delta \log GDP_{i,t} + \varepsilon_{i,t}^m \tag{4}$$

$$\Delta \log GNP_{i,t} - \Delta \log NI_{i,t} = \alpha^d + \beta^d \Delta \log GDP_{i,t} + \varepsilon_{i,t}^d \tag{5}$$

$$\Delta \log NI_{i,t} - \Delta \log DNI_{i,t} = \alpha^g + \beta^g \Delta \log GDP_{i,t} + \varepsilon_{i,t}^g \tag{6}$$

$$\Delta \log DNI_{i,t} - \Delta \log (DNI + G)_{i,t} = \alpha^p + \beta^p \Delta \log GDP_{i,t} + \varepsilon_{i,t}^p \tag{7}$$

$$\Delta \log (DNI + G)_{i,t} - \Delta \log (C + G)_{i,t} = \alpha^s + \beta^s \Delta \log GDP_{i,t} + \varepsilon_{i,t}^s \tag{8}$$

$$\Delta \log (C + G)_{i,t} = \alpha^u + \beta^u \Delta \log GDP_{i,t} + \varepsilon_{i,t}^u \tag{9}$$

where the index i $(i = 1,...,N)$ denotes the country; the index t $(t = 1,...,T)$ indicates the period.

17.   The β coefficients measure the incremental percentage amount of smoothing achieved at each level of the GDP decomposition; and $\sum \beta = 1$. In particular; β^u is the percentage of shock that remains unsmoothed; β^m is the percentage of shock smoothed by factor income flows; β^d represents capital depreciation smoothing (or dis-smoothing); β^g is the amount of shock smoothed by international transfers; β^p is the amount of shock smoothed by government spending; β^s measures private consumption smoothing. Thus; if β^u=0; then there is full risk-sharing. Moreover; each coefficient has no constraint; so it can be either larger than 1 or negative (dis-smoothing).

18.   Using equation (7) and restricting government spending to social spending we can further quantify the amount of smoothing provided by social spending:

$$\Delta \log DNI_{i,t} - \Delta \log (DNI + f)_{i,t} = \alpha^f + \beta^f \Delta \log GDP_{i,t} + \varepsilon_{i,t}^f \tag{10}$$

where f is the category of social spending we examine (Total social spending; Old Age; Survivors; Incapacity Related; Health; Family; Active Labor; Unemployment; Housing; Other social policy areas) and β^f is the relative amount of shock smoothed by that category.

        From a technical point of view; we estimate equation (10) using different econometric techniques: 1) Time fixed effects to capture year-specific impacts on growth rates; 2) Time and country fixed effects to capture also country-specific impacts on growth rates; 3) Time fixed-effects with error term following an AR(1); 4) Arellano and Bover (1995); Blundell and Bond (1998) GMM estimator.

4. Results

19.   We start our empirical analysis by estimating the percentage of shocks to GDP smoothed through each of the channels described in the equations (4) to (9). Analyzing the results of this empirical exercise (Table 1); it is immediately apparent that a large amount of shocks to GDP are not smoothed (42 percent). In particular; factor income flows and international transfers have a negligible effect in income smoothing. While the magnitude of the coefficients suggest that international transfers provide a very negligible dis-smoothing effect (-0.5 percent) and that net international tax and transfers provide 9 percent of the smoothing; the estimates of the coefficients associated with these channels are not significant.

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[4] See Asdrubali et al. (1996).

20.   Capital depreciation provides a sizeable amount of dis-smoothing (14 percent) since it generally constitutes a large fraction of output in recessions and a smaller fraction in the boom.

21.   The only operative smoothing mechanisms are government consumption and private saving. In particular; the amount of shocks to GDP smoothed through these channels are 9 percent and 45 percent; respectively.

22.   All these results are in line with those previously obtained by Sorensen and Yosha (1997); Areazza et al. (1998) for the OECD and EU countries; and by Afonso and Furceri (2008) for the EU25 countries. Our results differ in that the amount of shock unsmoothed is lower; due to the increased risk sharing provided by consumption smoothing.

23.   We continue our analysis assessing the impact of social spending in smoothing shocks to GDP (equation 10). The results are reported in Table 2. Looking at the first column of the table (where the results are obtained with the same estimation techniques of those presented in Table 1) we can see that the amount of smoothing provided by the total social spending is about 16 percent.

24.   This result is extremely statistically significant and robust across different econometric methods. In fact; according to different techniques the amount of income smoothing provided by social spending is always positive and statistically significant; ranging from 12 percent (Time Fixed Effect estimator) to 23 percent (Arellano and Bover; 1995; Blundell and Bond; 1998; GMM estimator).

25.   The sizeable magnitude of the coefficient has two main implications: i) government spending in social areas has a more stabilizing effect than total government spending as a whole; ii) for the coefficient associated with social spending to be greater than the one associated to total government spending; some items of government spending has to provide dis- smoothing. This; however; is not surprising. Firstly; as the economic literature has widely recognized; the component of government spending that should react more to the economic cycle is unemployment benefits. Secondly; previous research has found that some components of government spending are pro-cyclical (Afonso and Furceri; 2008)

4.1 Social Spending by Policy Areas

26.   In Table 3 we present the estimated percentage of shocks to GDP smoothed through different items of social spending. For comparison purposes; the results reported in the table are obtained using both time and country fixed effects (both which we have found to be significant); and for which we got a sensible point estimate of the coefficient associated to total spending (close to the average of all estimation methods).[5]

27.   The table reports the estimates for three different periods of analysis. The first is (the overall period) ranging from 1980 to 2003; the second is the sub-period 1980 to 1991; and the third is the sub-periods 1992 to 2003. In this way; we can see how the ability of these channels to smooth income fluctuations evolves over time.

28.   Analyzing the overall period; it is immediately apparent that the largest amount of smoothing to income fluctuations is provided by social spending in Old age (about 5 percent) and Unemployment benefits (5 percent). Regarding the other components; while spending in Housing and in Other policy do not provide any significant smoothing; spending devoted to Health (2.6 percent); Active labor market

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[5] All the results presented in this section are robust to the other econometric techniques discussed in the text. All the results are available from the author upon request.

policies (1.6 percent); Incapacity related (1.4 percent); Family (1.1 percent); and Survivors (0.3 percent) contributes to smooth overall an additional 7 percent of income fluctuations.[6]

29.   Looking at the results for the two sub-periods; and comparing them; we can see that the ability of social spending to smooth income fluctuations has declined over time. This is reflected in the decreased ability of all items of social spending in providing insurance against GDP shocks. The only exception is represented by Unemployment benefits; for which the associated coefficient increased from 4.9 percent to 5.4 percent.

30.   This result is in line with the empirical evidence in Afonso and Furceri (2008); which suggests that the ability of government spending to smooth income fluctuations has generally decreased in the last decade.

4.2 Positive versus Negative Shocks

31.   We examine now whether social spending smoothes shocks in an asymmetric way; i.e. differently when shocks to GDP are positive or negative. For this purpose; we estimate the following equation:

$$\Delta \log DNI_{i,t} - \Delta \log\left(DNI + f\right)_{i,t} = \alpha^f + \beta^+ D_t^i \Delta \log GDP_{i,t} + \beta^- (1 - D_t^i)\Delta \log GDP_{i,t} + \varepsilon_{i,t} \tag{11}$$

where D =1 if in year t country i had a GDP growth rate above its potential level (defined as the average growth rate over the years) while D=0 when country i in year t had a GDP growth rate below its potential. β^+ measures the amount of shocks absorbed during upturns; while β^- measures the amount of shocks absorbed during downturns.

32.   Estimates of equation (11) for total social spending and all its sub-components are reported in Table 4. The results show that the estimated amount of shock smoothed through total social spending; Unemployment benefits; Housing; Old age; Survivors and Others is bigger during upturns than downturns. The opposite is true for the other categories. However; the difference in the estimated coefficients is never statistically significant; suggesting that there is no remarkable asymmetry in the stabilization effect of social spending.

4.3 High versus Low Deficits

33.   In principle; the efficiency of automatic stabilizers can be a function of soundness of balance sheet positions in each country. For example; large government deficits may render government consumption smoothing more difficult since cross-country borrowing maybe very expensive due to a lower credit rating.

34.   For this purpose; we assess whether the ability of social spending in smoothing GDP shocks is different between countries with large and small deficits. We estimate an equation similar to equation (11);

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[6] Note that the estimated coefficient for each items of social spending do not sum up to the total social spending, since estimates are not computed by OLS (see Asdrubali et al., 1996).

where D this time assumes value equal to 1 when country i in year t had a level of deficit above 3 percent; and value equal to 0 when country i in year t had a level of deficit below the 3%.[7]

35.   The results of this exercise are reported in Table 5. Analyzing the table it is possible to see that for total social spending; unemployment benefits and old age; the amount of smoothing is larger in a situation of high deficits; while for the other items it is higher during period of low deficits. However; even in this case; the difference in the estimated coefficients is never statistically significant; suggesting that the size of the deficit has little or negligible effects on the efficiency of social spending in providing income smoothing.

4.4 High versus Low Discretionary Spending Volatility

36.   We successively test whether automatic stabilizers are more or less effective in countries with higher discretion of government spending. For this purpose; we estimate an equation similar to equation (11); where D this time assumes value equal to 1 for countries with high level of discretionary government spending (above to the cross-country average) and value equal to 0 for countries with low level of discretionary government spending.

37.   Discretionary spending is estimated following the approach proposed by Fátas and Mihov (2003; 2006). In particular; for each country we estimate the following equation:

$$\log(G_{i,t}) = \alpha_i + \beta_i \log(Y_{i,t}) + \gamma_i \log(G_{i,t-1}) + \boldsymbol{\delta}_i \mathbf{Z}_{i,t} + \eta_{i,t} \qquad (12)$$

where G is real government spending; Y is real GDP; and $\mathbf{Z}$ is a set of controls including also a time trend[8]. The estimates of the country-specific $\sigma_i \left(= \sqrt{\sum_t \eta_{i,t}^2} \Big/ n \right)$ in (12) represents our measures of discretionary spending volatility.[9]

38.   The results of this empirical exercise are reported in Table 7. Analyzing the table; it is possible to see that overall social spending is more effective in providing income smoothing in countries with low discretionary spending. In more detail; while the stabilization effect of Old age; Health; Housing; and Others seems to be higher in countries with low discretionary spending; the other components of social spending seem to provide more smoothing in countries with high discretionary spending. However; the differences are never statistically significant.

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[7] The choice of this value seems to be sensible since most of the countries in our sample are European countries, and are therefore considered high deficit countries when their value of deficit is above the threshold set in the Maastricht Treaty and in the Stability and Growth Programme (SGP).

[8] In order to get these estimates, we include as control variables (i.e. the vector $\mathbf{Z}_i$) the current and the lagged value of real oil prices, the current inflation rate and a linear time trend. Oil prices are included since they affect the state of the economy and more importantly because they contribute significantly to total revenue for some of the countries in the sample. We include inflation to ensure that our results are not driven by high inflation episodes. We also consider a time trend in our specifications, since government spending and revenue can also have a deterministic time trend in addition to the stochastic one. Finally, in order to control for possible endogeneity we use past values of real GDP as instruments. The results are qualitatively unchanged if we express the variables in differences.

[9] According to this definition, countries with high discretionary government spending are: Australia, Finland, Greece, Korea, Italy, Ireland, Mexico, Norway and Portugal.

4.5 Large versus Small Governments

39.   The economic literature on automatic stabilizers has pointed out that those countries with larger government shares benefit from more effective automatic stabilizers (Gáli; 1994; Fátas and Mihov; 2001; Balassone and Kumar; 2007). We test this hypothesis in the context of the effectiveness of social spending to smooth shocks to GDP. In particular; we want to investigate whether in countries with a larger size of social spending (above the average); social spending is more effective in providing income smoothing. For this purpose we estimate an equation similar to equation (11); where this time $D=1$ if in year t county i had a size of social spending larger than the (cross-country and over time) average; while $D=0$ otherwise.[10]

40.   The results reported in Table 7 confirm our hypothesis; i.e. the amount of smoothing provided by total social spending; and its sub-categories is significantly higher in countries with higher government size. This result also suggests that the ability of social spending to absorb shocks to GDP could vary considerably among countries.

4.6 Social spending by Countries

41.   Following the implications of the previous section; we estimate for each country the effectiveness of social spending as a shock absorber.[11] The results are reported in Table 8. Looking at the table; we can see that the amount of income smoothing provided by social spending is always positive and statistically significant; ranging from 12.7 percent in the case of Japan (the country with the lowest size) to 43.1 percent in the case of Sweden (the country with the largest size). Overall this confirms that the countries with a larger share of social spending (such as Belgium; Finland; France; and Sweden) are indeed those countries where the amount of income smoothed by social spending is larger (Figure 2). However; there are some exception. For example; in Australia social spending is lower than Germany; but the effectiveness of social spending to smooth shocks to GDP is larger.

5. Conclusions

42.   The macroeconomic literature on automatic stabilizers; smoothing and risk sharing mechanisms has mostly concentrated on the role played by taxes; transfers and government spending (mostly unemployment benefits); almost neglecting the role of social spending to smooth output fluctuations. This paper tries to contribute to fill this gap.

43.   Using the approach proposed by Arreaza et al (1998); we analyze the ability of social spending to smooth output shocks and to provide stabilization. We also quantify the amount of risk sharing provided by government spending in nine different social policy areas: Old Age; Survivors; Incapacity Related; Health; Family; Active Labor Market; Unemployment; Housing; and Other social policy areas.

44.   The results of the paper suggest that the amount of smoothing provided by the total social spending is about 16 percent. This result is extremely statistically significant and robust across different econometric methods. In fact; according to different techniques the amount of income smoothing provided by social spending is always positive and significant; ranging from 12 percent (Time Fixed Effect estimator) to 23 percent (Arellano and Bover; 1995; Blundell and Bond; 1998; GMM estimator). Moreover; it is interesting to point out that government spending in social areas has a more stabilizing effect than total government spending as a whole.

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[10] In particular, D assumes value equal to 1 if the GDP share of social spending is larger than 21%, assumes value equal to 0 otherwise.

[11] We report only the estimates for those countries where we have a number of observations bigger than 20.

45.   The stabilization effects of social spending seem to be similar during upturns and downturns; between countries with large and small deficit; and countries with low and high discretionary spending volatility. In contrast; we find empirical evidence that the stabilization effects of social spending is significantly larger in those countries where the size of social spending is larger.

46.   Finally; among its sub-categories; social spending devoted to Old Age; and Unemployment are the most effective in providing income stabilization; each one providing 5 percent of smoothing. This result has some important policy implications. In fact; population ageing is likely to increase Old age spending in the new future for most OECD countries. While there is a justified concern that this increase will have negative effects on the sustainability of the public finances for many countries; our results point out that the amount of stabilization provided by government spending is likely to increase as well.

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ANNEX

Table A1-Data Availability

	TOT	OLD	SUR	INC	HEA	FAM	ACT	UNE	HOU	OTH	DNI
AUS	1980	1980	1980	1980	1980	1980	1985	1980	1980	1980	1980
AUT	1980	1980	1980	1980	1980	1980	1985	1980	1980	1980	1980
BEL	1980	1980	1980	1980	1980	1988	1985	1988	-	1988	1988
CAN	1980	1980	1980	1980	1980	1995	1995	1995	1995	1995	1995
CZE	1990	1990	1990	1990	1990	1990	1991	1991	1994	1990	1995
DNK	1980	1980	1980	1980	1980	1980	1980	1980	1980	1983	1988
DEU	1980	1980	1980	1980	1980	1980	1985	1980	1980	1980	1980
FIN	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980
FRA	1980	1980	1980	1980	1980	1980	1985	1985	1980	1989	1989
GRE	1980	1980	1980	1980	1980	1980	1985	1980	1980	1980	1995
ICE	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	1980
IRL	1980	1980	1980	1980	1980	1980	1985	1985	1980	1980	1990
ITA	1980	1980	1980	1980	1980	1980	1990	1980	1980	1990	1980
JAP	1980	1980	1980	1980	1980	1980	1990	1980	-	1990	1980
KOR	1990	1990	1990	1990	1990	1990	1990	1997	-	1990	1980
MEX	1985	1985	1985	1985	1985	1989	1985	-	1985	1985	1988
NLD	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980
NZL	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1987
NOR	1980	1980	1980	1980	1980	1980	1985	1980	1980	1980	1980
SVK	1995	1995	1995	1995	1995	1995	1995	1995	1995	1995	1993
SWE	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1993
GBR	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980
USA	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980

Note: In the table is reported the first year where the data is available.

(-) means missing.

TOT=Total social spending; OLD=Old Age; SUR=survivors; INC=Incapacity Related; HEA=Health; FAM=Family; ACT=Active Labor Market; UNE=Unemployment; HOU=Housing; OTH=Other Policy Areas; DNI=Domestic National Income.

Table A2. Average Social Spending Shares

	% of Total Expenditure	% of GDP
Total	45.5	21.0
Old Age	14.5	6.8
Survivors	1.4	0.8
Incapacity Related	5.6	2.8
Health	12.5	5.5
Family	4.9	0.7
Active Labor Market Programme	1.5	0.7
Unemployment	2.7	1.3
Housing	0.9	0.4
Other Policy Areas	1.4	0.6

1. Total Social Spending over time (%GDP)
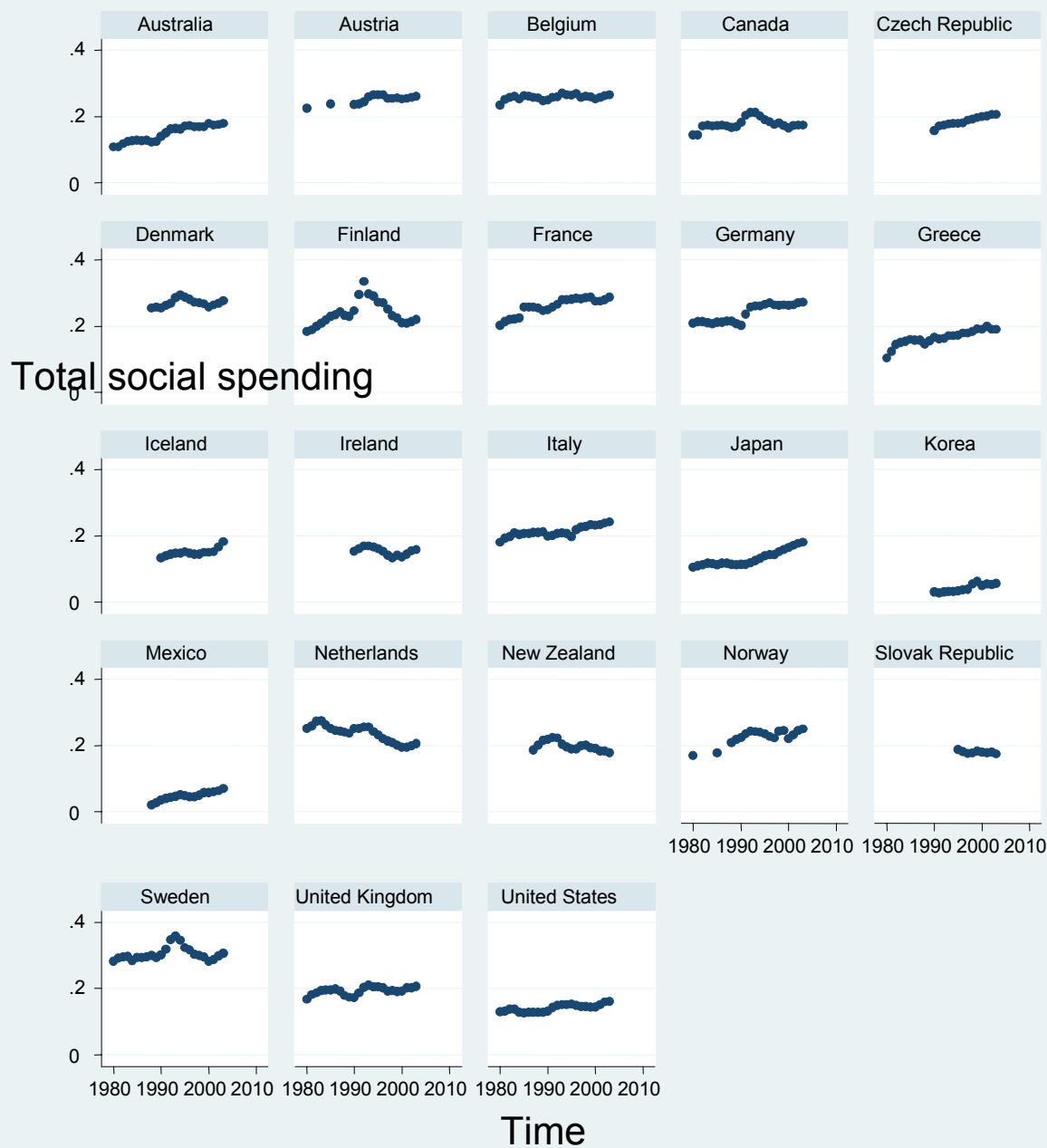
Graphs by country

Figure 2. Smoothing vs. Size
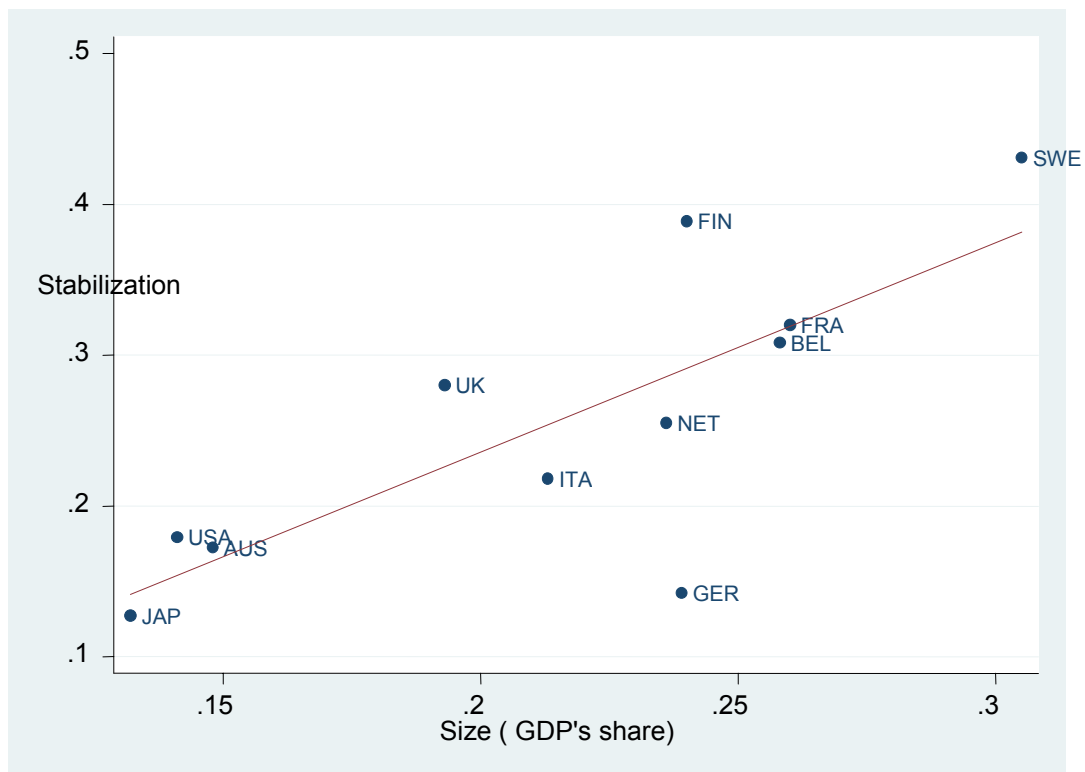
Table 1. Channels of output smoothing (OLS)

International factor income flows	-0.005
	(-0.30)
Capital depreciation	-0.141
	(-3.81)***
Net international tax and transfers	0.088
	(1.51)
government spending	0.092
	(5.08)***
private saving	0.449
	(4.47)***
unsmoothed	0.417
	(3.60)***

***denotes significance at 1%.

T-statistics in parenthesis (robust standard errors)

Table 2. Stabilization effects of total social spending

	OLS	Time FE	Country& Time FE	Country FE and AR(1)	GMM
Total Social Spending	0.156 (7.74)***	0.117 (6.14)***	0.150 (5.10)***	0.169 (11.81)***	0.228 (4.67)***

***denotes significance at 1%. T-statistics in parenthesis

Table 3. Stabilization effects of social *spending* by categories

	1980-2003	1980-1991	1992-2003
Old age	0.047 (5.72)***	0.048 (4.68)***	0.038 (3.38)***
Survivors	0.003 (1.92)*	0.002 (0.82)	0.003 (1.96)*
Incapacity related	0.014 (2.33)**	0.018 (2.24)**	0.008 (1.35)
Health	0.026 (3.54)***	0.044 (6.25)***	0.008 (1.07)
Family	0.011 (1.97)*	0.018 (4.32)***	0.005 (0.75)
Active labor market	0.016 (4.29)***	0.016 (4.47)***	0.014 (2.63)**
Unemployment	0.052 (3.81)***	0.049 (2.84)**	0.054 (2.68)**
Housing	0.002 (1.16)	0.003 (1.51)	0.002 (0.48)
Others	0.006 (1.38)	0.005 (0.69)	0.008 (1.67)*
Total	0.150 (5.10)***	0.181 (5.18)***	0.111 (3.32)***

***; **; *denotes significance at 1%; 5%; 10% respectively.

T-statistics in parenthesis (Robust standard errors)

Table 1.   Table 4. Stabilization effects of social spending by categories

Over positive and negative growth

	+ growth	- growth
Old age	0.049 (4.10)***	0.044 (3.17)***
Survivors	0.004 (1.19)	0.002 (0.91)
Incapacity related	0.011 (1.24)	0.0186 (1.75)*
Health	0.020 (2.35)***	0.033 (2.75)***
Family	0.009 (1.81)	0.014 (1.93)
Active labor market	0.013 (2.09)***	0.023 (2.09)***
Unemployment	0.059 (5.05)**	0.044 (1.85)*
Housing	0.006 (2.18)**	-0.001 (-0.28)
Others	0.010 (1.91)*	0.001 (0.24)
Total	0.155 (5.05)***	0.144 (3.14)***

***; **; *denotes significance at 1%; 5%; 10% respectively.

T-statistics in parenthesis (Robust standard errors)

Table 2.   Table 5. Stabilization effects of social spending by categoriesHigh and low deficit

High and low deficit

	High deficit	Low deficit
Old age	0.050 (2.73)**	0.046 (6.57)***
Survivors	0.003 (0.64)	0.003 (2.20)**
Incapacity related	0.011 (0.90)	0.015 (2.54)**
Health	0.017 (1.56)	0.029 (3.79)***
Family	0.010 (1.38)	0.011 (1.95)*
Active labor market	0.011 (1.71)*	0.017 (4.70)***
Unemployment	0.070 (3.42)***	0.047 (3.94)***
Housing	0.001 (0.15)	0.003 (1.30)
Others	0.015 (1.60)	0.004 (1.07)
Total	0.160 (3.54)***	0.147 (5.13)***

***; **; *denotes significance at 1%; 5%; 10% respectively.

T-statistics in parenthesis (Robust standard errors)

Table 3. Table 6. Stabilization effects of social spending by categories

High and low volatility of discretionary spending

	High volatility	Low volatility
Old age	0.040 (3.81)***	0.052 (4.39)***
Survivors	0.004 (1.83)*	0.002 (1.06)
Incapacity related	0.018 (1.39)	0.012 (2.45)**
Health	0.014 (1.27)	0.035 (4.62)***
Family	0.011 (0.97)	0.010 (2.41)**
Active labor market	0.019 (3.33)***	0.013 (2.58)**
Unemployment	0.068 (2.39)**	0.043 (4.24)***
Housing	-0.001 (-0.35)	0.005 (1.94)*
Others	0.002 (0.47)	0.009 (1.14)
Total	0.139 (2.23)**	0.158 (6.55)***

***; **; *denotes significance at 1%; 5%; 10% respectively.

T-statistics in parenthesis (Robust standard errors)

Table 4.   Table 7. Stabilization effects of social spending by categories

Large and small government size

	Large	Small
Old age	0.055 (3.48)***	0.041 (5.11)***
Survivors	0.003 (1.40)	0.003 (1.51)
Incapacity related	0.022 (1.94)*	0.009 (1.74)*
Health	0.032 (4.05)***	0.022 (2.44)**
Family	0.021 (2.57)**	0.004 (1.07)
Active labor market	0.027 (3.36)***	0.007 (1.69)*
Unemployment	0.066 (2.64)**	0.040 (4.27)***
Housing	0.004 (1.61)*	0.001 (0.21)
Others	0.004 (0.75)	0.008 (1.06)
Total	0.196 (3.74)***	0.116 (4.04)***

***; **; *denotes significance at 1%; 5%; 10% respectively.

T-statistics in parenthesis (Robust standard errors)

Table 8. Stabilization effects of total social spending by countries (OLS)

Australia	0.172
	(3.74)***
Belgium	0.308
	(3.82)***
Finland	0.389
	(4.18)***
France	0.320
	(5.74)***
Germany	0.142
	(23.74)***
Italy	0.218
	(2.67)**
Japan	0.127
	(6.62)***
Netherlands	0.255
	(3.64)***
Sweden	0.431
	(5.80)***
United Kingdom	0.280
	(5.10)***
United States	0.179
	(3.79)***

***; **; *denotes significance at 1%; 5%; 10% respectively.

T-statistics in parenthesis (Robust standard errors)

Note: only those countries for which we have more than 20 observations were considered.

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