Abstract

Introduction

The rise of the welfare state throughout the industrialised countries in the middle of the twentieth century was justified by social security and an improvement of living standards. Since then, government spending has continued to rise. Even in the 80’s and 90’s when a renewed conservatism unsuccessfully tried to limit social spending. Increasing government spending and redistribution seems to be an unstoppable tide. But will this continue? The likely answer is no!

Instead it is relevant to ask which factors will set a limits to social spending.

With improved living standards, comes increasing life expediency and thus more people relying on the generosity of government spending without participant in the production in the economy.

Lindert has famously argued that demography (the ratio of people over 65 to people in the working age) will set the limit to social spending – while controlling for rising deadweight costs due to higher taxation to finance increasing redistribution. Lindert focus was on demography versus deadweight costs from taxation thus excluding another very important factor limiting social spending. That factor is informality.

The aim of this paper is to shed light on the subject of limits to social spending by expanding the framework developed by Lindert to also including informality in the economy.

1. Social spending

Social spending can be measured in numerous ways. In this paper, spending (measured in USD) per capita will be used and we differ between social spending and non-social spending. Social spending will be divided into the subcategories pensions, health, education, welfare and unemployment. Non-social spending is defined as the residual between all spending and social spending. To investigate the limit of social spending, the following competing theories are explained and the validity is explored: deadweight cost of taxation, informality in the economy and demography.

* 1. Burden of taxation: there ain’t no such thing a free lunch.

In economic theory, it is a general assumption that taxes are distortionary, and that taxes and transfers reduces productivity. It is straight forward to argue that the limits to social spending is rising marginal deadweight costs of the redistributive welfare state: increasing taxation needed to finance the redistributive welfare state will choke of either the ability or the willingness to raise taxes and spending. Since the days of Adam Smith, warnings have been made that costs rise on two fronts and create discouraging effort both for the taxes and the subsidized. Thus the welfare state creates its own limit.

Due to distortionary taxes, extension of the welfare state and redistributive programs are moreover likely to have a negative effect on the income growth.

When investigating the theory of rising deadweight costs as a limit to social spending, it is essential to control for other factors effecting income-level. These factors include globalization, investment in real and human capital and whether or not national institutions are negotiating pay, employment and fiscal policies among organized representatives of labour, business and government.

As plausible as these ideas seems to be, they have failed to explain the great difference in size of the welfare state among industrialised countries. It is often found, that higher average income raises both the level of government spending and the share of national income (Lindert, 1996). There is not consensus to why these “development” effects arise. Some argues positively that high income allows for social insurance, whereas other pessimistically argues that development and high income creates the need for insurance. No matter the reason, it is predicted that both total and share of government spending should rise with average income.

* 1. Effect of informality

Taxes affects labour-leisure choices, but it also stimulates labour supply in the informal economy, here defined as the untaxed part of the economy. It has been argued that the main cause to the increase of the informal economy is to the rise of taxation and social security (Williams, Schneider, 2013). The argument is straight forward: as taxes are distortionary, the higher the tax rates, the more distortion and the bigger a shadow economy.

Others have argued that firms are willing to be taxed at reasonable rates, but unwilling to put up with over-regulation and corruption, and thus explaining the rise of the informal economy and decline of government revenue by poorly managed tax systems (Friedman, E. et al, 2000, La Porta et al, 1999).

No matter the reason, a rise in the share of the informal economy will by all likelihood decrease government revenue. This might result in a vicious circle where tax rates on the formal economy are increased to keep funding the public provision of goods – often combined with a decline in quality goods provided by the public sector and poor administration – with the consequence of additional growth in the informal economy (Enste, Schneider, 2000).

Informality might affect social expenditures in two opposite directions. A high degree of informality might make it difficult to obtain a high level of social spending, as the share of people paying taxes and thus funding the welfare state is low. Working in the opposite direction, a high degree of informality in the economy might require the state the expand redistributive program such as pensions and unemployment benefits to support people who does not participate on the official labour market.

Labour force participation for males will be used throughout the analysis, in order to measure the degree of informality in the economy. Earlier studies have used the difference between the official and actual labour force (cited in Williams, Schneider, 2013). The weakness of this method is that the difference in labour may have other causes (i.e. norms for whether or not women are participating on the labour market). Moreover, people can work both the formal and the informal economy. Only using male labour force participation might be a better indicator for the size of the informal economy.

* 1. Demography: the young man’s burden

An important factor for society’s priorities and government expenditure are the age distribution of the population. As the population grow older, the politics of social spending shift in favour of the policies catering to the needs of the elderly: health, pensions and welfare programs. This development has been there since life expectancy began to accelerate in the late nineteenth century (Lindert, 2004). The effects from an ageing population on social spending are twofold: when numbers of entitle recipient increase, the share of GDP spent on their support will rise even with unchanged policies. However, observing historical numbers shows that between the 1880 and the 1930 transfer per old person has increased. (Lindert, 2004). This gives reason to believe that an older population tips social sentiment and the political balance in favour of granting security and income. The older the population, the more the concern of the elderly will mobilize the old and middling age through the political system. However, as retirees becomes to numerous social spending catering to this group becomes very costly. Pensions are generally still financed through a pay-as-you-system and protest from the working adults would check the rise of pension benefits and thus the generosity of the programs will start to decrease. This implies, that the effect from the age distribution of the population could have non-linear effect on social spending.

Variables for the development of the demography entering the analysis, are the ratio of young people (0-19), school\_age (5-19), young\_adult (20-39) and old (65 +) to people in the working age (20-64).

* 1. Control variables

Literature have argued that income distribution and a number of political factors also affects social spending.

As mentioned, average income will raise both total government spending and spending as a share of the national income. However, a more interesting income-variable when trying to predict social spending is income distribution**,** especially the significance of the median-voter. The central question here is which group the median voter sympathizes with: the poor or the rich? The closer to the poor, the median voter feel, the more the median voter will favour redistribution and egalitarian spending. On other hand, if the median voter feels closer to the rich they will vote against taxation. (Meltzer and Richard, 1981 cited in Lindert, 1994). Higher inequality, measured by the median/mean income ratio, might discourage growth as it gives the median voter a taste for taxing the rich.

Turning to political factors, the only relevant electoral variables for the period of interest are voter turnout and executive turnover, as both universal suffragette and democracy are present in all countries. Both these variable might have a positive effect on redistribution and social spending. As voter turnout generally are more elastic among lower income voters, a high turnout tends to favour redistribution. Executive turnover is thought to be a measure of political stability, and fast turnover may raise spending.

Controlling for the effect of these factors, competing theories can now be tested against each other to find the limit of social spending.

1. Empirical work

2.1. Data selection

The data set includes 34 OECD member states from the period from 1980 to 2011. This also includes 5 countries that used to be under Soviet control (Poland, Estonia, Slovak Republic, Slovenia and the Czech Republic). Data from these countries are unavailable for many variables before the beginning of the 90’s. Data from Chile, Israel, Mexico and Korea are also missing in the beginning of the period. This implies an unbalanced panel data set. The data is extracted from OECD.Stat when possible to ensure consistency in definitions, but supplemented by data from the World Bank and from Penn World data. Data sources and definitions are elaborated in the appendix.

Dependent variable

2.2 Model selection

In any data set containing countries and time the error terms are likely to contain both international heteroscedasticity and serial correlation. To deal with serial correlation a 3/5 year average is calculated. As social spending will be effected by business cycles, averages over a time period removes some of the fluctuations due to booms and busts in the economy.

The two different approaches single equation estimation on panel data and an equation system can both deal with national heterogeneity. The equation system can moreover deal with the possibility of simultaneous realisation.

2.2.1. Random effects

This panel data set contains both a cross-sectional and a time dimension. For any economic analysis of the data, we cannot assume that the observations across countries are independently distributed across time. Any national propensity toward one social program or national tax moral that effects social spending in the 80’s will most likely also affect the social spending in the 90’s. These effects are often unobserved and can be removed using a fixed effect estimator. Fixed effect allows to assess the net effect from the predictors on social spending. However, the big differences in social spending among the countries in the sample are a strong argument for using random effect, as it gives us reason to believe that national differences play an important role in determining social spending. Trying to remove these country specific effect would lead to inefficient estimators. (Wooldridge, p. 489)

Comparing countries in the data set is furthermore an argument for using random effect. Denmark and Switzerland are two countries that looks very similar in terms of income, population size and age distribution, but varies greatly when looking at the level of social spending. Taking this into account, one can simply not ignore country specific unobserved factors.

Using random effect requires the assumption, that country specific differences that are likely to be uncorrelated with all explanatory variables, that is strict exogeneity (Wooldridge, chp. 14). Strict exogeneity is a rather strict assumption and requires good control in the equation. That fact that, some variables might not be available, can lead to omitted variable bias.

Another drawback to using random effect, is that the interpretation of the coefficients is tricky, as they include both within-country effects and between-country effects. “in the case of TSCS data represents the average effect of X over Y when X changes across time and between country by one unit” (Princeton, pp)

We can write our random effect model for each of the six types spending:

Where a\_i are the unobserved country specific effects and u\_it are the “between country errors”. p = pensions, welfare, unemployment, education, non-social, health. i=country, t=time. x= explanatory variables, guided by past literature. These relations might as well be nonlinear, which is why squared terms are entering the regression.

The key assumption here is that the unobserved country specific effect a\_i is uncorrelated with all explanatory variable in all time periods:

The ideal random effects assumption includes all fixed effect assumptions plus the additional requirement that a\_i is independent of the explanatory variables in all periods. (Wooldridge, chp. 14, assumption). These assumptions are presented in the appendix???

Using the same line of argument, where national differences might be due differences in tax moral or tax enforcement, the model for the rising costs of social spending are:

2.2.2. Shortcomings

Looking at the equation (1)-(6) and (7) it is clear that we are implicitly assuming that income and social spending are chosen simultaneous, (is jointly determined). As argued earlier, the extension of the welfare state financed by higher taxation, is distortionary and has negative effect on income. On the other hand, richer countries tend to have more redistribution. This implies that social spending is correlated with the error term in equation (7) or/and that income is correlated with the error term in equation (1) - (6), which will lead to simultaneity bias. (direction) Thus, there are good reasons to explore simultaneous relations between income level and social spending.

Moreover, some has argued that a big informal sector might dampen economic growth, as there might be a negative relationship between informality and investment in public infrastructure (Loayza, 1996). However, these findings are widely discussed, as it builds on the assumption that public investment in infrastructure is necessary to develop production technology and the data set only contains Latin American countries with poor institutions (Schneider et al p. 13, 2000).

A drawback to panel data are cross-country dependency (i.e. correlation between countries)

1. Presentation of results
   1. Prediction
2. Discussion, comparing to other literature

Key to the free lunch: bigger welfare states choses less distortionary tax systems, ensures that young people don’t avoid training and work. Transfers to retirement and unemployment benefits ensure higher productivity in the active labour force (Lindert, 2004, p. 227)

Besides the total tax burden, the system that a government uses to collect tax have an effect on the deadweight costs. Countries with a high degree of re-distribution in general chooses a mix of taxes that are less distortionary, compared to countries with smaller welfare states, while also developing tools to ensure young adults do not avoid training and work. (Lindert, 2004).

* 1. Improving method of estimation

As mentioned, social spending and income are chosen simultaneous, but are ignored throughout this analysis. The appropriate way of dealing with simultaneity is through a simultaneous-equation model: in one equation spending is allowed to depend on income, and in another spending is allowed to effect income negatively. Thus, we treat social spending and income as endogenous variables and all other variables as exogenous variables. In this case we have six equations for spending and one for income, making the SEM rather complicated.

When using SEM we need to make sure that the model meets the rank condition, which states that “*the first equation in a two-equation simultaneous equations model is identified if, and only if, the second equation contains at least one exogenous variable (with a nonzero coefficient) that is excluded from the first equation”* (Wooldridge, p. 554). We the number of equations excess two, identification is not that straight forward and there are many subtle ways that identification can fail in complicated SEMs. As we have 7 equations, SEM rather complicated in this case. Thus, for simplicity we look solely at the sum of social spending, giving us the model:

Z is a vector containing the exogenous variables used in the panel regression and as Z\_1!=Z\_0 the rank condition is met for both equations, implying that both equations are identified. The equations can now be estimated by 2SLS, where instrument variables consist of the exogenous variables in Z\_0 or Z\_1, where the first stage entails GLS of ln(Y) on social spending and the second stage combines the resulting predicted values (the hat’s) and their squared terms with the other variables in a GLS. This approach deals with simultaneity, heteroscedasticity and serial correlation. (must be tested, chp. 15, Wooldrigde)

* 1. Comparing to other literature

1. Conclusion

References

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Appendix A: Data

Most of the data is extracted from OECD.Stat. This includes data on government expenditures, GDP, demography, income inequality, voter turnout, unemployment, taxation and labour force participation. Expenditures, tax revenue and GDP are measured in USD in 2005-prices.

As a measure for inequality the P90/P50 ratio is used. This is the ratio of the upper bound value of the ninth decile to the median income. An increase in the ratio will imply more distance between the median voter and the rich.

The variable of interest, social expenditures, are divided into the sub-categories health, welfare, unemployment and pensions. All categories include both benefits in cash and benefits in kind. Social expenditures are the sum of these expenditures, thus excluding spending on housing. Non-social expenditures are defined as the residual of total government spending. These expenditures are divided by population, also extracted from OECD.Stat, to obtain spending per capita.

Data on expenditures on education and number of student enrolled are extracted from the World Bank. Data on import, export and capital formation are extracted from Pen World Tables. The variable open is defined as sum of export and import as a share of GDP. Corporatism is a crude index developed by Bruno and Sachs [1985] and Schmitter [1989] of national institutions negotiating pay, employment and fiscal policies among organized representatives of labour, business and government. Executive turnover is measured as the number of changes in president/premiere minister over the last decade and The Archigos data set “A Data Base on Leaders” is used. The variables linc is the natural logarithm to GDP pr. capita.

Appendix B: Assumptions: