Earnings responses to social security contributions☆

M. Neumann

German Institute for Economic Research (DIW Berlin), Mohrenstr. 58, D-10117 Berlin, Germany

ABSTRACT

This paper utilises the discontinuities induced by earnings caps for social security contributions (SSC) in Germany to analyse the effect of SSC on gross labour earnings. Economic incidence is identified by exploiting an increase of a regional earnings cap of health and long-term care insurance as a natural experiment. Based on administrative data, difference-in-differences models are estimated. I find the burden of SSC is shared equally between employers and employees. An auxiliary analysis studies employment responses to SSC at the intensive margin by a modified bunching approach that is applied to the earnings caps of health and long-term care insurance. Finding employment responses to be negligible supports crucial identifying assumptions of the main analysis. Both results are robust and consistent with a standard partial-equilibrium labour market model.

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1. Introduction

In most industrialised countries, social security contributions (SSC) represent a large share of total taxation. In 2010, SSC amounted to 9.1% of GDP and 26.4% of total tax revenues in OECD countries (OECD, 2015). Since they are (usually) nominally shared between employers and employees it is hardly surprising that SSC are often claimed to be detrimental to employment and economic growth (OECD, 1994; Prescott, 2004). Some governments seem to have followed this reasoning by implementing reforms to decrease SSC or switch from SSC to other means of revenue generation (Melguizo and Gonzalez-Paramo, 2013). During 2011 and 2012, the US decreased the employees' share of payroll taxes by two percentage points (pp.) in order to boost consumption. Many countries, including Germany, Denmark, and France, increased value added taxes in order to finance a decrease in SSC. Additionally, there seems to be a tendency to shift some legal burden of SSC from employers to employees. Germany, for example, abolished the equal sharing of SSC in 2005. To understand the effect of such reforms on disposable income, employment, and welfare, economic incidence of SSC is crucial.

The main research question of this study, therefore, is: Who bears the burden of social security contributions? It is answered based on administrative data on employees in the upper part of the earnings distribution. Identification makes use of the fact that contribution rates to health insurance in Germany (as in many other countries) only apply up to

certain thresholds of earnings; in the following called (earnings) caps. I employ a quasi-experimental approach (Gruber, 1994, 1997; Saez et al., 2012) exploiting a considerable increase of a regional earnings cap in 2001. Difference-in-differences models are estimated using employees with earnings above the earnings cap as treatment group and employees with earnings somewhat below as control group. I find that economic and legal incidence coincide, implying that employees and employers share the burden of SSC roughly in equal parts.

My main contribution to the literature is to provide fresh evidence on economic incidence of SSC in the interesting setting of Germany. Previous empirical work found mixed results. One potential reason is that economic incidence of SSC seems to crucially depend on the degree of centralisation of the wage bargaining process (Alesina and Perotti, 1997; Daveri and Tabellini, 2000). Intuitively, while unions are small and lack bargaining power in a very decentralised system, very large unions internalise negative repercussions of a high wage on labour demand. This implies a non-linear relationship between economic incidence and the centralisation of the wage bargaining process (Alesina and Perotti, 1997). Yet, hardly any evidence is available for Continental European countries, which mostly feature an intermediate degree of centralisation of the wage bargaining process. This study fills that gap by providing evidence for high-skilled employees in Germany.

In addition, an auxiliary analysis is concerned with intensive margin employment responses to SSC in order to support a crucial identifying

assumption of the main analysis. As hours of work are not observed, interpreting a change in labour earnings as economic incidence requires the assumption of no hours responses. I adapt the bunching approach (Chetty et al., 2011; Saez, 2010) to upward kinks in the budget set and apply it to the earnings cap of health insurance. I do not find any hours responses and argue that equal burden sharing and the lack of employment responses is consistent with a standard partial-equilibrium labour market model where economic incidence is determined by the ratio of labour demand and supply elasticities.

While this analysis of employment responses to SSC supports the credibility and facilitates the interpretation of the evidence on economic incidence, it is an contribution in itself, as previous evidence on employment responses to SSC is limited (Saez et al., 2012). This is astonishing because the shared legal incidence and other specific features of SSC make it difficult to extrapolate the more abundant evidence on income taxation. By adapting the bunching method to 'upward' kinks[1] in the budget set, I avoid some of the major problems responsible for the insufficient evidence. First, by analysing tax discontinuities based on cross-sectional earnings distributions, the bunching method does neither depend on exogenous variation over time nor does it require information on hours of work. I can, therefore, use large administrative data sets that frequently do not include the exact amount of working hours.

Finally, the effect of increasing the earnings cap for SSC is interesting for policy-makers as it constitutes a feasible policy for many countries to increase revenues or to shift the burden to employees in the upper part of the earnings distribution. In the UK, for example, the earnings cap for employers' SSC was abolished in 1985, as were most earnings caps for SSC in France in the 1980s. This study contributes to the discussion of welfare effects and efficiency of an increase of an earnings cap for SSC (Liebman and Saez, 2006). The main argument against such an increase are high estimated elasticities for high-income workers resulting in a high deadweight loss. My results contradict this argument by not finding any earnings responses to the increase of the East German earnings cap of health insurance.

The paper is organised as follows. Section 2 discusses the existing literature. Sections 3 and 4 present the German social security system and the data. The empirical methodology and the results on economic incidence are discussed in Section 5, which also presents the auxiliary analysis of economic responses to SSC and discusses the joint insights of both analyses. Section 6 concludes.

2. Literature

The early empirical work on economic incidence of SSC is mainly based on cross-country national account data (see for example OECD, 1990), usually finding that labour taxes are completely shifted to workers. However, more recent multi-country studies draw a more differentiated picture and conclude that shifting to wages seems to be an inverse U-shaped function of the degree of centralisation of wage bargaining (Alesina and Perotti, 1997; Daveri and Tabellini, 2000) and increases with the link between contributions and benefits (Ooghe et al., 2003).

The main body of evidence on economic incidence of SSC, however, is based on individual data and exploit policy reforms as natural experiments. In an influential paper, Gruber (1994) analyse the effects of the introduction of mandated maternity benefits in the US on gross hourly wage rates and employment with a difference-in-differences-in-differences approach. Based on survey data, he finds substantial shifting to wages and no impact on overall labour input. Since then, a large number of quasi-experimental studies have been conducted

for many different countries. Identification is based on variation between, among others, firms (Anderson and Meyer, 2000 for the US, Gruber, 1997 for Chile), industries (Bell et al., 2002 for the UK), age (Skedinger, 2014 for Sweden), and regions (Bennmarker et al., 2009 for Sweden, Korkeamäki and Uusitalo, 2009 for Finland, Baicker and Chandra, 2006 for the US). The results are mixed, which is reflected in a meta-study based on 52 empirical papers (Melguizo and Gonzalez-Paramo, 2013). On average 66% of labour taxes are estimated to be borne by employees with a standard deviation of 51 pp. Some of these studies also analyse the impact of SSC on employment but rarely find statistically and economically significant effects.

Few studies exploit the discontinuity induced by an earnings cap for SSC as it is done in this study. Lang (2003) and Liang et al. (2004) analyse significant increases of the earnings cap of the American Federal Insurance Contribution Act (FICA)[2] between 1968 and 1979. While Lang (2003) finds that earnings of treated individuals rose consistently stronger in years the cap increased, Liang et al. (2004) conclude that gross hourly wages were not significantly affected. Further, the latter study finds a small negative employment effect at the intensive margin. Saez et al. (2012) evaluate a Greek reform that created parallel regimes by increasing the earnings cap for SSC for all employees who started working on or after 1993. Thus, they estimate credible long-term effects, which most other studies could not provide, finding that economic and legal incidence coincide, but negligible effects on labour supply.

3. Institutions

The German social security system consists of pension, health, unemployment, and long-term care insurance. As this study analyses the impact of contributions to health and long-term care insurance on gross earnings, the following discussion focuses on these branches of the German social security system.

In comparison to personal income taxes, SSC in Germany and many other countries have some specific features that are crucial for earnings responses. The amount of SSC are calculated by flat contribution rates with daily gross earnings as tax base. In 2001, the year of the here analysed reform, the total SSC rate amounted to 41% of gross earnings with health contributing 13.5 pp. and long-term care insurance 1.7 pp. (Fig. 1, left panel). SSC were statutorily shared in equal parts by employers and employees.

Marginal SSC rates only apply up to certain thresholds of earnings, in the following called (earnings) caps. There is a common cap for health and long-term care insurance[3] (Fig. 1, right panel). It differed between West and East Germany until 2001, when the East German health earnings cap strongly increased to match its West German counterpart. I exploit this jump to estimate economic incidence of SSC (Section 5). Additionally, the earnings cap is slightly adjusted each year according to the change in the average gross wage bill in the preceding year. There is also an earnings cap for pension and unemployment insurance, which significantly exceeds the respective one for health insurance (Fig. 1, right panel)[4].

Unlike many other SSC, there is no direct link between benefits and contributions in the health insurance system. Compensation in case of an illness lasting over 6 weeks is an exception. Benefits and contributions are linked for the long-term care insurance, which is, however, much less important than health insurance (see above).

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[1] An upward kink in a gross-net earnings diagram is generated by a discontinuous drop in the marginal tax rate at a certain threshold. By contrast, Saez (2010) analyses downward kinks generated by an increase in the marginal tax rate.

[2] Similar to the caps analysed in this study, the marginal payroll tax rate drops to zero at the earnings cap of FICA.

[3] To improve readability, in the following I speak of earnings caps of health insurance instead of also mentioning the long-term care insurance.

[4] The significant jumps in the caps of pension and unemployment insurance in 2003 cannot be utilised here due to data limitations.