

A Wealth Tax on the Rich to Bring Down Public Debt? Revenue and Distributional Effects of a Capital Levy in Germany*

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Abstract

The idea of higher wealth taxes to finance the mounting public debt in the wake of the financial crisis is gaining ground in several OECD countries. We evaluate the revenue and distributional effects of a one-time capital levy on personal net wealth that is currently on the political agenda in Germany. We use survey data from the German Socio-Economic Panel (SOEP) and estimate the net wealth distribution at the very top, based on publicly-available information about very rich Germans. Since net wealth is strongly concentrated, the capital levy could raise substantial revenue, even if relatively high personal allowances are granted. We also analyse the compliance and administrative costs of the capital levy.

Policy points

- In many countries, public debt has spiked to hazardous levels after the financial crisis.

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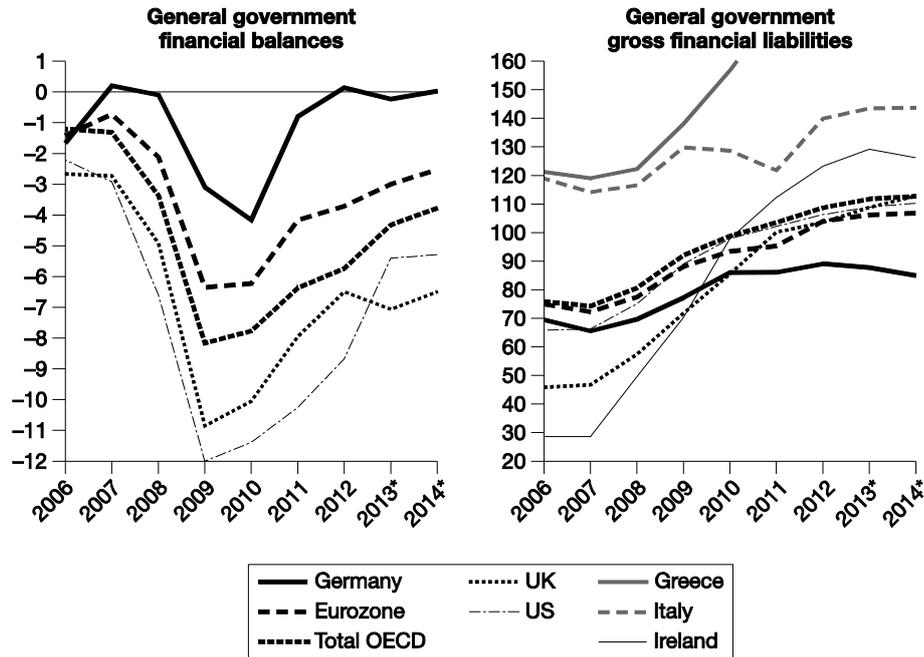
- A one-time capital levy is one way of financing debt reduction.
- Personal wealth is strongly concentrated in the top percentiles of the population.
- A capital levy on personal net wealth could thus raise substantial revenue, even if high personal allowances are granted.

I. Introduction

The hurricane of the financial crisis has left public budgets in a state of disorder. For the entire OECD, the debt-to-GDP ratio ballooned to a level of 110 per cent in 2012–13 (see Figure 1). Debt ratios will increase further since most of the countries continue to run higher structural deficits. Even in Germany, which recovered quickly from the sharp recession, debt reached 89 per cent of GDP at the end of 2012, representing an increase of 24 percentage points from its level prior to the crisis.

FIGURE 1

General government financial balances and liabilities in selected OECD countries, as a percentage of nominal GDP



*Figures for 2013 and 2014 are forecasts.

Source: OECD, 2013.

Historical experience and recent studies suggest that such levels of public debt are hazardous to long-term fiscal sustainability.¹ In the Mediterranean, some countries are already in or close to national bankruptcies. This runs the risk of a new banking crisis and a break-up of the eurozone. Fiscal retrenchment will be critical over the next few years, calling for spending cuts and tax increases. Since the distribution of income and wealth became more uneven in most advanced economies over the past few decades, taxing the ‘rich’ is back on the policy agenda again.² At the same time, households with high levels of income and wealth have been given tax relief in most countries, including Germany.³

In order to refinance the sharp increase in public debt caused by the financial crisis, a one-time capital levy is currently on the political agenda in Germany. The levy is to be imposed on personal net wealth, i.e. assets minus liabilities. To concentrate the tax burden on the wealthy part of the population, high personal allowances are proposed. Compared with conventional recurrent taxes on higher income and wealth, the one-time levy is to be imposed on the existing stock of wealth, thereby offering little room for immediate tax avoidance strategies.

In this study, we evaluate the revenue and distributional effects of a capital levy as proposed by, among others, Green Party representatives in the German federal parliament.^{4,5} This proposal aims to raise tax revenues of €100 billion over a period of 10 years. This amounts to at least the increase in public debt directly caused by the financial crisis since the end of 2007. We use survey data on households’ net wealth stocks from the 2007 wave of the German Socio-Economic Panel (SOEP) and microsimulation modelling to determine the impact of the capital levy on tax revenue and the wealth distribution. Since survey data do not represent the high end of the wealth distribution well, we augment our database with information from a listing of the 300 richest Germans, provided by the business periodical *manager magazin*. Using the Pareto distribution, we estimate and impute the distribution of net wealth of at least €2 million by adjusting the survey weights accordingly.⁶ The resulting aggregates on assets and liabilities are consistent with the stocks reported in the national and financial accounts statistics.

Since net wealth is strongly concentrated at the top of the distribution, a capital levy could raise substantial revenue even if relatively high personal

¹Kumar and Woo, 2010; Reinhart and Rogoff, 2010.

²For the income distribution, see Atkinson and Piketty (2007 and 2010), OECD (2008) and Bach, Corneo and Steiner (2009).

³See Bach, Corneo and Steiner (2013).

⁴See the draft bill of Bundestagsfraktion BÜNDNIS 90 / DIE GRÜNEN, 2012.

⁵Our study is based on a research project on behalf of the Green parliamentary group in the German federal parliament (for the detailed final report, see Bach, Beznoska and Steiner (2010)).

⁶For a similar approach, see Davies (1993).

allowances are granted, thus restricting the number of affected people to a very small share of all taxpayers. Assuming a personal allowance of €250,000, we estimate a tax base of €2,950 billion, amounting to 118 per cent of GDP in 2010. A capital levy raising tax revenue of €100 billion, or 4 per cent of GDP, would thus require a tax rate of 3.4 per cent. We also analyse alternative scenarios of a capital levy yielding the same tax revenue with a narrower tax base and a correspondingly higher tax rate. In the case of a personal allowance of €1 million, which would confine the capital levy to the richest 0.6 per cent of the population, the required tax rate would be 5.4 per cent. We also analyse the compliance and administrative costs of the capital levy.

The remainder of the paper proceeds as follows. Section II discusses the capital levy proposal against the background of recent fiscal policy challenges and historical experience. Section III describes the data on household wealth, including the imputation of wealth at the top of the distribution. The microsimulation model used to assess the impact of the capital levy on tax revenues, implied tax rates and the wealth distribution is described in Section IV. Section V presents the main results of the study and Section VI concludes.

II. A capital levy on personal net wealth

An alternative to conventional recurrent taxes on higher income and wealth is a one-time capital levy, which is proposed in Germany. The revenue should refinance the increase in public debt in the wake of the financial crisis. Public funding for bank rescues and economic stimulus programmes is estimated to cost at least €100 billion, which equals at least 4 per cent of GDP.⁷ We assume this amount as the revenue target for the simulations of the capital levy in the following.

The capital levy is suggested to be imposed on personal net wealth – i.e. assets minus liabilities – and should include high personal allowances in order to focus the tax burden on the wealthy part of the population. We operationalise these features of the proposals in our simulations by setting the personal allowance to at least €250,000, which would confine the tax burden to the top decile of the net wealth distribution. Furthermore, we analyse scenarios with higher personal allowances (€500,000 and €1 million). In addition, parents should benefit from a child allowance for their dependent children. We assume a child allowance of €100,000, or €250,000 in the case of the higher personal allowances.

⁷See International Monetary Fund (2010, p. 7). Actually, the hike in public debt in the wake of the financial and economic crisis could be considerably higher. According to OECD (2013), Germany's net financial liabilities of the general government sector (i.e. public debt less government financial assets such as shareholdings, credit claims and deposits) increased by 8.2 per cent of GDP from 2007 to 2011.

The tax base of the capital levy is similar, in principle, to that of a recurrent tax on personal net wealth that existed in Germany until 1997. Regarding the details of tax design, assessment procedures, tax administration and tax compliance, one can therefore refer to the previously-existing regulations. With respect to the ascertainment and appraisal of the tax base, which was rather contentious at that time, tax policy might rely on the new valuation procedures introduced for inheritance and gift taxation in 2009. They aim to capture market values as closely as possible for tax purposes, although there is little experience with these valuation procedures so far. Actually, standardised appraisal remains an intricate issue.⁸ It is especially challenging to assess standard values for real-estate properties and small firms based upon market transactions. In these cases, special valuation procedures, based on standard business and real-estate appraisal practices, must be implemented. Moreover, financial assets are often hidden from capital income and wealth taxation in Germany due to bank secrecy regulations. Their assessment would require disclosure obligations for financial institutions – in particular, tracer notes for tax purposes – as already exist for inheritance and gift taxation in Germany. With respect to the foreign investments of domestic taxpayers, some room for tax evasion will remain since international cooperation between tax authorities is still insufficient, although improving.

Like the former wealth tax, claims to social security or private pension and health-care plans should be tax exempt, at least as long as they do not exceed a certain amount. The same procedure should apply to other durable goods such as furniture and ordinary motor vehicles. However, higher-value household assets, such as expensive cars, yachts, private aircraft and collections of art, jewellery etc., should be subject to taxation in order to prevent tax avoidance. Liabilities are to be deducted from the tax base as far as they refer to taxable assets. Thus this does not apply to consumer credit taken out for the purchase of non-taxable household assets.

Unlike the former German wealth tax, the capital levy should be confined to individuals. Corporations should be exempt since their shareholders are subject to individual taxation. This would avoid double taxation of incorporated firms, but would also exclude foreign shareholders from taxation, as well as domestic non-commercial institutions such as governmental bodies, religious communities, associations and unions. Problems might arise with respect to private family foundations or trusts that are often used as holdings for larger family-owned firms. In these cases, it may be difficult to identify the beneficiaries to whom the shares are to be assigned.⁹

⁸See Rudnick and Gordon (1996).

⁹For the UK, see the discussion in Boadway, Chamberlain and Emmerson (2010, p. 785).

In contrast to a recurrent tax on personal net wealth, the one-time levy would be imposed on the existing stock of wealth. For obvious reasons, a valuation date in the recent past must be declared – for example, 1 January 2012. To the extent that the potentially affected taxpayers did not anticipate the capital levy, taxpayers have no incentives for immediate tax avoidance by adjusting their economic behaviour. In so far as there are no substitution effects, the levy implies no excess burden in terms of standard optimal taxation theory. From an economic perspective, this is a main advantage of a one-off capital levy compared with increases in recurrent taxes, in particular those on higher income and wealth. Tax avoidance is a major concern with tax reforms such as the 50p top income tax rate in the UK 2010–12, the hike in top income tax rates and wealth taxation adopted under the new French president Hollande 2013–14, and similar proposals in Germany, or the ongoing struggle in the US to continue the tax breaks for the rich. However, there are income and wealth effects caused by the one-time levy. These effects may impact on economic development because of liquidity and financing problems for real-estate investments and smaller businesses. The unexpected tax hike on existing stocks might provoke political outrage and could affect the expectations of the rich concerning the future taxation of wealth.

As proposed here, the capital levy would be charged at a flat rate, determined by the desired revenue divided by the estimated tax base. A progressive tax scheme might also be possible, by defining brackets of taxable wealth with different tax rates, or by reducing the allowances if the tax base exceeds a certain amount. According to historical examples¹⁰ and the German capital levy from the 1950s (see below), the payment of the levy could be stretched out over a longer period – for instance, 10 years – with tax paid in instalments, using a standard interest rate for public debt. This would account for taxpayers' liquidity constraints, especially in the case of business and real-estate property. Even in the case of higher tax rates, spreading payments over a decade would allow the levy to be paid out of current income rather than principal. This turns the levy into a recurrent tax on capital income effectively, thus mitigating the income and wealth effects of the tax burden.

Specific reliefs are proposed for business property, including participations. These should reduce the tax burden of small and medium-sized firms in order to counter the liquidity constraints of the annual tax payments in economic downturns. As a separate scenario, we assume a rather generous allowance of €5 million for the net equity of each firm. This would exempt most small firms. Moreover, in line with proposals made for Germany, we restrict the annual tax payment to 35 per cent of the annual gross business income, which would further mitigate firms' liquidity

¹⁰See Eichengreen (1990) and Bach (2012).

problems in times of trouble. The idea behind this is to restrict the annual burden of the levy to 50 per cent of the net-of-tax business income. Since the statutory corporate income tax rate is around 30 per cent in Germany on average (including local business tax, which is levied by the municipalities at their own rates), the threshold would be 35 per cent of the annual gross business income.

Regarding the practical and political feasibility of a capital levy, Eichengreen (1990) combines theoretical considerations with a historical review of attempts to introduce such a levy in the 20th century. In a standard capital income taxation framework, the welfare-improving effect of a capital levy obviously hinges on the perception of the levy's exceptionality. If potential taxpayers expect that the capital levy will be repeated, this could discourage long-term saving and investment, while encouraging capital flight. Eichengreen argues that even if its recurrence cannot be ruled out, a capital levy can be welfare improving if adopted to redress debt problems created by extraordinary circumstances.

Historically, this was often the case during or after great wars. In particular, after the First World War, several European countries considered capital levies, some implemented them and, in most cases, the levies failed. These countries included Germany.¹¹ Problems of practicability and tax enforcement arose, capital flight occurred since the political deliberations caused delay, and property owners heavily resisted the levy. However, successful capital levies were implemented after the Second World War in Japan and, in particular, in Germany.¹²

III. Data on household wealth and top wealth concentration

Our analysis is mainly based on the 2007 wave of the German Socio-Economic Panel survey. The SOEP is a representative yearly panel study of private households in Germany.¹³ In 2007, about 20,000 individuals living in approximately 12,000 households were interviewed. For each year, the survey contains detailed information on personal and household income, household composition and personal characteristics of the household members. The 2007 wave includes a special wealth survey that provides us

¹¹Bach, 2012.

¹²In Germany, a capital levy was introduced as the principal financing source in the 'burden sharing' (*Lastenausgleich*) legislation of 1952 (Hughes, 1999; Bach, 2012). A tax rate as high as 50 per cent was imposed on personal net wealth exceeding a personal allowance, with payments spread over 30 years. The tax burden mainly fell on real-estate and business property since financial assets were largely devalued by the 1948 currency reform. Ultimately, the levy raised yearly revenues of about 1 per cent of GDP at the beginning of the 1950s and was helpful in funding war indemnities, reconstruction programmes and the integration of displaced persons.

¹³For a detailed description, see Haisken-DeNew and Frick (2005) and Wagner, Frick and Schupp (2007).

with detailed information on the level and composition of wealth of individuals aged over 16. In particular, the wealth questionnaire records the gross value of both owner-occupied and rented property wealth, outstanding debt on these wealth components, financial and tangible assets as well as related debt, and the estimated value of a business or shares owned in business property.¹⁴ For real-estate and business property, the market value as estimated by the respondent is recorded.

An important feature of the SOEP is the special high-income sample¹⁵ that includes about 800 households with monthly household net incomes of at least €3,850 in 2007. Since there is a strong positive correlation between income and wealth, and because the capital levy analysed here is principally targeted on the wealthy population, this oversampling of high-income households in SOEP waves allows us to estimate the wealth distribution more precisely. For aggregating the results based on SOEP data, we use the individual-level weights provided by the 2010 SOEP distribution.¹⁶

A substantial share of respondents report only that they own certain wealth components but do not report the respective amounts. We impute these wealth items following the statistical procedure suggested by Frick, Grabka and Marcus (2007 and 2010). The procedure imputes missing values at the personal level, which cannot be directly inferred from valid household information on the basis of selectivity-corrected regression models for each wealth component. To check to what extent these survey data contain systematic measurement errors, we compare wealth information derived from the SOEP wealth survey for the household sector with aggregate data from the national and financial accounts statistics.

Given the modest size of the high-income sample and the fact that the very rich are under-represented in household surveys, household wealth at the top of the distribution cannot be accurately estimated on the basis of SOEP data alone. The SOEP records 75 people (representing about 175,000 people) who report net wealth of at least €2 million, and 20 people (representing about 40,000 people) reporting at least €5 million. While the reported net wealth of the richest person in the SOEP was less than €50 million in 2007, it is well known that a substantial number of people or families living in Germany have wealth exceeding this amount by a large margin. According to the yearly ranking of the 300 richest Germans published by the business periodical *manager magazin* (2007), which is compiled by using publicly-available information on the shareholdings of this wealthy elite, the minimum amount of net wealth required to make it

¹⁴Recorded financial assets do not include the value of occupational pensions. Tangible assets do not include the value of household furniture and cars owned by the household. Refer to the section 'Your personal assets and liabilities' in the 2007 questionnaire: pp. 29–31 at http://www.diw.de/documents/dokumentenarchiv/17/diw_01.c.56579.de/personen_en_2007.pdf.

¹⁵See Haisken-DeNew and Frick (2005).

¹⁶For the revised weighting scheme, see Kroh (2009).

onto this list was about €300 million in 2007. The aggregate wealth of these richest people or families amounts to €450 billion.

We estimate the wealth distribution at the very top on the basis of this source and adjust the wealth distribution derived from the SOEP accordingly. A similar approach was utilised by Davies (1993). The rest of this section briefly summarises the method applied and the main assumptions made for the imputation procedure on top wealth. The underlying estimations are documented in depth in Appendix A.¹⁷

Since many positions on the *manager magazin* list are only reported for families, while we analyse the distribution of wealth at the individual level, we first equally divide the amount of reported net wealth by the assumed number of family members, which is four.¹⁸ People whose ordinary place of residence is known to be abroad are excluded from the sample. After these adjustments, we assume that the *manager magazin* list includes everyone resident in Germany whose net wealth exceeds €300 million in 2007 and that the distribution of net wealth exceeding this threshold can be approximated by the Pareto distribution.¹⁹ The parameter determining this distribution (the Pareto coefficient) is estimated using simple linear regression. For our sample and the mentioned threshold, the estimated Pareto coefficient is 1.34, with an estimated standard error of 0.04. Using this estimate, we derive the number of people with a net wealth in the range €5–300 million from the Pareto distribution. Applying this imputation procedure, we estimate that about 90,000 people have net wealth of at least €5 million, including all cases from the *manager magazin* list of the 300 richest Germans. We integrate these cases into our data set and delete the 20 SOEP observations with personal net wealth of at least €5 million that represent 40,000 people. In order to adjust the SOEP population weights for the imputed cases of super-rich people, we reduce the sampling weights of the SOEP cases with net wealth of €2–5 million according to the assumed Pareto distribution so that, on balance, the required adjustment of population weights by 50,000 people is achieved.

The wealth components for the imputed cases – in particular, business property including shares, real-estate property and financial assets – are derived on the basis of share equations estimated on the subsample of people with net wealth of at least €1 million before imputation (see Appendix A²⁰). These estimates imply that the share of business assets is increasing in total net wealth. The share is around 50 per cent for people with net wealth of €5 million, and steadily increases to 90 per cent for personal net wealth of

¹⁷ Available online at http://www.ifs.org.uk/docs/fsmar14_bachetal_appendices.pdf.

¹⁸ For a discussion of this assumption, see Appendix A online.

¹⁹ For the use of the Pareto distribution in the analysis of the distribution of very high wealth, see Klass et al. (2006), for example.

²⁰ Available online as above.

€20 million. For people with net wealth over €30 million, the estimated share of business assets converges towards 100 per cent. The remaining characteristics that are relevant for the assessment of the capital levy or for the distributional analysis – for instance, the age or the number of children – are imputed using mean values from the SOEP cases representing the top 40,000 people of the net wealth distribution before imputation.

The imputation at the top of the distribution results in a substantial increase in the estimated amount of personal net wealth, by almost €1,200 billion. The resulting total amount of personal net wealth of €7,215 billion, derived on the basis of this imputation and the SOEP data, is very close to the corresponding amount of €7,242 billion reported in national and financial accounts statistics (see Table B1 in Appendix B²¹).²² This substantial increase in the amount of personal net wealth is mainly due to the relatively large amount of business property owned by the imputed cases at the top of the distribution, whereas the other wealth components are slightly reduced as a result of the imputation and the corresponding reduction in the sampling weights of the observations with a net wealth below €5 million.

The left-hand panel of Table 1 shows the distribution of personal net wealth including imputations for non-response based on the SOEP data alone, while the right-hand panel also includes the imputed amounts of personal net wealth at the top of the distribution. Personal net wealth is highly concentrated even without imputing wealth at the very top of the distribution, as indicated by the Gini coefficient of 0.7726 reported at the bottom of the table. The breakdown of the wealth distribution by percentiles shows that only 2 per cent of total net wealth is owned by the bottom half of the distribution, whereas more than 60 per cent is held by the top decile of the distribution, more than 23 per cent by the top 1 per cent and almost 9 per cent by the top 0.1 per cent.

The increase in the wealth concentration is substantial when imputed wealth at the very top of the distribution is added. The Gini coefficient jumps to 0.8094. The top-sensitive entropy measures – i.e. the GE(1) measure (Theil index) and, in particular, the GE(2) measure (half the squared coefficient of variation) – indicate a much stronger increase in wealth inequality. The share of personal net wealth owned by the top 1 per cent of the distribution increases to more than a third, and the share of the top 0.1 per cent nearly triples. This underlines the importance of imputing wealth at the very top of the distribution, which is usually not represented in survey

²¹ Available online at http://www.ifs.org.uk/docs/fsmar14_bachetal_appendices.pdf.

²² From the total amount of net wealth reported in the national accounts, we have deducted the following items that are not recorded in the SOEP database: consumer durables, the value of occupational pensions and private health insurance schemes, currency and transferable bank deposits, and consumer loans.

TABLE 1
Distribution of personal net wealth^a in Germany, 2007

Fractiles of personal net wealth	SOEP database			SOEP database including imputed top wealth distribution		
	Lower bound of fractile (€thous.)	Aggregate (€bn)	Aggregate (%)	Lower bound of fractile (€thous.)	Aggregate (€bn)	Aggregate (%)
1 st –5 th deciles	\	103	1.7	\	103	1.4
6 th –9 th deciles	16	2,310	38.2	16	2,310	32.0
10 th decile	210	3,633	60.1	210	4,802	66.6
Total	\	6,045	100.0	\	7,215	100.0
Top 7.5%	256	3,227	53.4	256	4,397	60.9
Top 2.5%	492	2,046	33.9	492	3,216	44.6
Top 1%	772	1,409	23.3	772	2,579	35.8
Top 0.5%	1,200	1,072	17.7	1,200	2,242	31.1
Top 0.1%	4,079	520	8.6	6,080	1,617	22.4
	<i>For information: summary inequality measures of personal net wealth</i>					
Gini coefficient		0.7726			0.8094	
Entropy measures ^b						
GE(1)		1.3801			2.2118	
GE(2)		7.0211			692.5599	

^aNet wealth distribution of people in households aged over 16.

^bGE(1) is the Theil index. GE(2) is half the square of the coefficient of variation.

Source: German Socio-Economic Panel Study 2007 and authors' calculations.

data, and, at the same time, indicates that estimates of total wealth may be sensitive to the imputation procedure.

Our data refer to 2007, the year of the most recent wealth survey collected in the SOEP. We abstain from updating the database to the present. Basically, household wealth in Germany should not have changed significantly in the meantime. Although the financial crisis devalued several assets, businesses and stock markets have recovered strongly over the last few years. Real-estate markets performed rather moderately in Germany over the last decade and were not strongly affected by the crisis. In recent years, housing prices have gone up noticeably. Taking into account additional savings, the aggregate household wealth stock should be slightly higher in 2012 than in 2007. However, since the tax base of the levy is dominated by business properties including shares, the aggregate tax base should not have changed much since 2007.

IV. Microsimulation modelling of personal wealth taxation

Using the edited and adjusted micro database described in the previous section, we build a microsimulation model of personal wealth taxation. Modelling the tax base, we start from the compilation of the various assets and liabilities, take into account the specific reliefs for business property, and include personal and child allowances, for which we assume different scenarios. We also analyse the compliance and administrative costs of the capital levy.

We analyse three scenarios of personal and child allowances, which represent different degrees of a broader or narrower tax base. In order to confine the tax base to the top decile of the wealth distribution, we set the personal allowance to at least €250,000, and the child allowance to at least €100,000. Scenarios with higher personal allowances – €500,000 and €1 million, both combined with a child allowance of €250,000 – limit the tax burden to the very top of the wealth distribution.

We align these scenarios to a further scenario taking into account specific reliefs for business property. This scenario includes an extra allowance of €5 million on the net equity of each firm. (Note that the allowance is granted only once per firm.) Therefore, we impute information on the distribution of firm size and number of shareholders from tax statistics, in order to estimate the firm size of the shareholdings observed. Moreover, we restrict the annual tax payments to 35 per cent of the annual business income, less imputed entrepreneurial profit. For that purpose, we edit the survey information on business income and estimate a fictitious wage for the self-employed, using standard wage regression models accounting for selection effects.²³

The child allowances can be derived using the detailed information on household composition. The entitlement to the allowance, which includes dependent adult children in education and severely disabled children, follows the corresponding regulations in personal income taxation.

The tax rate of the capital levy is calculated by dividing the revenue target of €100 billion by the estimated tax base of the respective scenarios assuming a flat rate. The payment of the levy is spread over 10 years. The yearly instalments are calculated using an interest rate of 4.0 per cent, which is derived from the longer-term average of government bonds of that maturity.

The compliance and administrative costs of wealth taxation have been rather contentious in policy debates.²⁴ In particular, the inexactness of real-estate appraisal is considered a main obstacle in a fundamental reassessment of the outdated standard values for property taxation in Germany. Using the detailed information from the micro database, we simulate the potential

²³For details, see Bach, Beznoska and Steiner (2010, p. 55).

²⁴See Rudnick and Gordon (1996) and Boadway, Chamberlain and Emmerson (2010).

compliance and administrative costs, taking into account taxpayers' incentives to appeal against assessments.²⁵ For the valuation of assets and assessment procedures, we rely on standard cost rates from the fiscal authorities and estimations of the time involved for compliance. With respect to the potential estimation errors of the real-estate appraisal, which are deemed to be rather high, we use empirical information on the performance of the new valuation schemes used for inheritance and gift taxation. Studies show that these valuation procedures appear to be unbiased, but have a large standard error.²⁶ By imputing normally distributed error terms on the observed values in the data set, we simulate the potential estimation error of the real-estate appraisal. Based on this distribution, we analyse the potential for remonstrance against the values assessed by the fiscal authorities by simply modelling taxpayers' incentives. Beside extra costs for the appeal procedures and certified appraisals, our results suggest that the valuation corrections might result in a significant tax revenue shortfall. The owners of noticeably overvalued properties would appeal in order to adjust the valuation, whereas no such correction would happen in the opposite direction in the case of undervalued properties.

Regarding the reliability of our estimations of the revenue and distributional effects presented in Section V, some caveats are in order. Given the rather small number of observations and the huge variance in the very top wealth percentiles in the SOEP, on which the capital levy is concentrated, the standard errors of estimates of the tax base, revenue and distribution of the levy are likely to be fairly large. The confidence bands we report for the main results are based on estimated robust standard errors and include the estimation errors of the imputed top wealth concentration. Given the high importance of imputed wealth at the top of the distribution for the tax base (see Section V), further estimation risks emerge with respect to the validity of the Pareto distribution.

Further measurement errors are hard to assess given the available information. We cannot evaluate the self-assessed property valuations of the SOEP respondents since there is no additional information on the characteristics of the respective assets. In any case, we have no evidence of a systematic bias in this respect. The point estimate on net wealth aggregates captures the aggregates from macroeconomic wealth accounts for households, as reported in Section III. However, these macroeconomic figures could be plagued by several estimation risks as well. Comprehensive information on real-estate and business property derived from market transactions or financial accounting does not exist in Germany. Moreover, it remains unclear whether the fiscal authorities would actually succeed in fully ascertaining and valuing all taxable properties. Thus, a significant

²⁵For details, see Bach, Beznoska and Steiner (2010, p. 67).

²⁶See Broekelschen and Maiterth (2010a and 2010b).

measurement error would clearly remain. This means that our results presented in the following section should be treated with some caution.

V. Tax base, tax rate and distributional effects of a capital levy

The ‘first-round’ effects of the capital levy on the tax base and the wealth distribution presented in the following do not include taxpayers’ behavioural responses to the extra tax burden. However, as discussed in Section II, a one-time levy imposed on the existing stock of wealth does not provide incentives for immediate adjustments in economic behaviour. In this respect, there will be no substitution effects of the levy but only income and wealth effects – for instance, on saving and investment or bequest planning. Moreover, liquidity constraints might cause financial troubles in the case of business and real-estate property, although mitigated through the 10-year payment period and tax reliefs. These effects are neglected in the following. We do, however, take into account the potential for taxpayer appeals against the real-estate values assessed by the fiscal authorities, and the revenue losses incurred.

Since net wealth is heavily concentrated in the top percentiles of the population, wealth taxation could raise substantial revenue even if relatively generous personal allowances were granted. In the case of a personal allowance of €250,000 and a child allowance of €100,000, we estimate a tax base of €2,941 billion, neglecting the allowance for business property (see Table 2). This tax base amounts to 118 per cent of GDP in 2010. About 4.8 million people, or 7.7 per cent of the population aged over 16, would be liable to the tax.

In the case of a rather generous personal allowance of €1 million and a child allowance of €250,000, the tax base is still estimated at €1,864 billion, or 75 per cent of GDP. The number of affected taxpayers declines to 414,000 (0.6 per cent of the population aged over 16). The specific allowance for business property clearly reduces the tax base, by 22 per cent for the lowest personal allowance and by about 25 per cent for the higher allowances.

Due to the estimation risks resulting from the sampling error of SOEP data and the imputation of the top wealth distribution, the estimated 95 per cent confidence intervals for the tax base are wide. For the lowest personal allowance, they amount to about ± 13 per cent of the point estimate. They increase to ± 19 per cent for the highest allowance.

The results shown by net wealth percentiles underline the high wealth concentration in the top percentiles. In the case of the lowest allowance, the top 0.1 per cent wealthiest individuals account for around 55 per cent of the tax base, compared with 22 per cent of total net wealth. This share significantly increases with higher personal allowances. In the scenario with

TABLE 2

Tax base of the capital levy for alternative scenarios

	<i>Personal allowance: €250,000</i>		<i>Personal allowance: €500,000</i>		<i>Personal allowance: €1 million</i>		<i>Total net wealth</i>
	<i>Child allowance: €100,000</i>		<i>Child allowance: €250,000</i>		<i>Child allowance: €250,000</i>		
<i>Specific allowance for business property:</i>	<i>None</i>	<i>€5 million</i>	<i>None</i>	<i>€5 million</i>	<i>None</i>	<i>€5 million</i>	
Tax base (€bn)	2,941	2,303	2,234	1,694	1,864	1,398	7,215
<i>CI^a lower bound</i>	2,551	2,024	1,855	1,426	1,500	1,144	6,739
<i>CI^a upper bound</i>	3,332	2,582	2,613	1,962	2,229	1,653	7,691
Tax base (% of GDP)	118%	92%	89%	68%	75%	56%	289%
<i>CI^a lower bound</i>	102%	81%	74%	57%	60%	46%	270%
<i>CI^a upper bound</i>	133%	103%	105%	78%	89%	66%	308%
Taxpayers (thous.)	4,787	4,384	1,394	1,162	414	332	
<i>CI^a lower bound</i>	4,451	4,065	1,194	990	320	241	
<i>CI^a upper bound</i>	5,124	4,703	1,593	1,334	508	423	
Percentile ^b onset of tax liability	92.3	92.3	97.7	97.7	99.4	99.4	

Table continues

TABLE 2 continued

<i>Specific allowance for business property:</i>	<i>Personal allowance: €250,000</i>		<i>Personal allowance: €500,000</i>		<i>Personal allowance: €1 million</i>		<i>Total net wealth</i>
	<i>Child allowance: €100,000</i>		<i>Child allowance: €250,000</i>		<i>Child allowance: €250,000</i>		
	<i>None</i>	<i>€5 million</i>	<i>None</i>	<i>€5 million</i>	<i>None</i>	<i>€5 million</i>	
	Distribution of the tax base / net wealth by percentiles ^b of net wealth (%)						
1 st –99 th percentiles	19.8	22.1	3.7	4.1	0.0	0.0	64.2
99.1 th –99.9 th percentiles	25.9	22.5	25.7	21.8	17.3	12.7	13.3
Top 0.1%	54.3	55.4	70.6	74.1	82.7	87.3	22.4
	Distribution of the tax base / net wealth by percentiles ^b of net equivalent income ^c (%)						
1 st –5 th deciles	3.6	3.5	1.7	1.3	0.5	0.4	15.6
6 th –8 th deciles	7.0	7.3	2.7	2.3	1.0	0.6	23.1
9 th decile	6.1	5.8	2.8	2.2	0.8	0.5	12.3
10 th decile	83.3	83.5	92.8	94.1	97.8	98.5	49.0
	Distribution of the tax base / net wealth by age groups (%)						
Under 45 years	14.5	13.3	14.5	13.8	14.7	14.2	20.2
45–64 years	39.3	38.6	36.5	35.9	34.2	33.8	42.0
65 years and older	46.2	48.1	48.9	50.2	51.0	51.9	37.8
<i>For information: simulations based on original SOEP database</i>							
Tax base (€bn)	1,768	1,402	1,060	792	691	496	6,045
<i>CI^a lower bound</i>	<i>1,412</i>	<i>1,103</i>	<i>736</i>	<i>520</i>	<i>401</i>	<i>252</i>	<i>5,645</i>
<i>CI^a upper bound</i>	<i>2,123</i>	<i>1,700</i>	<i>1,384</i>	<i>1,064</i>	<i>980</i>	<i>740</i>	<i>6,445</i>

^a95 per cent confidence interval; robust standard errors.

^bDistribution of people in households aged over 16.

^cNet equivalent income is calculated based on net household income including imputed rent and weighted by the modified OECD equivalence scale.

Source: Simulations based on German Socio-Economic Panel Study 2007 adjusted for top wealth concentration.

a personal allowance of €1 million and a child allowance of €250,000, the tax burden is completely concentrated on the top 1 per cent of the wealth distribution. In this case, the top 0.1 per cent wealthiest individuals account for 83 per cent of the tax base, or 87 per cent for the scenario including the allowance for business property.

We further report the distribution of the tax base by net equivalent income, which is calculated based on net household income including imputed rent and weighted by the modified OECD equivalence scale. The concentration in the top income decile is also pronounced, but less so than for wealth concentration. This result arises from wage and transfer income, whose underlying implicit wealth stocks – ‘human capital’ and ‘social capital’ – are not or only partly included in the tax base.

The tax base is more heavily concentrated on older people when compared with the overall distribution of net wealth. Since these people often no longer have children eligible for the child allowance, its impact is not so strong. A separate simulation (which is not provided here) shows that the tax base would increase only by 1.7 per cent if we reduced the child allowance from €250,000 to €100,000 for the middle scenario of the personal allowance (€500,000).

In the bottom panel of Table 2, we include information on the tax base that would result from calculations without imputing the top wealth distribution. As described in Section III, this imputation has a strong effect on wealth aggregates and concentration. While the imputation increases total net wealth by 20 per cent, the tax base increases by 67 per cent in the scenario with the lowest allowances. With the highest allowances, including that for business taxation, the tax base nearly triples. This emphasises the importance of accounting for top wealth concentration in modelling the revenue and distributional effects of wealth taxation with higher allowances. However, this also indicates the estimation risks involved with our estimation procedure.

The tax rate of the capital levy is calculated by dividing the targeted revenue of €100 billion by the estimated tax base of the respective scenarios from Table 2. For the scenarios including special allowances for business property, we further restrict the annual tax payments to 35 per cent of the annual business income. Therefore, we iteratively increase the tax rate until we achieve the fixed revenue target. Table 3 displays both the entire tax rate, which is required to raise the revenue target of €100 billion, and the annual tax rate calculated as instalments over 10 years with an interest rate of 4.0 per cent. Due to compounded interest, the annual tax rate is 21 per cent higher than one-tenth of the tax rate for the whole 10-year period.

The narrower the tax base, the higher the tax rate must be fixed in order to realise the revenue target of €100 billion. However, even in the case of the

TABLE 3

Tax rate and distributional effects of the capital levy for alternative scenarios and targeted tax revenue of €100 billion

	Personal allowance: €250,000 Child allowance: €100,000 Specific allowance for business property: ^a		Personal allowance: €500,000 Child allowance: €250,000 Specific allowance for business property: ^a		Personal allowance: €1 million Child allowance: €250,000 Specific allowance for business property: ^a	
	None	€5 million	None	€5 million	None	€5 million
Total tax rate	3.40%	4.42%	4.48%	5.99%	5.36%	7.23%
CI ^b upper bound	3.92%	5.03%	5.39%	7.11%	6.67%	8.84%
CI ^b lower bound	3.00%	3.95%	3.83%	5.17%	4.49%	6.12%
Annual rate, 10 years ^c	0.41%	0.53%	0.54%	0.72%	0.65%	0.87%
CI ^b upper bound	0.47%	0.61%	0.65%	0.86%	0.81%	1.07%
CI ^b lower bound	0.36%	0.48%	0.46%	0.63%	0.54%	0.74%
	Distribution of the tax burden by percentiles ^d of net wealth (%)					
1 st –99 th percentiles	19.8	22.2	3.7	4.1	0.0	0.0
99.1 th –99.9 th percentiles	25.9	22.1	25.7	21.5	17.3	12.6
Top 0.1%	54.3	55.7	70.6	74.3	82.7	87.4
	Change in summary inequality measures of personal net wealth ^d (%)					
Gini coefficient	–0.31	–0.31	–0.33	–0.33	–0.33	–0.33
Entropy measures ^e						
GE(1)	–1.55	–1.71	–2.11	–2.38	–2.46	–2.81
GE(2)	–4.03	–5.86	–6.15	–8.87	–7.87	–11.21
Costs of tax assessment as % of tax revenue	7.43%	9.02%	4.81%	5.54%	2.86%	3.25%
Compliance costs ^f	3.40%	3.59%	1.66%	1.58%	0.72%	0.64%
Administrative costs ^g	1.40%	1.36%	0.57%	0.54%	0.23%	0.20%
Revenue loss from valuation corrections	2.63%	4.07%	2.57%	3.42%	1.91%	2.41%
	<i>For information: simulations based on original SOEP database</i>					
Total tax rate	5.66%	7.63%	9.43%	14.85%	14.48%	26.96%
CI ^b upper bound	7.08%	9.70%	13.58%	22.62%	24.94%	53.11%
CI ^b lower bound	4.71%	6.29%	7.22%	11.06%	10.20%	18.07%

^aIncluding a limitation of the annual tax payments to 35 per cent of the annual business income.

^b95 per cent confidence interval; robust standard errors.

^cAnnuity of the total tax liability; 4.0 per cent interest rate.

^dDistribution of people in households aged over 16.

^eGE(1) is the Theil index. GE(2) is half the square of the coefficient of variation.

^fCompliance costs of the taxpayers.

^gAdministrative costs of the fiscal authorities.

Source: Simulations based on German Socio-Economic Panel Study 2007 adjusted for top wealth concentration.

rather generous personal allowance of €1 million, which would confine the capital levy to the richest 0.6 per cent of the population, the annual tax rate might still be deemed to be rather modest, as it amounts to 0.65 per cent, or 0.87 per cent for the scenario including the special reliefs for business property. This result again underlines the high wealth concentration. Yet the estimation risks are high, in particular for the scenarios with the high allowances. The upper bounds of the confidence intervals for these annual tax rates are 0.81 per cent and 1.07 per cent. Notably, the confidence intervals estimated for the tax rates are not symmetrically distributed around the point estimates since the tax rate is determined for the fixed revenue target of €100 billion, which is divided by the respective tax base.

The distribution of the tax burden by net wealth corresponds closely to the distribution of the tax base presented in Table 2. In the case with specific reliefs for business property, the tax burden is concentrated slightly more heavily in the top percentiles. This results from restricting the annual tax payments to 35 per cent of the annual business income. We also report the effect of the capital levy on the summary inequality measures, for which we display the relative change. We account for the entire capital levy burden in relation to the existing net wealth. The Gini coefficient, which is known to be sensitive to changes at the middle of the distribution, increases only slightly more with higher allowances. The top-sensitive entropy measures indicate a much stronger reduction in wealth inequality, with the reduction increasing markedly with higher allowances. The specific reliefs for business property reduce the wealth inequality more than the respective scenarios without such reliefs. Obviously, people with lower business property and net wealth benefit relatively more from this relief.

The costs of tax assessment depend strongly on the number of taxpayers. This is especially true for the compliance costs of taxpayers and the administrative costs of the tax authorities. Raising the fixed revenue target from a significantly smaller number of taxpayers would reduce the assessment effort. The total cost of compliance and administration makes up around 5 per cent of tax revenue for the scenarios with the lowest personal allowance, and decreases to below 1 per cent for the scenarios with the highest personal allowance. The picture is less clear regarding the estimated revenue loss resulting from valuation corrections for real-estate property. On the one hand, the share of real estate in total wealth declines with higher personal allowances, which would reduce the impact of the valuation corrections. On the other hand, higher allowances require higher tax rates in order to raise the targeted revenue amount, thus increasing taxpayers' incentives to appeal against assessments, which we model in our simulations. On balance, the revenue loss from valuation corrections declines slightly with higher personal allowances.

In the bottom panel of Table 3, we report the tax rates that result from a simulation that uses SOEP data only, without the imputed top wealth concentration. Correspondingly, the tax rates would be much higher, particularly in the case of the high allowances.

VI. Summary and conclusion

The idea of higher wealth taxes to finance the mounting public debt in the wake of the financial crisis is gaining ground in several OECD countries. In this study, we evaluate the revenue and distributional effects of a capital levy as proposed in the German political debate. The levy aims to raise tax revenue of €100 billion, which equals 4 per cent of GDP, to refinance the increase in public debt in the wake of the financial crisis. Higher personal allowances would concentrate the tax burden on the wealthiest part of the population.

Our empirical analysis is based on household survey data from the 2007 wave of the German Socio-Economic Panel (SOEP) and microsimulation modelling. Since survey data do not represent the high end of the wealth distribution well, we include information from a listing of the 300 richest Germans, provided by the business periodical *manager magazin*. Using the Pareto distribution, we estimate the wealth distribution of individuals owning net wealth of at least €2 million and impute this distribution into the micro database. The resulting aggregates on personal wealth are consistent with the stocks reported in the national and financial accounts statistics. Based on this data set, we build up a microsimulation model of wealth taxation.

Our simulations show that wealth taxation could raise a substantial amount of revenue, even if high personal allowances target the tax to those in the top percentiles of the wealth distribution. Yet, even if high personal allowances are set, the annual tax rates required to yield revenue of €100 billion seem rather modest. For a personal allowance of €1 million, which would confine the capital levy to the richest 0.6 per cent of the population, we estimate the annual tax rate to be 0.65 per cent, or 0.87 per cent if special reliefs for business property are included. Moreover, raising the tax revenue from the top percentiles of the wealth distribution would reduce the costs of assessment.

It should be noted that our empirical analysis faces several estimation risks. The sampling errors of the survey data are rather large, in particular with respect to the higher personal allowances. Further estimation risks emerge from the imputation strategy of the top wealth concentration, which relies on the Pareto distribution, and from measurement errors in household wealth. Furthermore, it is unclear whether the fiscal authorities can actually succeed in fully valuing all taxable properties. Therefore, to be on the safe

side, we would recommend focusing on the lower bound of the confidence intervals reported for the tax base and on the upper bound for the tax rate. For the scenario with a personal allowance of €1 million, this would imply an annual tax rate of around 1 per cent.

We have not analysed further economic effects of the capital levy. As taxpayers could not anticipate it, no immediate substitution effects seem likely in the short run. This is a main advantage of a one-off capital levy compared with increases in recurrent taxes, particularly those on higher income and wealth, which are currently discussed or implemented in many countries. Such tax hikes are more or less plagued by disincentive effects on saving and tax avoidance. For the same reason, Diamond and Saez (2011) recommend taxation of capital as part of an optimal tax structure and suggest taxing existing wealth rather than future capital income.

However, the capital levy induces income and wealth effects. Savings or bequests might be adjusted to compensate the extra tax burden. In the case of real-estate and business property, frustration with deficient valuation procedures could enhance political resistance against the levy. Liquidity constraints might cause problems, which could be addressed by tax reliefs or longer payment periods. The introduction of a capital levy might change the expectations of wealthy people concerning future fiscal policy. Moreover, the unexpected tax burden on existing wealth could prompt political protest, particularly from the wealthy elite, members of which might consider themselves to be expropriated by the levy. In the long run, saving and investment might be discouraged if potential taxpayers expect that the capital levy will be repeated. Balanced-budget rules, recently proposed as part of the European Fiscal Union, could prevent future public debt overhangs, thus meeting concerns regarding the levy's exceptionality.

Finally, as historical experience suggests, the feasibility of a capital levy would depend considerably on the attitude and perception of the wealthy elite with respect to the political exigency to resort to such an extraordinary fiscal policy measure. There is increasing support for taxing the rich somewhat more heavily, even from amongst their number, since it is mainly the rich who have gained from reduced taxation over the past few decades in most countries.

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