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DIE LINKE Capital Levy.
Revenue and the distributional effects

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Summary

This study examines the revenue and the distributional effects of the DIE LINKE proposal for a capital levy. The proposed levy would be a one-off charge on the existing net assets of private households. The revenue is intended to help finance the financial burdens on public budgets caused by the coronavirus economic crisis. The historical starting point is the capital levy under the equalisation of burdens (the "Lastenausgleich") of 1952.

The levy would be charged on assets subject to the levy as at 1 January 2020 and would be paid over a period of 20 years. The tax base consists of the individual net assets of each natural person, calculated from the assets subject to the levy, less the liabilities on those assets. A separate allowance of 2 or 5 million euros is planned for business assets. A personal allowance of 1 or 2 million euros is also to be deducted from the assets subject to the levy. The capital levy rate is progressive, starting at 10 percent and rising to 30 percent on higher wealth subject to the levy. The peak rate will start at assets subject to the levy of 30 million euros; alternatively, variants at 50 million euros and 100 million euros are considered. Either a tiered rate or a linear-progressive rate is to be applied, the latter placing a greater burden on levy-payers at the onset.

Our study is based on the third wave of the Household Finance and Consumption Survey (HFCS) by the Eurosystem central banks - the German survey was conducted by Deutsche Bundesbank in 2017. The 300 wealthiest Germans according to the list compiled by "manager magazin" (2017) are also integrated into the model dataset. Assuming a Pareto distribution, the wealth and wealth distribution of high net worth households (3 million euros or more) is estimated for the top range of wealth. Using a microsimulation model, we analyse revenue and the distributional effects, as well as the collection costs of the capital levy.

The concentration of wealth in Germany is considerable. The richest one percent of the population, which starts at a personal net assets of 1.8 million euros, owns 32 percent of all assets. The richest 0.1 percent, which starts at personal net assets of 8.7 million euros, owns 16 percent of all assets. A capital levy can therefore generate considerable revenue, even if the allowances are high.

The most levy revenue is generated when the top rate for the levy starts at assets of 30 million euros (Tabelle 01). Depending on the scenario for the tax base, the levy revenue for the

tiered rate ranges from 338 billion euros (with a personal allowance of 2 million euros and an allowance for business assets of 5 million euros) to 501 billion euros (with a personal allowance of 1 million euros and no allowance for business assets). For a linear-progressive rate, the revenue is about 10 percent higher, ranging from 369 to 560 billion euros. The annual levy revenue in these scenarios is 20 to 35 billion euros.

Owing to the high concentration of wealth and the progressive levy rate, the levy revenue is highly concentrated in the top percentiles of wealth distribution. The richest 0.1 percent pay up to 80 percent of the levy revenue at a personal allowance of 1 million euros and up to 90 percent of the levy revenue at a personal allowance of 2 million euros. This means a moderate reduction in the high level of wealth inequality. Regarding collection costs, the capital levy is significantly cheaper than an ongoing wealth tax, as the tax base only has to be measured once. The costs are 2 to 3.5 percent of the revenue.

If the top levy rate of 30 percent only starts to apply at assets of 50 or 100 million euros, the levy revenue is lower. The revenue is then somewhat less concentrated in the wealthiest 0.1 percent of the population. The share of collection costs is minimally increased as a result of the lower revenue.

As the levy is to be charged on assets as at the start of 2020, levy-payers can no longer avoid it via structures. To this extent, there are no direct substitution effects - and therefore there is no excess burden - for the capital levy. However, the capital levy triggers wealth and income effects. This may mean liquidity and financing problems for real estate or business assets, in particular if the current return on assets is not sufficient to pay the ongoing capital levy.

Table 01   **Tax base and revenue of the capital levy for various scenarios**

	Personal allowance 1 million euros			Personal allowance 2 million euros		
	Allowance for business assets and investments in corporations					
	None	2 million euros	5 million euros	None	2 million euros	5 million euros
Tax base						
Billion euros	3 185	2 528	2 338	2 424	1 934	1 743
Percentage of GDP	98.0	77.8	71.9	74.6	59.5	53.6
Levy-payers						
Thousands	1 564	1 448	1 332	423	366	293
Percent of population	2.3	2.1	2.0	0.6	0.5	0.4
Scenario: Top rate of 30% from 30 million euros, tiered rate						
Revenue from levy in billion euros						
Total	501	428	400	421	366	338
Annually	30	26	24	26	22	20
Distribution of revenue from levy						
1st to 99.9th percentile	26.2	18.5	19.3	14.7	7.2	7.3
Top 0.1%	73.8	81.5	80.7	85.3	92.8	92.7
Scenario: Top rate of 30% from 30 million euros, linear-progressive levy rate						
Revenue from levy in billion euros						
Total	560	473	437	471	405	369
Annually	34	29	26	29	25	22
Distribution of revenue from levy						
1st to 99.9th percentile	25.7	17.8	18.7	14.5	7.0	7.0
Top 0.1%	74.3	82.2	81.3	85.5	93.0	93.0
Scenario: Top rate of 30% from 50 million euros, tiered rate						
Revenue from levy in billion euros						
Total	466	396	372	388	335	311
Annually	28	24	23	23	20	19
Distribution of revenue from levy						
1st to 99.9th percentile	28.2	20.0	20.8	16.0	7.9	7.9

Top 0.1%	71.8	80.0	79.2	84.0	92.1
	92.1				
Scenario: Top rate of 30% from 50 million euros, linear-progressive levy rate					
Revenue from levy in billion euros					
Total	519	440	409	435	374
	344				
Annually	31	27	25	26	23
	21				
Distribution of revenue from levy					
1st to 99.9th percentile	26.7	18.7	19.6	15.2	7.4
	7.4				
Top 0.1%	73.3	81.3	80.4	84.8	92.6
	92.6				
Scenario: Top rate of 30% from 100 million euros, tiered rate					
Revenue from levy in billion euros					
Total	427	360	339	350	300
	279				
Annually	26	22	21	21	18
	17				
Distribution of revenue from levy					
1st to 99.9th percentile	30.8	22.0	22.8	17.7	8.8
	8.8				
Top 0.1%	69.2	78.0	77.2	82.3	91.2
	91.2				
Scenario: Top rate of 30% from 100 million euros, linear-progressive levy rate					
Revenue from levy in billion euros					
Total	472	399	372	391	336
	310				
Annually	29	24	23	24	20
	19				
Distribution of revenue from levy					
1st to 99.9th percentile	28.6	20.2	21.1	16.3	8.1
	8.1				
Top 0.1%	71.4	79.8	78.9	83.7	91.9
	91.9				

Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

The high personal allowances, the separate allowance for business assets and the extension of the liability for the capital levy over a period of 20 years largely avoid these problems. Re-

lief could be provided for temporary periods of losses or permanent reductions in assets. It may also be possible for levy-payers to convert their burden into permanent state ownership.

1.   Introduction

The coronavirus crisis has plunged public budgets into a woeful state. In addition to the revenue shortfalls and additional expenditure caused by the recession, government deficits are spiralling upwards as a result of aid programmes and the economic stimulus package. There are also loans and equity investments as well as sureties and guarantees for distressed companies. As a result, total national debt in Germany will increase by at least 10 percent of gross domestic product (GDP) by 2022. Depending on the further course of the pandemic and its economic consequences, the increase could be 15 percent or more.

The debt limit requires long-term repayment of the additional debt. If you do not want to limit social spending, "investment in the future" for infrastructure, research and education, or other expenditure, then you must increase taxes. As the tax burden on the middle classes and higher earners is quite high, interest falls on high incomes and wealth. In recent decades, these have enjoyed tax relief, while also growing disproportionately to the income of ordinary citizens.

In addition to increasing current taxes on high incomes and wealth via top income levy rates, capital gains tax, wealth tax and inheritance tax, a one-off capital levy is a frequently discussed instrument for managing extraordinary fiscal challenges. Germany has a long tradition in this area and has raised one-off capital levies several times in the 20th century - successfully financing the equalisation of burdens after the Second World War. After reunification and the financial crisis, there were also proposals to raise a one-off capital levy.

This study examines the revenue and the distributional effects of the DIE LINKE proposal for a capital levy. The levy would be charged on assets subject to the levy as at 1 January 2020 and would be paid over a period of 20 years. A separate allowance of 2 or 5 million euros is planned for business assets. A personal allowance of 1 or 2 million euros is also to be deducted from the assets subject to the levy. The capital levy rate is progressive, starting at 10 percent and rising to 30 percent on higher wealth subject to the levy.

Our study is based on the third wave of the Household Finance and Consumption Survey (HFCS) by the Eurosystem central banks - the German survey was conducted by Deutsche Bundesbank in 2017. The 300 wealthiest Germans according to the list compiled by "manager magazin" (2017) are also integrated into the model dataset. Assuming a Pareto distribution,

the wealth and wealth distribution of high net worth households (3 million euros or more) is estimated for the top range of wealth. Using a microsimulation model, we analyse revenue and the distributional effects, as well as the collection costs of the capital levy.

The concept of the DIE LINKE capital levy and the historical precedents are presented in Section 2. The underlying data and the methods used for the microsimulation analyses are described in Section 3. The results of the microsimulation analyses are described in Section 4.

2. The DIE LINKE capital levy concept

2.1. One-off capital levy

The DIE LINKE capital levy would be raised as a one-off capital levy under Article 106(1) No. 5 of the German Basic Law (GG). The constitutional conditions for the levy are that the levy is charged once on the assets at a certain point in time and that the revenue from the levy is used to cover special, extraordinary financial requirements of the Federal Government (Wissenschaftliche Dienste Deutscher Bundestag, 2020). The historical starting point is the capital levy under the equalisation of war burdens (the "Lastenausgleich") of 1952, which largely financed the equalisation of burdens fund ("Lastenausgleichsfond"), which was used to pay reparations and aid for the consequences of war (cf. below, Section 2.5).

The revenue from the capital levy is intended to help finance the financial burdens of the Federal Government that have arisen or will arise as a result of the coronavirus crisis. Where appropriate, the Länder and municipalities should also receive a share of the revenue from the capital levy. According to current forecasts, the budget deficits, as well guarantees, loans and equity investments, created in the wake of the coronavirus crisis, are likely to increase Germany's total national debt by up to 15 percent of gross domestic product (GDP) by 2022 (Joint Economic Forecast 2-2020). Relative to GDP in 2019, up to 500 billion euros.

The proposed key date for defining the assets subject to the levy is 1 January 2020. However, in view of the shifts in assets due to the coronavirus crisis, provision should be made for evidence of a lower value that has arisen, until the coronavirus crisis has been overcome in the economy as a whole, which would be submitted, for example, until 1 January 2022. Levy-payers whose assets have increased in the course of the coronavirus crisis would then be assessed at the lower value as at the start of 2020. A general valuation date in the future, however, is not recommended, as this would create incentives to reduce the assets subject to the levy via consumption, valuation or tax evasion.

The payments for the capital levy would be spread over a period of 20 years. The intention is for the ongoing instalments to be paid from the return on assets or from other current income. If necessary, the revenue target for the capital levy could be reduced retroactively if the burdens to be financed from the levy revenue are lower than expected after the coronavirus

crisis has been overcome. Instalments of the capital levy that are then still to be paid could be reduced or amounts already paid in excess could be reimbursed.

Natural persons with "residence" (Section 8 of the German Fiscal Code (AO)) or "habitual abode" (Section 9 of the German Fiscal Code (AO)) in Germany are subject to the levy without restriction.[1] The intention is for domestic assets of natural persons abroad, i.e. in particular for real estate and companies in Germany, to be subject to the levy with restrictions. The same approach was taken for the former wealth tax and for the capital levy under the 1952 equalisation of burdens. Where applicable, the provisions of double taxation agreements must be observed.

Legal entities are generally not subject to the levy. Their assets recorded with the part-owners, provided they are natural persons. Special provisions in this regard must be made for domestic and foreign foundations or similar entities that benefit domestic natural persons (cf. below, Section 2.2).

The tax base for the capital levy is the individual's net assets subject to the levy. This consists of the assets subject to the levy, plus foreign assets, less the liabilities on those assets. The assets should be determined and valued according to the provisions of the German Valuation Act (BewG). The Act lays down special valuation rules for agricultural and forestry assets, real estate (including owner-occupied housing) and business assets, including significant holdings in corporations. These assets are to be subject to the new market value-oriented valuation rules of the Section 6 of the Act, which will apply to inheritance tax from 2009. The old provisions for "other assets" (mainly financial assets and securities, pension assets, intellectual property such as patents and copyrights, collections, etc.) and "total assets" under Section 110-120 of the German Valuation Act (BewG) have been abolished since 1997, the wealth tax has no longer been levied. To this end, similar provisions would have to be enacted or comparable provision under the current inheritance tax law would have to be used if the general valuation provisions of the German Valuation Act (BewG) are not sufficient or if special provisions are to be made for specific types of assets.

The capital levy is designed to be raised on individuals. A personal allowance of at least 1 million euros should be deducted from the net assets subject to the levy. Alternative scenari-

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[1] On the technical implementation of a capital levy, cf. also the draft law on raising a capital levy by the Alliance 90/The Greens Parliamentary Group (2012) and Bach et al. (2010, 2014).

os with a personal allowance of 2 million euros are analysed in this study. Joint assessment of spouses or life partners or with dependent children is not proposed. There is no additional child allowance for children.

A separate allowance of 2 or 5 million euros is provided for business assets, including significant holdings in corporations. "Administrative property" according to Section 13b para. 2 of the German Inheritance and Gift Tax Act (ErbStG) that is not required for business purposes should not be given favourable treatment. The current inheritance tax provisions are to be used for this purpose. Accordingly, a minimum shareholding of 25 percent is required for investments in corporations in order to use the allowance. For smaller shareholdings, part-owners may join together via a "pool agreement" in which they agree on the uniform exercise of voting rights and disposal of the shares (Section 13 b para. 1 No. 3 of the German Inheritance and Gift Tax Act (ErbStG)).

2.2. Recording and valuation of assets

For administrative processing of the capital levy, the assets subject to the levy must be recorded and valued. Non-financial assets, such as real estate or business assets, are generally easy to record, provided they are not located abroad. However, there are often no recent market values on which to base the valuation, in which case suitable values must be estimated. For financial assets, the valuation is usually unproblematic. The upstream recording of these assets is more difficult, as the tax authorities are not able to check the various assets of levy-payers held by financial intermediaries. This applies in particular to holdings abroad, although the ability of the national tax authorities to investigate has improved considerably in recent years.

Market values as a guide

The valuation of assets should in principle be based on the market value (fair value) of the assets. If market values are available at the asset reporting date, such as the nominal values of savings deposits, the market values of securities or comparable values for real estate, these may be used. If no reliable market values are available for real estate or business assets, including shareholdings in limited companies, valuation methods must be used.

When valuing real estate and business assets, it is advisable to use the market value-based valuation provisions of Section 6 of the German Valuation Act (BewG), which have applied to inheritance tax since 2009. The reform has based the inheritance tax valuation procedures on standard valuation procedures for real estate and companies. However, for reasons of practicality, the legislator has made a number of simplifications and standardisations.

Real estate valuation

The valuation of real estate for inheritance tax purposes is based on the relevant provisions of the German Real Estate Valuation Ordinance (ImmoWertV). Owner-occupied homes and flats should generally be valued using the sales comparison approach. Comparative prices from suitable information systems should be used for this purpose, primarily the purchase prices collected by the municipal expert committees for real estate, as well as estimates of comparative prices derived from those prices. The income approach is used for rented properties. Alternatively, cost approaches can be used if no suitable comparative or income values are available.

A separate expert valuation may include "soft" factors in the specific case if they have a value-determining effect, e.g. micro-location and layout of a plot of land or design and state of preservation of the building. However, this means a significant additional expense for the tax authorities and the levy-payers (cf. also the analyses of the National Regulatory Control Council, 2009: 22 ff. and Bach et al. 2010: 69 ff.).

Business valuation

The valuation of business assets for inheritance tax purposes is also generally based on the standard valuation approaches. For non-listed shares in corporations and business assets for which no suitable market value can be determined, company valuations should be valued based on capitalised earnings according to recognised standard market procedures (Section 11(2) of the German Valuation Act (BewG)), such as the discounted cash flow (DCF) method, other income capitalisation approaches or valuation methods using multiples. The simplified income approach under Section 200 of the German Valuation Act (BewG) may also be applied "if this does not lead to obviously incorrect results" (Section 199, paras. 1 and 2 of the German Valuation Act (BewG)). These methods seem in principle to be a sensible compromise between what is desirable, i.e. determining the companies' prospective earnings po-

tential, and what is feasible in terms of compliance costs and avoiding subjective, discretionary decisions. There is no provision for correction to account for special economic situations, such as within the economic cycle. However, a lower value limit is the sum of the common values of the assets of the business (net asset value, cf. Section 11(2) sentence 3 of the German Valuation Act (BewG)).

If necessary, the capitalisation factors that are used must be reviewed in light of the persistently high company prices on the financial markets or the low yields. In the 2016 inheritance tax reform, the flat-rate capitalisation factor for the simplified income approach was reduced from just under 18 to 13.75, which corresponds to a return of 7.3 percent. This is likely to lead to significant undervaluations of larger companies with good refinancing options and lower risk and should be differentiated more according to company size or sector.

It should be considered whether the maximum valuation discount of 30 percent on holdings in (family) companies with standard distribution, disposal and compensation restrictions (Section 13a (9) of the German Inheritance and Gift Tax Act (ErbStG)) introduced with the 2016 inheritance tax reform should be adopted for the capital levy. On the one hand, this discount is in principle appropriate from the perspective of the part-owners, since such restrictions clearly limit the direct value of the investment from the perspective of the individual part-owner. On the other hand, the values are present in the company and can potentially be realised if all shareholders have joint control over them by amending the articles of association or even selling the company. Therefore, the inheritance tax provisions should in any case also be adopted, according to which the statutory conditions for the preferential treatment must be fulfilled two years before and 20 years after the valuation date. Alternatively, in these cases, the companies themselves could be included in the liability for the levy, in the same way as inheritance tax for foundations.

The value of company partnerships and corporations are allocated to the shareholders in accordance with the provisions of the German Valuation Act (BewG). In contrast to the former wealth tax or the capital levy under the 1952 equalisation of burdens, the DIE LINKE capital levy proposes that legal entities are not to be subject to the levy. This avoids double burdens on the equity capital of corporations. Foreign natural persons holding shares in domestic corporations are to be subject to the levy to a limited extent, if they have larger holdings. In the case of nested holding structures, however, this can be difficult to determine. At the same

time, the holdings of domestic natural persons in foreign corporations are fully subject to the levy. The alternative would be to provide for a separate liability to the levy for corporations and other legal entities, as was the case for the capital levy under the 1952 equalisation of burdens. However, if double burdens on the equity capital of corporations are to be avoided, separate provisions such as a half-assets method or a dividend imputation system would be necessary (cf. Bach et al., 2012: 19 f.).

Foundations and similar entities

A tax problem arises in the case of legal entities managing assets for the benefit of domestic natural persons. This applies to foundations, associations, trusts or similar entities under domestic or foreign law that are not charitable. Such forms of organisation are also often used as holding functions for larger family businesses, so that considerable assets can be held in these legal forms. The assets of these organisations would have to be valued and allocated to the beneficiaries, insofar as they are domestic natural persons subject to the levy (Alliance 90/The Greens Parliamentary Group, 2012: Section 5). Such allocation can cause difficulties if the provisions governing the current use of income or the accumulation of assets on dissolution of the entity are not sufficiently specific or are at the discretion of the competent bodies of the entities. Within the framework of limited liability for the levy, corresponding provisions would have to be made for foreign beneficiaries of domestic entities. Alternatively, there could be a separate liability for the levy implemented for domestic entities, similar to the inheritance tax on foundations.

Recording of financial assets

In general, there are no particular valuation problems regarding financial assets. Money claims such as current and savings accounts, loans, etc. can be stated at their nominal value; market values are usually available for shares, bonds, mortgage bonds, fund shares and other securities. However, company valuations must be carried out for unquoted shares in corporations (see previous section).

There have traditionally been problems recording financial assets. For a long time, a sort of tax banking secrecy in Germany prevented the effective enforcement of capital gains tax and the former wealth tax, even for domestic financial investments. Since then, these provisions have been significantly restricted and the ability of the tax authorities to investigate in suspi-

cious cases has been expanded. However, Germany still does not have any general tax monitoring procedures, such as notifications to tax authorities during tax audits and automated reporting procedures. There is also no longer any need for this in the case of capital gains tax, since a final withholding tax on capital income has been in force since 2009. However, reporting and monitoring procedures can be used for the capital levy, as is the case for inheritance tax.

It is more difficult for the tax authorities to identify the foreign assets of the domestic residents subject to the levy, as foreign financial service providers are outside their jurisdiction. The tax authorities are then dependent on cooperation with foreign authorities. In recent years, a comprehensive sharing exchange of information with investors' countries of residence has been introduced for this purpose. Any gaps that may still exist would have to be filled.

Recording real estate and business assets abroad

Real estate and business assets held abroad by domestic levy-payers are also to be included in the capital levy. In this case, recording and valuation is more complex, as the German tax authorities depend on cooperation with foreign authorities during fact-finding investigations abroad. Such cases occur frequently in the context of inheritance tax. The capital levy could also follow those same procedures and administrative arrangements. The provisions of double taxation agreements must be observed in this context, where applicable.

Pension assets largely exempt from the levy

As per the provisions of the former wealth tax, pension assets are to remain exempt from the levy in principle. This applies to pension entitlements for disability, old-age and survivors' pensions under the statutory social security system, civil servants' pensions and other state pension schemes (e.g. war and military service victims' pensions), company pension schemes including pension commitments, private pension schemes and the Riester pension, as well as old-age provisions under private health insurance policies.

Given the high pension entitlements of managers and other professionals, top civil servants and politicians, a ceiling on pension assets exempt from the levy could be set, if necessary, e.g. at 1 million euros. Excess pension assets would then be subject to the capital levy. However, this would require the capital values of all the pension rights of levy-payers to be determined.

Levy-payers with only small or no such pension assets may additionally deduct a pension allowance of up to 500,000 euros from the assets subject to the levy, which is offset against existing pension assets. This is relevant for the self-employed and private individuals who have only limited entitlements under defined benefit plans and use their business assets or other assets to provide cover. In these cases too, the capital values of all the pension rights of levy-payers would have to be determined.

Other assets subject to the levy

In addition to financial assets and securities, intellectual property assets such as patents and copyrights and mineral resources which were not part of a business asset, as well as precious metals, precious stones, pearls, coins, medals, jewellery, works of art or other collections of valuable objects, in so far as their value exceeded a certain amount, were also subject to the former wealth tax in accordance with Section 110 (1) of the German Valuation Act (BewG) as amended in 1997. These provisions could be continued, but should be reviewed in terms of the burden of enforcing them. Practicality is also an argument in favour of leaving household contents and "normal" vehicles exempt from the levy or providing high allowances or exemption limits.

Deduction of liabilities

The capital levy is charged on net assets, consisting of the assets subject to the levy, less the liabilities on those assets, i.e. debts and comparable charges. Under the former wealth tax, pension obligations or charges due to statutory maintenance obligations were also deductible (Section 118 (1) No. 2 (3) of the German Valuation Act (BewG) as amended in 1997). As the existence of dependent children is not taken into account for the capital levy, these obligations are not to be deductible from the assets subject to the levy.

Liabilities and charges which are economically linked to assets exempt from the levy are not be deductible (cf. Section 118 para. 2 of the German Valuation Act (BewG) as amended in

1997). This applies, for example, to consumer credit used to finance cars or other consumer goods that are exempt from the levy. However, this may give rise to problems of differentiating from liabilities undertaken to finance assets subject to the levy, such as real estate. The relevant provisions of income tax law can be applied to the interest expense in this case.

2.3. Taxation of individual & personal allowances

The capital levy is charged on individuals. There is no provision for joint assessment of spouses or life partners as in the case of income tax, the former wealth tax or the wealth tax under the equalisation of burdens scheme of 1952. For the capital levy, the individual ownership shares must be determined for spouses, civil partnerships or other persons with joint ownership (e.g. communities of heirs and partnerships).

A personal allowance of 1 million euros is deducted from the net assets subject to the levy; a personal allowance of 2 million euros is analysed below as an alternative. If a spouse or cohabiting partner has no assets subject to the levy or his or her assets subject to the levy do not exhaust his or her allowances, whereas the assets of the other partner exceed the allowance, the unused portion of one partner's allowance cannot be used by the other partner.

There is no additional child allowance for the dependent children of the levy-payer. As with income tax or the former wealth tax, the children themselves are separately subject to the levy, provided they have assets above the allowances. This is the case in rich and super-rich (entrepreneurial) families, who sometimes transfer company shares in the two to three-digit million range to smaller children (Bach and Mertz, 2016). In these cases, the parent or guardian must assume the obligations for the taxation procedure.

2.4. Levy rate and distribution over time of the levy burden

The capital levy provides for a progressive rate, which is charged on the assets subject to the levy beyond the allowances. The onset rate of the levy would be 10 per cent, rising to 30 per cent on higher assets.

Three variants of the threshold for the assets subject to the levy are analysed below, above which the top tax rate of 30 percent applies: 30 million euros, 50 million euros and 100 million euros. We also examine two different rate concepts for each of these variants: a tiered

rate with three tiers of (marginal) levy rates and a linear-progressive rate of marginal tax rates analogous to the progression zones of the German income tax rate, which rises incrementally across the steps of the tiered rate.

See Abbildung 21 for the curves of the marginal and average burdens for the two rate concepts for the variant with the peak levy rate of 30 percent from assets of 30 million euros. In the case of the tiered rate, the levy rate of 10 per cent applies up to assets of 15 million euros; assets exceeding 15 million euros are charged at 20 per cent up to 30 million euros; and the assets in excess of 30 million euros are charged at 30 per cent. The linear-progressive rate rises incrementally across the tiers. As a result, this rate leads to higher marginal and average charges, particularly at the onset of the levy rate, and therefore to higher levy revenue. A similar curve of average burdens as in the linear-progressive rate would be achieved with the tiered rate if the levy rate for the first tier was increased to 15 percent and the levy rate for the second tier was increased to 25 percent.

Analogous rate patterns are envisaged for the variants with the higher asset thresholds of 50 or 100 million euros, above which the peak levy rate of 30 percent applies. For the tiered rate, the first tier rate of 10 per cent applies to up to half of the asset threshold of the peak rate, i.e. up to 25 or 50 million euros, while the second tier rate applies to the other half. The linear-progressive tariff rises incrementally across these tiers.

Figure 21 **Rate for the capital levy**
with a top levy rate of 30 percent from above 30 million euros

Assets subject to the levy after tax allowances in million euros

Marginal burden of the tiered rate	Marginal burden of the linear-progressive rate
Average burden of the tiered rate	Average burden of the linear-progressive rate
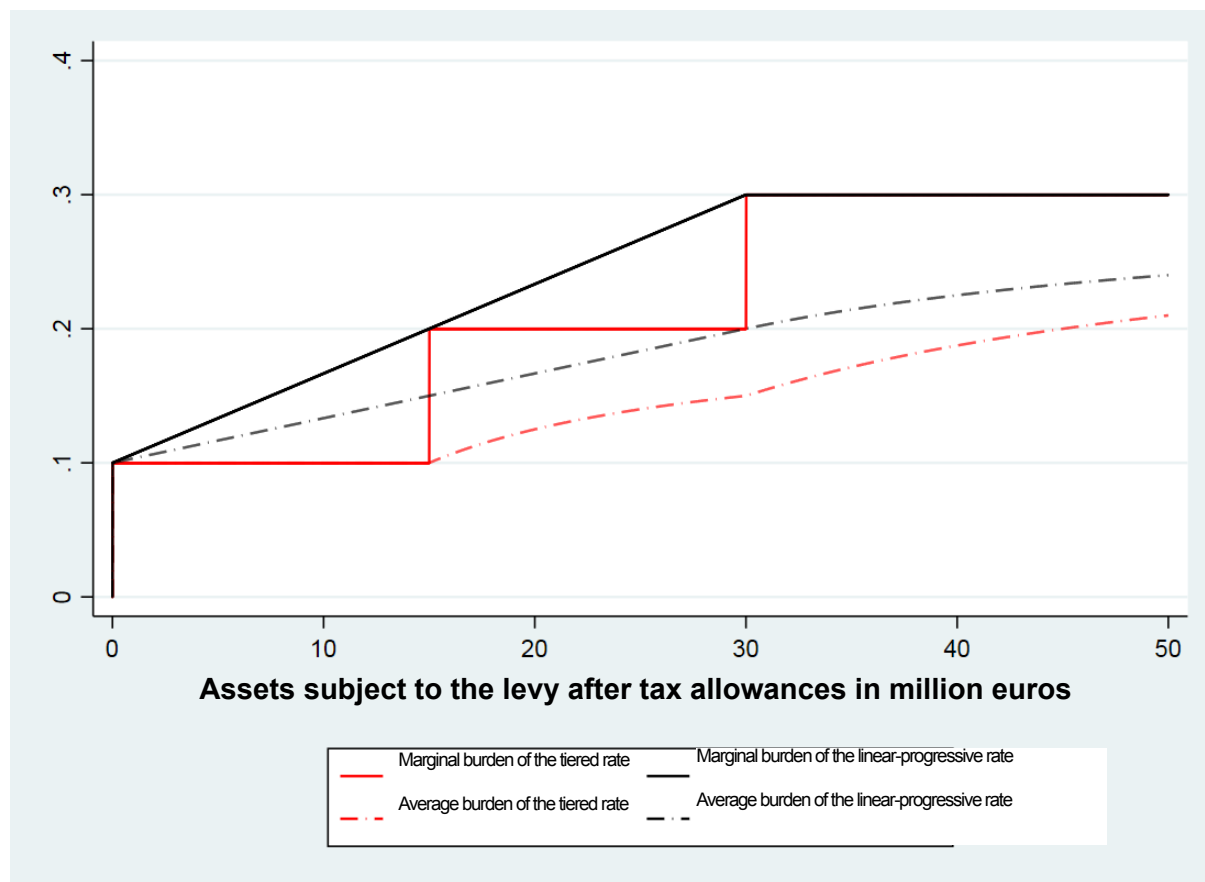
The capital levy debt to be paid would be distributed in equal amounts over a period of 20 years. The intention is for the ongoing levy payments to ordinarily be paid from the return on assets or from other current income. The annual instalments would bear interest and be broken down into quarterly instalments, as was the case with the capital levy under the equalisation of burdens of 1952 (see below, Section 2.5). The interest rate to be used would be the basic interest rate in accordance with Section 247 of the German Civil Code (BGB) plus 2 percentage points, with a minimum interest rate of 2 percent. As the base interest rate is currently set by the Deutsche Bundesbank (2020a) at -0.88 percent, the minimum interest rate of 2 percent applies. This means that the annual instalment payment is 6.06 percent of the total levy debt (average of annuities paid in advance and annuities paid in arrears), while quarterly instalments paid during the year are 1.52 percent of the total levy debt (which do not bear interest during the year).

As the capital levy is based on the assets as at the valuation date, hardship may arise if the income from assets and the asset value are significantly reduced in the subsequent period.

For business assets or significant holdings in corporations, where this could occur in the event of an economic downturn, the current annual levy burden could be limited to, for example, 35 percent of the annual profit and carried forward (Alliance 90/The Greens Parliamentary Group 2012: Section 14). This problem may also occur with real estate and financial assets. Similar special arrangements would have to be made where appropriate. In addition, it might be possible, if necessary, to revalue businesses, major holdings in corporations or real estate during the 20-year payment period of the capital levy if the earning power of the assets is permanently reduced, and the remaining levy burden could be reduced proportionately.

Provisions must also be made in the event that levy-payers transfer their residence abroad. In this case, the remaining residual levy debt would have to be due for payment immediately or collateralised, as the German tax authorities cannot easily enforce the levy abroad.

There is no provision for any deduction of ongoing capital levy payments from the tax base for income tax. This would significantly reduce the effective burden of the capital levy for levy-payers with higher income tax burdens and thereby also reduce the levy revenue. This does not make sense, as the capital levy is intended to provide an independent extraordinary source of financing for the federal government, which is intended to be drawn from the assets of wealthy households. Any deduction for income tax would significantly change this burden concept, as levy-payers typically will have a high marginal income tax rate. This would also have consequences for the redistribution of income between federal government, Länder and municipalities, since it is not just the federal government, but also the Länder and municipalities that share in the revenue from income tax. However, the capital levy under the equalisation of burdens scheme of 1952 was partially deductible from the tax base for income and corporation tax (cf. below, Section 2.5), as was the wealth tax until 1974.

2.5. Historical precedents: National defence contribution (Wehrbeitrag) 1913, national emergency tax levy (Reichsnotopfer) 1919, capital levy under the equalisation of burdens 1952

Germany has a long tradition of asset-based taxation, which in earlier decades had a greater fiscal significance than today (Abbildung 22). This applies in particular to the ongoing wealth tax and real estate tax, the assessment results of which were also used for capital levies. In the 20th century, Germany has had recourse to one-off capital levies several times.

The 1913 national defence contribution was intended to finance the high military expenditure before the First World War; the 1919 national emergency tax levy was intended to remedy the disastrous financial situation of the Reich after the First World War; and the capital levy under the equalisation of burdens in 1952 was intended to compensate for disadvantages caused by war damage, flight and expulsion. After reunification and the financial crisis, there were also proposals to raise a one-off capital levy.

Figure 22   **Revenue from property-based taxes and capital levies in Germany, 1890-2020**
as a percentage of gross domestic product (GDP)

Sources: Federal Statistical Office, Federal Ministry of Finance, own calculations
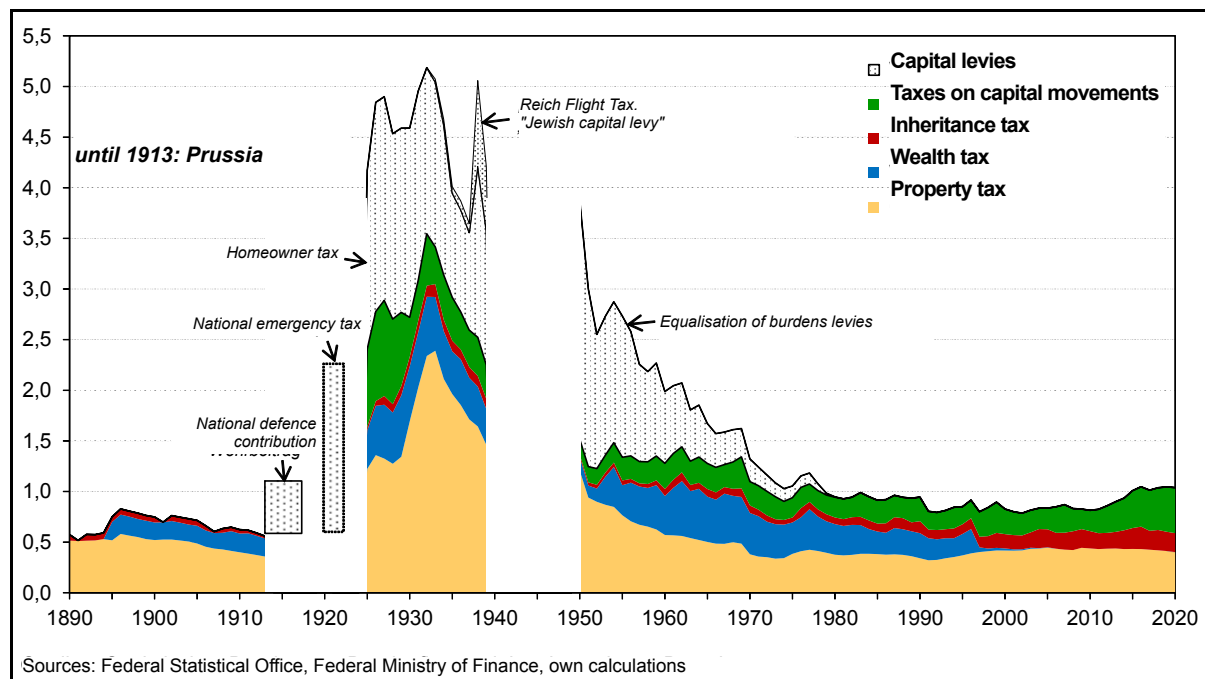
National defence contribution 1913

The national defence contribution ("Wehrbeitrag") was a one-off levy on higher assets and income, which the Reich levied in 1913 (Mann, 1928). The revenue was intended to finance high military expenditure and therefore limit the sharp rise in the Reich's national debt. Assets in excess of 10,000 marks[2] were progressively charged at rates ranging from 0.15 percent to 1.5 percent; the average charge was 0.5 percent. In addition, incomes above 5,000 marks were progressively charged at rates of between 1 and 8 percent. An amount of five percent of the assets subject to the levy was deducted from the income subject to the levy to avoid

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[2]   To put the nominal values into context: The average annual income subject to compulsory pension insurance was 1,182 marks in 1913; in 2020 it will be 40,551 euros. See SGB (Social Code) VI, Annex 1.

double taxation of asset income. The levy burden was spread over a three-year period. The total revenue amounted to about 1.7 percent of GDP in 1913.

National emergency tax levy 1919

The national emergency tax levy ("Reichsnotopfer") was introduced in 1919 as a general extraordinary capital levy as part of the "Erzberger tax and financial reforms" (Mann, 1925). This was in the context of the disastrous state of public finances after the military defeat in the First World War. The taxpayers' assets were widely covered and taxed progressively after deducting an allowance of 5 000 marks [3] for each person in the household. The levy rates started at 12 percent and gradually increased to 65 percent for assets subject to the levy in excess of 2 million marks. Corporations and other legal entities were subject to a separate levy at a uniform rate of 10 percent. The levy was to be paid off over 30 years, with interest being paid on the instalments, and charges on land could be spread over 50 years. The revenue was estimated at between 70 and 90 billion marks and was intended at least to eliminate the inflationary "floating" national debt in the banking system.

The capital levy largely failed in the following years. The tax administration was not in a position realistically to assess the assets comprehensively, and the high levy rates triggered political outrage, as well as strong resistance to the tax and tax evasion. Rising inflation rates above all gradually devalued the instalments. From 1923 onwards, the national emergency tax levy was replaced by the general wealth tax, which was raised until 1996.

Homeowner tax from 1924

From 1924, the unencumbered building taxes ("Gebäudeentschuldungssteuern") of the federal states, which were mostly based on the Prussian model of the homeowner tax ("Hauszinssteuer"), had great fiscal significance (Witt, 1979). Formally, they were not capital levies but turnover taxes on gross rent ("house rent") (Cohen, 1931). However, they were designed to skim off the inflation-related debtor profits of real estate owners indirectly. The tax rates were therefore differentiated according to the level of liabilities before inflation. In addition, the general aim was to put a strain on real estate assets, most of which had survived inflation unscathed and whose value had risen due to the severe housing shortage after the First

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[3] The average annual income subject to pension insurance was 2,010 marks in 1919. See SGB (Social Code) VI, Annex 1.

World War. However, no differentiation according to the personal circumstances of the tax-payers or a progressive taxation were included.

In the second half of the 1920s, the unencumbered building taxes generated high revenues of up to 2 percent of GDP per year (Abbildung 22). The funds were mainly used for housing and urban development. They allowed for a significant increase in investment in these areas.

Reich Flight Tax and "Jewish Capital Levy" 1938

The Nazi regime provides many repulsive examples of the instrumentalisation of taxation for economic discrimination and the annihilation of minorities and political opponents (Kuller, 2013, Banken, 2018). Capital levies were also used specifically to exploit political opponents, the Jewish population and other racially persecuted groups.

The Reich Flight Tax had already been introduced in 1931 to combat flight abroad to evade tax. When moving abroad, the assets were charged at 25 percent if the assets exceeded RM 200,000 or the annual income exceeded RM 20,000[4]. After 1933, the asset limit was lowered to RM 50,000 and the tax was also levied on the assets of the population who had fled or been forced to emigrate. The revenue from was initially insignificant, but, owing to the sharp rise in emigration in 1938 and 1939, it increased to around 0.3 percent of GDP in each year (Fremdling 2016: 259 ff.). After the November pogroms of 1938, a capital levy of 25 percent was imposed on the Jewish population with assets of over RM 5,000. By the end of 1939, the revenue had reached 1.0 percent of GDP in 1939.

Capital levy under the equalisation of burdens 1952

After the Second World War, the currency reform of 1948 had largely eliminated the high national debt caused by the war. Apart from ongoing occupation costs, only a few reparations had to be made and the remaining foreign debts were regulated by the 1953 London Debt Agreement. As a result, the "economic miracle" started with a moderate government debt of 20 percent of GDP, and the public budgets achieved surpluses. There was in any case no special financial emergency or "exceptional situation" in the federal budget, as is sometimes formulated today as a constitutional requirement for a one-off capital levy (Wissenschaftliche Dienste Deutscher Bundestag, 2020), when the equalisation of burdens was adopted in 1952.

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[4] The average annual income subject to pension insurance was RM 1,924 in 1931. See SGB (Social Code) VI, Annex 1.

At the same time, considerable costs for reconstruction and the aftermath of the war had to be overcome. In addition, there was a massive influx of refugees and displaced persons from the former German eastern territories, the German settlement areas in East and South-East Europe, and from the Soviet Occupation Zone/the German Democratic Republic. In that context, even before the founding of the Federal Republic, a discussion arose about the "equalisation of burdens", i.e. targeted material compensation for war damage as well as losses resulting from flight and expulsion, which was to be financed primarily by a levy on higher asset holders (Käss, 1959, Albers, 1989, Hauser, 2011).

After the (Western) allied military governments initially prevented further plans so as not to jeopardise the currency reform, the German Emergency Aid Act (Soforthilfegesetz) was passed in 1949. This mainly provided for reintegration aid based on need; there was no general compensation for loss of assets. The general emergency aid levy, as a capital levy of 3 percent, was raised to finance the costs. In addition, immediately after the currency reform in 1948, the debtor profits from the currency changeover were siphoned off with a mortgage profit levy and the speculative profits of companies on non-essential inventory assets were siphoned off with further levies.

After lengthy political discussions, the Equalisation of Burdens Act 1952 (Lastenausgleichsgesetz/LAG) created a solution for a more comprehensive equalisation of burdens. The payments were expanded substantially, in particular reparation payments for the consequences of the war. The equalisation of burdens fund created for this purpose was initially financed mainly by a one-off capital levy. The emergency aid levies were integrated into the financing of the equalisation of burdens fund. There were also subsidies from public budgets, which increased over time and, since the early 1970s, exceeded the nominal fixed revenue from the equalisation of burdens levies. The Länder subsidies were largely financed from wealth tax revenues, so that, until the end of the 1970s, a considerable part of the wealth tax revenues was used to finance the equalisation of burdens.

The capital levy under the Equalisation of Burdens Act (LAG) of 1952 was charged on net assets, less debts and personal allowances. The tax base generally followed the tax base of the wealth tax (Section 21 of the Equalisation of Burdens Act (LAG)), subject to special provisions. In contrast to the capital levy under discussion here, legal entities were subject to a separate levy, in return, shares in corporations were only recorded as financial assets at half

their value. There was also a limited liability to the levy for foreigners with assets within the country.

Agricultural and forestry assets, real estate and business premises were valued according to the standard unit values of 1935, whereby reductions for war damage could be deducted. Business assets were assessed on 21 June 1948 (the date of the currency reform), following a separate main assessment of the unit values. Other assets, i.e. primarily financial assets and securities, which were still excluded from the 1949 emergency aid levy, were also included, with a relatively high exemption limit of DM 150,000 being granted for currency, claims under life, endowment and pension insurance policies and, generally, for capital claims, credit balances, shares and other holdings in corporations and rights to recurring uses and benefits (Section 24 of the Equalisation of Burdens Act (LAG)). This was intended to account for the fact that monetary claims had been devalued to the Deutschmark at a ratio of 10:1 as a result of the 1948 currency reform.

For natural persons subject to the levy without restriction, there was a personal allowance of DM 5,000 (Article 29(1) of the Equalisation of Burdens Act (LAG)).[5] This applied without reduction up to assets subject to the levy of DM 25,000. For persons with greater assets, the allowance was reduced by DM 100 for each DM 200 of assets in excess, so that the allowance no longer applied to assets of DM 35,000 or more. Married couples subject to the levy without restrictions were assessed together, unless they permanently lived apart (Section 38 of the Equalisation of Burdens Act (LAG)). Their assets were added together (Section 22 of the Equalisation of Burdens Act (LAG)) without doubling the personal allowance. This provision was repealed by the German Federal Constitutional Court in 1961 because it discriminated against married couples. Subsequently, the partial amounts to be paid for the capital levy were reduced in accordance with the individual assessment of each spouse. Child allowances or similar reductions for children were not taken into account in the assessment of the capital levy. However, flat-rate family reductions were available on application on the quarterly instalments of the capital levy, provided that the assets subject to the levy were less than DM 35,000 (Section 53 of the Equalisation of Burdens Act (LAG)). These reductions were granted to spouses and children for whom the levy-payer was or would have been entitled to exemption from wealth tax and were reduced for assets of more than DM 25,000 subject to

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[5] The average annual income subject to pension insurance in 1952 was DM 3,852. See SGB (Social Code) VI, Annex 1.

the levy. For legal entities subject to the levy without restriction and for levy-payers with restriction, there was only an exemption limit of DM 3,000 (Section 29(2) of the Equalisation of Burdens Act (LAG)).

The levy rate on the resulting assets subject to the levy was 50 percent. There were reductions for "war damage, expulsion damage and damage in Eastern occupied territories" [Kriegssachschäden, Vertreibungsschäden und Ostschäden]. The emergency aid levy was also taken into account. The remaining levy debt was collected in quarterly amounts over a period up to 1979. In addition to the above family reduction, there were further reductions on application for age, unemployment and welfare status, as well as for refugees from the Soviet Occupation Zone/the German Democratic Republic (Sections 54-55a of the Equalisation of Burdens Act (LAG)). The partial amounts were subject to interest, and the interest rates were based on the assumption of different income opportunities according to asset type. The levies were therefore generally intended to be paid from current income. Early settlement with what were initially substantial discounts was also encouraged. When natural persons emigrated abroad, the future outstanding partial payments became due at their cash value ("redemption value") (Section 51 of the Equalisation of Burdens Act (LAG)). Similar provisions applied to the liquidation of legal entities (Section 52 of the Equalisation of Burdens Act (LAG)).

The ongoing partial payments of the capital levy and the other equalisation of burdens levies could be partially deducted from the tax base for income and corporation tax (Section 211 LAG), but not for trade tax (Section 212 LAG). In the case of wealth tax, the sum of the outstanding partial amounts was deducted from the tax base (Section 209 LAG).

In total, the capital levy, including the emergency aid levy, generated revenue of DM 42 billion, equivalent to 60 percent of GDP in 1952. The equalisation of burdens levies in the 1950s therefore also had an appreciable macroeconomic impact (Abbildung 22). The high growth rates in national product and income gradually reduced the economic importance and impact of the burden of the nominally fixed levy burdens in the following decades. As a result, state subsidies from the Federal Government and the Länder later dominated the financing, which amounted to some DM 61 billion up to 2001. At the same time, the considerable volume of finance has made it possible to mobilise significant resources for the reconstruction and integration of displaced persons and refugees.

In this respect, the equalisation of burdens was a success in financial, economic and social policy terms. It has greatly facilitated the rapid integration of millions of refugees and displaced persons. Financing via the capital levy mobilised a social equalisation between people who were differently affected by war and the consequences of war. This made an important contribution to the political stability and economic success of the young Federal Republic.

3. Data sources and microsimulation model

3.1. "Household Finance and Consumption Survey" (HFCS) for Germany 2017

As the data source for analysing the revenue and distributional effects of capital levies, we use the Household Finance and Consumption Survey (HFCS) by the Eurosystem central banks (European Central Bank, 2020). The HFCS involves conducting comparable representative surveys of household wealth, debt, income and consumption in all eurozone countries. Three waves of surveys have now been carried out.

The data for Germany is collected by the Deutsche Bundesbank (2020b) as a study on private households and their finances ("Private Haushalte und ihre Finanzen" (PHF)). The last available third wave was conducted between March and November 2017. A total of 5,000 households were surveyed; households with high income and wealth were included with a higher probability of selection. However, there is clear under-recording of households with high and very high wealth (see Section 3.2 below for detailed discussion).

The HFCS asks for information about assets, liabilities and income at household level. It therefore cannot present wealth distribution at the level of the individual. This is a disadvantage for the microsimulation analyses of the capital levy, as the levy is raised on individuals. For this purpose, we assume that the total household assets are divided equally among the adults.

The HFCS includes the following categories of real estate assets in the survey: owner-occupied, rented and other properties, the latter being commercial or agricultural properties, garages and warehouses, holiday homes, and undeveloped land. The survey collects information on companies and holdings by legal form and type of participation, as well as by type of investment. Detailed information about financial assets is collected via current and savings accounts, funds, shares, bonds, etc. Information is also collected about significant non-financial assets in the form of gold, jewellery, coins and valuable antiques, as well as information about the value of vehicles. Income from assets is also recorded, but not in detail by individual asset category. All information about assets is based on self-disclosure by those involved in the study. The values of real estate and business assets should be provided at the market or fair value, i.e. the value that could be obtained on sale.

In terms of data preparation, we proceed in a similar way to the previous studies on the capital levy and the wealth tax (Bach et al. 2010, 2012, 2014, 2016). In cases of item nonresponse, where the households surveyed have individual types of assets but do not provide information on the value of the assets, data providers have estimated five values ("implicates") using statistical imputation procedures and added them to the data set (European Central Bank, 2013). For the point estimators, we use the mean of these imputed values; the standard errors of the estimates are adjusted for the variance of the imputations.

3.2. Estimation and integration of high net worth households based on the "manager magazin" list 2017

Wealthy households are included in the HFCS survey at a higher probability of selection by disproportionately taking more prosperous regions into account in the sample selection (Deutsche Bundesbank (2020b)). However, the case numbers in the German HFCS survey are relatively small, at 5,000 households. As a result, there are only very few households in the HFCS with assets in the double-digit millions and none with triple-digit millions. In fact, however, there are a considerable number of super-wealthy people in Germany with assets in the hundreds of millions, as well as a few billionaires. This is known from the "manager magazin" rich lists (2017), inheritance tax statistics (see Bach, 2015, Bach and Mertz, 2006) and the wealth reports of financial service providers and international consulting firms (Capgemini, 2020). However, the number of people in the top wealth category is so small that they can no longer be recorded reliably via household surveys with small sample sizes ("non-observation bias"). In addition, there are presumed to be selection biases ("non response bias", "middle class bias"), as households with high wealth participate less in household surveys on a voluntary basis. As a significant proportion of private net assets is concentrated in the top wealth bracket, household surveys significantly underestimate the presumed aggregate wealth and concentration of wealth. So far, this has also been the case for other household surveys that record wealth, such as the Income and Consumption Survey (EVS) and the Socio-Economic Panel Study (SOEP) in Germany.

As a result of the high personal allowance of at least one million euros, the capital levy under investigation here only affects the top percentiles of the population (Section 4). Within levy-payers, the super-wealthy account for a considerable proportion of the levy revenue. Therefore, reliable information on the top wealth bracket is required to estimate the revenue and

distributional effects of the capital levy. In accordance with the methodology of previous studies, we have supplemented the survey data with the list of the 1000 richest Germans according to "manager magazin" (2017) and, using the Pareto distribution, have estimated the wealth and the wealth distribution of persons with net assets of more than 3 million euros (Bach et al. 2010, 2012, 2014, 2016; for detail of the method, see Bach, Thiemann and Zucco, 2019).

Better data sources for the number and wealth of the super-rich are not currently available. The wealth tax has not been levied since 1997, and when it was levied, wealth was mostly heavily undervalued due to obsolete unit values and inadequate company valuations. Household surveys such as the EVS and the SOEP have so far not reliably penetrated into the double-digit million range. However, with the SOEP-P sub-sample collected in 2019, the data on high net worth should improve significantly (Schröder et al., 2020).

Since many entries in the "manager magazin" rich list (2017) refer to "families" and represent several households, the entries are extended by the presumed number of households based on publicly available information. Persons and households clearly living abroad are removed from the list. The lower ranks of the list appear less reliable, as many asset figures appear to have been rounded approximately ("heaping") and the selectivity of the selection is likely to increase. The 300 richest households are therefore selected from the adjusted list.

We integrate this information into the HFCS data set and first determine the two parameters of the Pareto distribution: The minimum wealth from which the Pareto distribution applies and the Pareto coefficient, which describes the concentration of the distribution. The minimum wealth is set at half a million euros and a Pareto coefficient of 1.4 is estimated. These two values are used to simulate the Pareto distribution for the top range of the distribution. All HFCS households above 3 million euros in assets are then removed from the data set and replaced by synthetic households following the Pareto distribution. The richest 300 households from the "manager magazin" list are used as the richest households. The weighted total number of households that are added is equal to the weighted total number of households that are removed.

For the imputed households and for the cases that are integrated from the "manager magazin" list, information on the structure of asset portfolios (business assets, real estate as-

sets etc. as well as debts) and socio-demographic information (e.g. children, age) are also estimated and imputed on the basis of observed households with high assets in the HFCS.

Tabelle 31 describes the distribution of household net personal wealth in 2017, before and after imputing top wealth. The "HFCS data" columns describe the wealth distribution based on the original HFCS data, while the right part of the table shows the wealth distribution including the imputed top assets. The lower part of the table presents relevant inequality measures of wealth distribution.[6] The top range is presented in more detail for the richest 1 percent and the richest 0.1 percent of the population. The distribution refers to the total adult population living in private households, which is a total of 67.5 million people. As the HFCS only includes assets in the survey for households as a whole, we distribute the total household assets equally among the adults in the household. Differences in assets within the household are ignored in this case. To the extent that these differences are likely to play a role, especially for wealthy households, we probably slightly underestimate the concentration of wealth.

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[6]
  We use the relevant analytical distribution measures. The frequently used Gini coefficient is derived from the observed Lorenz curve. It responds mainly to changes in the middle range of the distribution. The Gini coefficient has a range of values from 0 (equal distribution) to 1 (concentration of distribution in one person). The generalised measures of entropy (GE) measure income inequality to varying degrees: The GE(1) measure, also referred to as the Theil index, which is a statistical measure of entropy, emphasises distributional changes in the top part of the distribution ("top-sensitive"). The GE(2) measure, which measures half of the squared coefficient of variation, responds very sensitively to changes in the upper and top part of the distribution. The range of values of GE measures starts at 0 (equal distribution) and goes beyond 1 as the distribution becomes more unequal.

Table 31   **Wealth distribution in Germany 2017**

Quantile of personal net assets	Original HFCS data			HFCS data and imputed top wealth				
	Percentile of net assets	Total net assets		Percentile of net assets	Total net assets		Distribution of assets	
							Companies	Real estate (net)
	1000s of euros	Billion euros	Percent	1000s of euros	Billion euros	Percent	% net assets	
1st-5th Decile	34	409	4.4	34	414	3.4	3.8	35.0
6th Decile	62	475	5.1	62	483	4.0	1.9	58.9
7th Decile	102	757	8.1	103	764	6.3	2.2	72.2
8th Decile	156	1 129	12.0	158	1 146	9.5	1.8	71.6
9th Decile	236	1 745	18.6	239	1 780	14.7	3.0	68.2
10th Decile	405	4 880	51.9	412	7 515	62.1	30.2	47.8
Total	\	9 394	100.0	\	12 102	100.0	20.0	54.6
Top 1%	1 646	1 525	16.2	1 811	3 839	31.7	48.0	31.6
Top 0.1%	5 224	248	2.6	8 681	1 955	16.2	61.3	20.2
Measures of inequality of distribution								
Gini coefficient	0.7204			0.7763				
Entropy measures[1]								
GE(1)	1.0722			1.8237				
GE(2)	3.0170			324.9850				
1) GE(1) is the Theil index, GE(2) is half of the squared coefficient of variation. Source: Household Finance and Consumption Surveys (HFCS) 2017, including estimated cases of very high wealth								

The original HFCS data provides a total net assets for households of 9,394 billion euros (Tabelle 31). Wealth is heavily concentrated in the top decile and the highest percentiles of the population. The imputation of top wealth increases the net assets of private households by a significant 2,700 billion euros to 12,102 billion euros (+29 percent). As a result, the share in wealth of the richest decile of the population increases by a substantial 10 percentage points to 62 percent. An individual belongs to the richest 10 percent of the population if they have

more than 412,000 euros in net assets. The richest percent of the population starts with a personal net assets of 1.8 million euros; the share in wealth of this group increases to 32 percent after imputation. The share of the richest 0.1 percent rises to 16 percent; this group begins with personal net assets of 8.7 million euros.

The significant increase in wealth concentration following the imputation of those with high wealth is reflected in the inequalities of distribution. The Gini coefficient, which is relatively sensitive to changes in the middle range of the wealth distribution, increases from 0.72 to 0.78. The GE(2) measure, which is very sensitive to changes at the top of the distribution, increases more than 100 times.

It becomes clear that the shares in wealth of the top 1 percent and in particular of the top 0.1 percent of the population depend strongly on the amount of additional estimated top wealth. The following microsimulation analyses show that the capital levy will mainly be paid by the top 1 percent of households and that the richest 0.1 percent of households account for a large part of the levy revenue (Section 4). Therefore, the robustness of the following revenue and distribution analyses depends largely on the quality of the estimated additional top wealth.

The "manager magazin" rich list is the best data source for the super-rich in Germany. The main data sources that are used are publicly available information, i.e. information from companies, capital markets, financial services providers and commercial registers. Information about individuals and families on the list is also used, to the extent they cooperate with the publishers of the list. This is likely to make the list much more selective in the lower ranks, as it mainly covers companies and interests in companies. In contrast, little is known publicly about households with large real estate or financial assets.

Estimation uncertainties arise with regard to the number of family members involved and for foreign part-owners, who may be subject to limited liability to the levy. The editors of the list also report on a small number of cases that have been removed from the list, requested for personal reasons.

There are further estimation uncertainties with regard to the assets of the households on the list. These are often not based on observed market values, as many of the family businesses that are included are not listed on the stock exchange. The assets are likely to be systematically underestimated in this respect, as the private assets of the families on the list are generally not known beyond companies and significant holdings in companies. For private debts,

the rich list overestimates assets. However, for tax reasons these are unlikely to play a major role in Germany.

Our estimate of the wealth of the richest percentage of the population is confirmed by the first preliminary results of the new SOEP-P sub-sample within the SOEP (Schröder et al., 2020). In addition to the previous SOEP sample, almost 2,000 households with high wealth were surveyed in 2019. Of these, 881 individuals had personal net assets of more than one million euros, 353 had more than three million euros and 185 had more than five million euros. An initial provisional projection for 2019, including integration of the 700 richest Germans from the "manager magazin" list for 2019, shows a significantly higher concentration of wealth compared to our results: the Gini coefficient is 0.826, the richest percent of the population has 35.3 percent of total net assets and the richest 0.1 percent has 20.4 percent. However, at 10,300 billion euros, the aggregate wealth is much lower than ours. This appears to be due to the fact that the wealth of the upper middle and lower upper classes in the range of the wealth percentiles up to 95 percent in the SOEP, including the SOEP-P 2019 high-wealth sample, is probably significantly lower than in the HFCS.

In contrast, the average wealth of the richest percentage of the population in the new SOEP-P survey, including the estimated cases from the rich list, remains only about 5 percent below the results of our estimate – i.e. the population that will be liable to pay the capital levy. The richest 0.1 percent of the population – who account for a considerable share of the revenue from the capital levy – even have slightly higher average wealth than we estimate. Therefore, a microsimulation analysis based on an integrated data source from SOEP, SOEP-P and the "manager magazin" list of wealthy people for 2019 should yield similar results for the concepts of the capital levy that is analysed here. More detailed analyses on this will only be possible in the course of next year (2021), when preparation of the data from the 2019 SOEP wave report will be complete and the data set will be available.

We are also currently preparing the specific data available for the inheritance tax statistics from 2012 to 2018 at the Research Data Centre of the Statistical Offices as part of a research project. An "estate multiplier" estimate of the top wealth distribution and other changes are to be made on the basis of the estate information from the probate cases (see Johnson and Woodburn, 1993; Kopczuk and Saez, 2004). In this process, the probate cases are interpreted as a random sample from the wealth distribution and extrapolated using mortality probabil-

ities. The latter are corrected using information about the longer life expectancy of people with high incomes/assets ("wealthier is healthier"). First test calculations show good agreement of the probate cases from 1.5 million euros and above with the Pareto distribution, resulting in a Pareto coefficient of 1.35. This information also confirms in principle the wealth distribution that we have estimated here.

Another way of checking the wealth estimate is to compare it with the overall balance sheets prepared by the Deutsche Bundesbank and the Federal Statistical Office (2019) for the German national accounts (VGR) and the financial accounts (see also Bach, Thiemann and Zucco, 2019: 1250 f.). The corresponding macroeconomic balance sheet of private households shows net assets of 12.2 trillion euros for 2017 (Tabelle 32). Consumption assets, i.e. household contents and fixtures, vehicles and other durable goods, are not included. Of such assets, only vehicles are covered by the HFCS. Furthermore, for a comparison with our wealth estimate, the German national accounts wealth must be adjusted for cash and non-life insurance reserves (mainly private health insurance) and for pension entitlements (company and private pension schemes). These items are also not covered by the HFCS survey. This produces corrected net assets of 10.8 trillion euros. Our integrated data from HFCS and imputed top wealth with a total net asset value of 12.1 trillion euros clearly overestimates this value.

However, for methodological reasons there are major differences between the individual components of the wealth balance sheet. For example, the German national accounts do not use market values as a basis for non-financial assets, but real values instead (cf. Westermeier and Grabka, 2015: 728 f.). In general, the macroeconomic balance sheets also contain many estimation risks, in particular with regard to real estate, unlisted companies and foreign assets. As a result, real estate assets are likely to be undervalued in the macroeconomic balance sheet. In particular, on the assets side of the balance sheet, a large share of household holdings in corporations appear to be missing, as there are no valid information systems for this purpose. It lists only listed shares, unlisted shares and other equities (holdings in limited liability companies and partnerships) and is estimated at a total value of 611 billion euros. In addition, households are likely to have indirect holdings in corporations via investment fund shares. However, unlisted shares and other equity are not valued at their market value due to a lack of information, but only at their share capital, which results in a clear underestimation. This is because the "German Mittelstand", i.e. the many small and medium-sized companies up to large family-run businesses that characterise the German corporate landscape,

are only rarely listed on the stock exchange. There is huge underlying aggregate wealth here, which is clearly missing from the overall balance of household wealth.

Table 32 **Assets and liabilities of private households in Germany according to national and financial accounts, 2017**
End-of-year level

ESA 2010 code	Assets	Billion euros	Percent	ESA 2010 code	Liabilities	Billion euros	Per-cent
	Non-financial assets[1]	8 145	58.7		Liabilities	1 695	12.2
				AF.41	Short-term loans	56	0.4
AN.111	Dwellings	4 489	32.4	AF.42	Long-term loans	1 623	11.7
AN.112	Other buildings and structures	343	2.5	AF.8	Other liabilities	16	
AN.113	Machinery and equipment	145	1.0				
AN.2111	Land underlying buildings and structures	2 784	20.1				
AN.2112-9	Land under cultivation, other land	355	2.6				
	Other non-financial assets[2]	27	0.2				
	Financial assets	5 723	41.3				
AF.21	Currency	179	1.3				
AF.22	Transferable deposits	1 231	8.9				
AF.23	Other deposits	837	6.0				
AF.3	Debt securities	125	0.9		Net assets	12 172	87.8
AF.511	Listed shares	304	2.2				
AF.512	Unlisted shares	90	0.6		*Net assets less currency, non-life insurance technical reser-ves and pension entitlements*		
AF.519	Other equity	217	1.6				
AF.52	Investment fund shares or units	547	3.9			*10 823*	
AF.61	Non-life insurance technical reserves	344	2.5		Total		*78.1*
AF.62	Life insurance and annuity entitlements	987	7.1			13 867	100.0
AF.63	Pension entitlements	825	5.9				
AF.8	Other financial assets	35	0.3				
	Total	13 867	100.0				
	Note:						
	Consumption as-sets[3]	*1 041*					
	Net assets of corporations	*3 424*					

1) Including non-profit institutions serving households.- 2) Cultivated assets and other natural resources, intellectual property products, inventories.- 3) Household contents and fixtures, vehicles, other durable goods such as sports equipment and musical instruments, excluding housing property and valuables.

Sources: Federal Statistical Office, national accounts (VGR); Deutsche Bundesbank, financial accounts.

At the same time, the macroeconomic balance sheet of corporations shows "net assets" of 3.4 trillion euros on the liabilities side (Federal Statistical Office and Deutsche Bundesbank, 2019). However, corporations do not belong to themselves, but to private households, foreigners or the state. Assuming that 60 percent of the net assets of domestic corporations belong to private households, there is an asset value of 2 trillion euros that can be attributed to domestic private households. Subtracting from this the values of quoted shares, unquoted

shares and other equity and an (estimated) 30% of investment fund shares or units recorded in the national balance sheet of households produces a correction item of 1.3 trillion euros by which the assets of households can be extended. If the net assets of 10.8 trillion euros, which is comparable to the HFCS, is increased by this amount, the total net assets of private households amount to 12.1 trillion euros. This corresponds exactly to the value estimated by us using the HFCS and imputed top assets. Our estimate in this regards is therefore compatible with the macroeconomic balance sheets.

Another issue is tax recording and valuation of assets. In the following microsimulation analyses it is assumed that the assets on which this is based can be fully recognised and charged with the capital levy, subject to a special allowance for business assets and to the personal allowances. However, to the extent that systematic undervaluations of real estate and unlisted companies occurs when applying the capital levy for tax purposes, the tax base could be lower. The potential impact of valuation errors in real estate are analysed separately (see Section 4).

3.3. Development of wealth since 2017

Information about the development of macroeconomic financial assets, the development of the wealth of the richest 300 Germans according to the "manager magazin" lists and about real estate prices and securities indices up to 2019 are compiled in Tabelle 33.

According to the Deutsche Bundesbank's financial accounts, the net financial assets of private households rose by 10 percent between 2017 and 2019. Since the start of the coronavirus crisis, household savings are likely to have increased further. In the general population, the loss of income was initially largely compensated for by state transfers, while consumption declined at the same time. Further development depends on the impact of the pandemic in the coming months.

As it is essentially the top percent of the population that is liable to pay the capital levy, the assets subject to the levy consist largely of business assets and holdings. The market values of these assets have risen sharply over the past 10 years and have continued to rise gradually from 2017 to 2019. After a significant slump following the start of the coronavirus crisis in March 2020, stock market values have now largely recovered. So far, the financial markets do not expect the pandemic to have a lasting dampening effect on overall economic develop-

ment. In addition, central banks worldwide are pumping large amounts of liquidity into the financial markets, which is stabilising prices. More specifically, the development of asset prices depends on the extent to which the coronavirus crisis affects them. Company values in retail, transport, tourism and other personal services are likely to have suffered, while other sectors of the economy have tended to benefit from the crisis. As long as the crisis can be overcome in the coming months and there are no major structural problems in the German economy, company values should continue to stabilise. There is therefore currently no sign of a sustained decline in total company value compared with the 2017 level.

Table 33 **Development of household financial assets, house prices and securities indices, 2007-2019**
2017 index = 100

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Financial assets[1]	72.2	69.0	71.7	74.6	75.3	78.8	82.6	86.5	90.7	94.8	100.0	102.0	109.4
Liabilities[1]	88.6	87.8	87.6	87.9	88.9	89.9	90.5	91.8	93.8	96.6	100.0	103.7	108.5
Net financial assets	65.5	61.2	65.1	69.1	69.6	74.3	79.2	84.3	89.4	94.1	100.0	101.3	109.8
vdp Property Price Indexes[2]													
Residential	69.9	71.3	70.8	71.2	73.1	75.9	78.9	82.8	87.8	93.5	100.0	108.3	115.3
Commercial	80.8	79.9	75.6	75.9	77.7	80.1	83.8	87.0	88.8	93.9	100.0	106.8	113.6
Overall index	72.5	73.3	71.9	72.3	74.2	76.9	80.0	83.8	88.0	93.6	100.0	108.0	114.9
Wealth of richest 300 Germans ("manager magazin" list, 2005-2014)	71.4	71.1	59.3	68.5	64.1	86.4	91.2	83.0	88.1	93.9	100.0	107.5	107.5
Securities total return indexes[3]													
Deutscher Aktienindex (DAX)	62.5	37.2	46.1	53.5	45.7	58.9	73.9	75.9	83.2	88.9	100.0	81.7	102.6
Composite DAX (CDAX)[4]	59.3	34.0	42.7	50.5	43.1	55.7	70.5	72.7	81.0	86.2	100.0	81.9	102.4
Deutscher Rentenindex (REX)	67.6	74.5	78.1	81.3	88.0	92.1	91.6	98.2	98.7	101.0	100.0	101.5	102.6

1) Financial accounts of the Deutsche Bundesbank, excluding private non-profit organisations, as at year-end.- 2) vdpResearch GmbH, annual averages.-
3) As at year-end.- 4) Includes all German shares listed on the Frankfurt Stock Exchange.
Sources: Deutsche Bundesbank, manager magazin, vdpResearch GmbH.

Real estate prices in Germany have risen disproportionately in the past decade and have continued to rise in recent years. As is the case for the financial markets, the coronavirus crisis has not had any major impact on real estate markets so far. Residential real estate continues to be in demand or even increase in value as people spend less money on travel and other leisure activities. In the case of commercial real estate, however, there is subdued develop-

ment in sectors that have been harder hit by the coronavirus crisis, such as retail and tourism.

Overall, asset prices and asset values therefore should not have changed significantly since 2017 as a result of the coronavirus crisis. This also applies to the wealth of the richest percentage of the population, which is liable to pay the capital levy and the assets of which consist to a large extent of holdings and real estate. The assets are therefore not extrapolated below; we use the estimated values for 2017.

3.4. Preparation of the tax base

Using the integrated HFCS data source and imputed top assets, we carry out microsimulation analyses of the revenue and distributional effects of various scenarios for the capital levy (Section 4). The concrete modelling of the tax base is based on the methods of previous studies (Bach et al., 2010, 2011, 2014, 2016). The asset values contained in the data source are used for the microsimulations; there is no flat-rate valuation discount or similar corrections. In addition to the point estimates, we provide confidence intervals. These take into account the sampling or standard error of the HFCS as a relatively small household sample, the standard errors of statistical imputations of missing values for individual assets of the respondents, and the standard error of estimating additional top wealth.

As the HFCS only includes assets in the survey for households as a whole and not for the individuals within each household, we distribute the total household assets equally among the adults in the household. Differences in assets within the household are ignored in this case. To the extent that these differences are likely to play a role, especially for wealthy households, we probably slightly underestimate the revenue from the capital levy. At the same time, very wealthy families sometimes transfer considerable assets to minors (Bach and Mertz, 2016). In these cases, the children can take advantage of personal allowances and, if necessary, a lower levy rate for progressive levy rates. We therefore probably slightly overestimate the revenue from the capital levy.

In line with the approach taken in the previous studies, pension assets in the form of pension and retirement entitlements to statutory social security, public civil servants' pensions, company pension schemes and under private insurance contracts are not subject to the levy. In the case of self-employed persons with little or no pension assets of this kind, we also deduct

a pension allowance of up to 500,000 euros from the assets subject to the levy, which is offset against existing pension assets (see Section 2.2).

The HFCS survey includes questions on vehicle ownership, as well as valuable jewellery and collections etc. We combine the value of these assets and deduct from them a 20,000 euro allowance for normal household effects and vehicles (see Section 2.2 on this point).

We also deduct the other loans identified by the HFCS from the assets subject to the levy. It is indeed true that in the case of households with fewer assets, these loans are often likely to be consumer loans that cannot be deducted from assets subject to the levy, in so far as they relate to household assets exempt from the levy. However, the definition of real estate financing here is unclear. Moreover, as the high allowances mean that the capital levy is concentrated on the very wealthy households, for whom consumer loans play no role, this lack of clarity has virtually no impact on the simulation results.

The impact of the limited liability to the levy of foreigners for their domestic assets is ignored in the simulations. The HFCS provides no information about this, as the sample only covers individuals and households in Germany. In this respect, we underestimate the revenue. We also ignore the fact that the foreign assets of domestic residents may be exempt from the levy as a result of double taxation agreements or lack of recording and control by the tax authorities. The associated impact on revenue is likely to be small on balance.

3.5. Estimate of the administrative and compliance costs of the capital levy

Updated case-based cost rates for administrative and compliance costs from the previous studies on the capital levy and wealth tax

We estimate the administrative and compliance costs of the capital levy on the basis of the methods developed in the previous studies on the capital levy and wealth tax (Bach at al., 2010: 67 ff., Bach and Beznoska, 2012: 27 ff., Bach at al., 2016: 34 ff.). The case-based cost rates used in this study for the compliance costs of citizens and businesses and for the administrative costs of tax authorities are applied and updated.

Hourly rates for administrative and compliance costs are used as follows:

- Hourly rate for *tax consultants*:85 euros.
- Hourly rates at companies for *company valuation:*70 euros.

- Hourly rate for the *tax administration*: 70 euros.

- Hourly rate for *private compliance costs*: 32 euros (average hourly pay of employees in national accounts for 2017, including employers' social security contributions)

The time required for real estate valuation is assumed to be as follows:

- For *owner-occupied homes and flats*, time expenditure of 8 hours with a tax consultant's share of 80 percent is applied to levy-payers. The time required by the tax authorities is 2 hours.

- For *rental properties and other real estate*, time expenditure of 4 hours with a tax consultant's share of 80 percent is applied to levy-payers. The time required by the tax authorities is 2 hours.

The simulations on the *estimation error of real estate valuation* and on *challenges to the valuation results by expert opinions* are taken from the previous study on the capital levy (Bach et al., 2010: 70 ff.).[7] For the simulation of the decision to obtain a valuation under the "opening clause" procedure,[8] we assume that the expected burden of the levy that is saved must exceed the cost of the valuation by a factor of 1.5. We continue to derive the costs of the valuation from the fee table of the old Section 34 (1) of the German Fee Scale for Architects and Engineers (HOAI), which was valid until 2009, but is still used as a reference point for the fee rates today.[9] We increase the fees derived from the HOAI for the valuations by 15 percent. We also assume that levy-payers will only use the "opening clause" in the event of an overvaluation of 30 percent or more. For support and completion of the valuation, we set an additional time expenditure of 4 hours for levy-payers and 2 hours for the tax authorities.

For the calculations of the *time required for company valuation*, we differentiate the time required according to the degree of complexity and its distribution among the companies that the National Regulatory Control Council (2009: 13 ff.) has used for the inheritance tax valu-

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[7]   Based on studies of the valuation of real estate for tax purposes, we assume that the estimation procedures on average reflect the market values, that the estimation errors are normally distributed and that the standard deviation of the relation of market value to tax value is 30 percent. This means that 25 percent of cases are classified as having more than 120 percent or less than 80 percent of their actual market value.

[8]   According to Section 198 of the German Valuation Act (BewG), the taxpayer may prove a low value for real estate. This has become known as the "opening clause" procedure. For this purpose, the taxpayer usually has to present a formal valuation by experts.

[9]   Section 34 of the German Fee Scale for Architects and Engineers (HOAI), version until 2009.

ation of business assets using the simplified income approach (proportion of cases with low complexity: 20 percent, with medium complexity: 70 percent, with high complexity: 10 percent). We also apply the operationalisation of this distribution to the model data in accordance with the procedure in the previous study (Bach et al., 2010: 72 ff.). For the time expenditure of the levy-payers, we apply the following:

- In cases of *low complexity*, a time expenditure of 4 hours with a tax consultant's share of 90 percent

- In cases of *medium complexity*, a time expenditure of 8 hours with a tax consultant's share of 80 percent

- In cases of *high complexity*, a time expenditure of 50 hours with a tax consultant's share of 70 percent

We estimate the administrative costs of the tax authorities to be half of the time required for levy-payers to comply. No additional administrative and compliance costs are taken into account for the business asset relief.

For the *recording and valuation of other assets subject to the levy* (financial assets, as well as luxury items and collections, etc.), we estimate the time required by levy-payers is 2 hours with a tax consultant's share of 80 percent and the time required by the tax authorities as 1 hour.

For the *assessment and processing of the capital levy*, we assume a time expenditure of 1 hour each for the levy-payers (with a tax consultant's share of 80 percent) and for the tax authorities. The "zero case rate", i.e. the proportion of taxable persons for whom no wealth tax is assessed, is set at 15 percent and taken into account in the model data.

The cost estimates for the capital levy are determined for the one-off recording and valuation of assets for a capital levy and are based on the total revenue of the capital levy.

Higher compliance costs according to the German Tax Consultant Fee Ordinance (StBVV)

An alternative method for estimating the compliance costs of the capital levy is to use the tax consultancy costs in accordance with the German Tax Consultant Fee Ordinance (Bach et al., 2016: 37 ff., 55 ff., Schneider et al., 2013: 45 ff.). This produces higher estimates of the compliance costs for levy-payers. However, they will usually negotiate lower fees with the tax consultants. We therefore do not provide a separate estimate of these compliance costs.

4. Results of the microsimulation analyses

4.1. Tax base

In the microsimulation analyses of the revenue and distributional effects of the capital levy, we look at six scenarios for the tax base; the following tables are structured on this basis. For this purpose, we combine a personal allowance of 1 and 2 million euros without and with a separate allowance for business assets (business assets and major holdings in corporations) of 2 and 5 million euros (Tabelle 41). These scenarios for the tax base are then combined with the scenarios for the progressive levy rate, in which six scenarios are analysed for a rate trend up to a peak levy rate of 30 percent (Section 2.4).

The highest tax base naturally results from the personal allowance of 1 million euros and without the allowance for business assets. It is then 3.19 trillion euros or 98 percent of the GDP of 2017. It is lowest at 1.74 trillion euros or 54 percent of GDP with a personal allowance of 2 million euros and a business assets allowance of 5 million euros. The increase of the personal allowance to 2 million euros reduces the tax base by 600 to 760 billion euros, depending on the combination with the allowance for business assets. An allowance for business assets of 2 million euros reduces the tax base by 660 billion euros for the personal allowance of 1 million euros and by 490 billion euros for the personal allowance of 2 million euros. An allowance for business assets of 5 million euros reduces the tax base by 850 billion euros for the personal allowance of 1 million euros and by 680 billion euros for the personal allowance of 2 million euros.

Table 41 **Tax base of the capital levy for different scenarios of personal allowances and allowances for business assets**

	Personal allowance 1 million euros			Personal allowance 2 million euros			Total net assets
	Allowance for business assets and investments in corporations						
	None	2 million euros	5 million euros	None	2 million euros	5 million euros	
Tax base in billion euros	3 185	2 528	2 338	2 424	1 934	1 743	12 102
CI[1] lower bound	2 387	1 896	1 754	1 799	1 435	1 294	11 303
CI[1] upper bound	3 984	3 161	2 921	3 049	2 432	2 193	12 901
of which in billion euros:							
Business assets	1 521	1 027	839	1 315	988	816	2 425
Net real estate assets	1 108	981	979	677	558	546	6 610
Other assets	556	520	520	432	388	381	3 071
Tax base in percent of GDP	98.0	77.8	71.9	74.6	59.5	53.6	372.4
CI[1] lower bound	73.4	58.3	54.0	55.4	44.2	39.8	347.8
CI[1] upper bound	122.6	97.3	89.9	93.8	74.8	67.5	396.9
Levy-payers in thousands	1 564	1 448	1 332	423	366	293	.
CI[1] lower bound	1 158	1 025	966	185	186	136	.
CI[1] upper bound	1 982	1 072	1 708	664	548	452	.
Levy-payers as a percentage of the population[2]	2.3	2.1	2.0	0.6	0.5	0.4	.
Percentile[2] start of levy burden	97.5	97.5	97.5	99.3	99.3	99.3	.
Distribution of the tax base according by percentile[2] of net assets in percent							
Percentile 1-99	4.8	3.2	3.5	0.0	0.0	0.0	68.3
Percentile 99.1-99.9	36.5	28.1	29.6	25.6	13.7	14.1	15.6
Top 0.1%	58.7	68.7	66.9	74.4	86.3	85.9	16.2
Distribution of the tax base by age group in percent							
up to 44 years	6.7	6.7	6.7	6.7	6.7	6.8	12.7
45-64 years	23.4	23.4	23.4	23.6	23.7	23.7	24.7
65 and above	69.9	70.0	69.9	69.7	69.6	69.5	62.6

Note: Simulations based on HFCS original data

1 187 394	660	561	564	221	187	9
747 664	445	382	280	114	91	8
1 637 197	880	743	852	329	285	10

1) 95% Confidence Interval; robust standard errors.
2) Individuals in private households aged 18 and over.
Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

A breakdown by type of assets shows that business assets and real estate assets dominate the tax base for the capital levy. The share of business assets increases with the higher personal allowance of 2 million euros and naturally decreases with the allowances for business assets. For real estate assets, the net values are stated after netting with liabilities. Correspondingly, the share of real estate assets in the tax base decreases with the higher personal allowance and increases with the business asset allowances. Other assets include the other assets subject to the levy, i.e. primarily financial assets and collections.

The capital levy only affects the wealthiest percentiles of the population. Depending on the scenario, there is a tax base of between 1.3 and 1.6 million people subject to the levy in the case of the personal allowance of 1 million euros and of 300,000 to 400,000 people in the case of the personal allowance of 2 million euros. The burden therefore falls on the richest 2 percent and the richest 0.5 percent of the population. For couples, the individuals are counted here, as there is no joint assessment for the capital levy. The majority of the tax base is accounted for by the richest 0.1 percent of the population, in particular with a personal allowance of 2 million euros. The increase in the personal allowance to 2 million euros reduces the number of levy-payers by at least 1 million and the allowance for business assets reduces the number by between 60,000 and 200,000 people.

The 95 percent confidence intervals around the point estimates are quite wide. They represent the sampling or standard error of the HFCS as a relatively small household sample, the standard error of statistical imputations of missing values for individual assets of the respondents, and the standard error of estimating additional top wealth. They are approximately +/-25 percent in relation to the point estimates; for levy-payers they are significantly higher.

High wealth is heavily concentrated in the older population groups, as the distribution of the tax base by age group shows. At least two-thirds of the tax base is accounted for by households with a head of household aged 65 and above.

The bottom part of Tabelle 41 shows the results of the simulations based on the original HFCS data. As expected, the top assets that have been closely estimated have a considerable influence on the results. As a result, the calculations based on the HFCS alone for the higher personal allowance and for the business asset allowance are only 10 percent of the tax base from the integrated data. This makes it clear that the results presented here depend to a large extent on the additional estimate of top assets.

4.2. Revenue and the distributional effects

For the revenue and the distributional effects of the capital levy, we combine the six scenarios for the tax base with six scenarios for a progressive levy rate from 10 to 30 percent (see Section 2.4):

- Three variants of the threshold for the assets subject to the levy are analysed, above which the top levy rate of 30 percent applies:
  - 30 million euros
  - 50 million euros
  - 100 million euros
- Two progressive rate structures are applied to each case:
  - A tiered rate with three tiers of (marginal) levy rates, with a second 20 percent (marginal) levy rate from half of the asset threshold of the peak levy rate.
  - A linear-progressive increase in the marginal rates from 10 to 30 percent analogous to the progression zones of the German income levy rate, which rises incrementally across the tiers.

The static "first-round effects" are presented below on the basis of the estimated tax bases. Reactions in response to the levy by levy-payers and other economic effects are ignored (see Section 4.3).

The most levy revenue is, of course, generated when the 30-percent top rate starts at assets above 30 million euros. The tiered rate is less of a burden than the linear-progressive rate in this case.

The levy revenue with the tiered rate ranges from 338 billion euros (with a personal allowance of 2 million euros and an allowance for business assets of 5 million euros) to 501 billion euros (with a personal allowance of 1 million euros and no allowance for business assets (Tabelle 42).

The capital levy debt to be paid is to be paid in equal amounts over a period of 20 years, with the annual instalments bearing interest at 2 percent, which corresponds to an annual instalment of 6.06 percent of the total levy debt (Section 2.4). This results in annual levy revenue of between 20 billion and 30 billion euros.

Table 42   **Revenue from the capital levy for various allowances with progressive levy rates from 10 percent to 30 percent above 30 million euros, tiered rate**

	Personal allowance 1 million euros			Personal allowance 2 million euros		
	Allowance for business assets and investments in corporations					
	None	2 million euros	5 million euros	None	2 million euros	5 million euros
Levy revenue in billion euros	501 338	428	400	421	366	
CI [1] lower bound						
CI [1] upper bound	374 251	320	299	313	271	
Annual levy revenue[2] in billion euros	628 425	537	501	530	460	
	30 20	26	24	26	22	
Percentile 1-99	Distribution of levy revenue by percentile[3] of net assets in percent					
Percentile 99.1-99.9						
Top 0.1%	3.0 0.0	1.9	2.0	0.0	0.0	
	23.2 7.3	16.6	17.3	14.7	7.2	
Gini coefficient GE(1) GE(2)	73.8 92.7	81.5	80.7	85.3	92.8	
	Change in wealth distribution measures by levy revenue in percent					
Percentile 1-99	-1.3 0.9	-1.1	-1.0	-1.1	-0.9	-
Percentile 99.1-99.9						
Top 0.1%	-9.6 8.1	-8.9	-8.5	-9.1	-8.5	-
Gini coefficient GE(1) GE(2)	-45.2 6.4	-45.8	-45.9	-45.9	-46.3	-4
	Distribution of levy revenue by percentile[3] of gross equivalent income in percent					
Collection costs in % of revenue	12.0 0.2	8.2	8.7	2.3	0.2	
Compliance costs[4]	14.2 7.0	10.3	10.6	12.5	7.0	
Administrative costs[5]	73.8 92.7	81.5	80.7	85.3	92.7	
Shortfall in revenue from expert valuations	Change in income distribution measures due to annual levy revenue[2] in percent					
	-1.7 1.2	-1.5	-1.4	-1.5	-1.3	-
	-10.8 9.2	-10.1	-9.6	-10.3	-9.6	-
Levy revenue	-44.1 4.3	-44.2	-44.2	-44.3	-44.4	-4
CI [1] lower bound CI [1] upper bound	3.0 2.3	3.3	3.4	2.2	2.2	
	0.6 0.3	0.6	0.6	0.3	0.3	

0.2 0.1	0.2	0.2	0.1	0.1
2.3 1.8	2.5	2.6	1.8	1.8

Note: Simulations based on HFCS original data

121 20	*68*	*58*	*59*	*24*
76 9	*45*	*39*	*29*	*11*
167 32	*91*	*77*	*88*	*37*

1) 95% Confidence Interval; robust standard errors.
2) 6.06 percent of the total levy debt (annuity for repayment over a period of 20 years; 2 percent interest rate).
3) Percentiles of individuals in private households aged 18 and over.
4) Compliance costs of levy-payers. - 5) Costs of tax authorities.
Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

Owing to the progressive levy rate, the levy revenue is significantly more concentrated in the top percentiles of wealth distribution than the tax base. The richest 0.1 percent pay up to 80 percent of the levy revenue at a personal allowance of 1 million euros and up to 90 percent of the levy revenue at a personal allowance of 2 million euros.

We analyse the impact of the capital levy on wealth distribution by reducing the assets of levy-payers by the full amount of the levy and calculating the change in the relevant distributional measures [10]. The "top-sensitive" GE measures react more strongly in this case than the Gini coefficient, because the capital levy is heavily concentrated on the rich. The Gini coefficient, which is more strongly related to the middle of the distribution, only decreases by about 1 percent. A cross-comparison of the scenarios reveals only minor differences. With the higher allowances, the revenue is more concentrated on the richer levy-payers. However, this is usually overcompensated by the significantly lower tax revenue. Overall, the Gini coefficient and the GE(1) measure react slightly more strongly to the personal allowance of 1 million euros, while the highly "top-sensitive" GE(2) measure reacts more strongly to the personal allowance of 2 million euros.

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[10]

See footnote 6.

Usually, the distributional effects of the ongoing wealth tax are related to income, as it is usually paid from the income from assets. This is also to be ensured for the capital levy, taken into account in this case by spreading the total levy burden evenly over a period of 20 years. For this purpose, we use the instalment of 6.06 percent of the total levy debt and calculate its distributional effects on the gross household income surveyed in the HFCS, i.e. the sum of dependent and self-employed income, property income and public and private transfer income. The net income is not available in the HFCS, as this survey does not include the burdens of tax and social security contributions and we were unable to use a microsimulation model to calculate these burdens.

The distribution according to the top percentiles of gross equivalised income is very similar to the distribution according to net assets. However, when interpreting these results, one must bear in mind the limitations of the underlying data. Our analysis is strongly driven by the additional estimate of top assets, for which we assume uniform returns. The actual variance in returns, including losses, is not accounted for. We also underestimate the high wage incomes that are under-recorded in the HFCS and for which no additional allowance is made. The correlation between top income and top wealth is therefore likely to be less close than assumed in the simulation analyses. However, even taking these imprecisions into account, the somewhat sharper decline in the centrally oriented measures of income distribution is plausible, as gross income is less strongly concentrated and also has a much lower level in aggregate than net assets. For the highly "top-sensitive" GE(2) measure, on the other hand, income inequality decreases more than wealth inequality.

All in all, the distribution analyses show that the scenarios of wealth tax analysed here principally affect the richest one percent of the population and, within this group, mainly the richest 0.1 percent – i.e. the population with personal net assets of 8.6 million euros or more. The capital levy is therefore highly progressive. Owing to the appreciable revenue, it makes a moderate contribution to reducing the high level of wealth inequality and, indirectly, to reducing income inequality.

The significance of the collection costs in relation to the levy revenue, including the reduced revenue due to the value adjustment of real estate assets, depends on the number of levy-payers and on the levy revenue. As the higher personal allowances involve considerably fewer cases and the revenue per case is much higher, the ratio of collection costs to revenue is

more favourable. However, the significant decline in the levy revenue is overcompensated for by the reduction in the allowance for business assets. In relation to revenue, the collection costs are 3 percent and above in the scenarios with the personal allowance of 1 million euros and 2 percent and above in the scenarios with the personal allowance of 2 million euros. A large part of the collection costs is due to the reduced revenue from the value adjustment of real estate assets as a result of expert valuations. The actual compliance and administrative costs of the capital levy are very low and much cheaper than the corresponding costs of an ongoing wealth tax, where the assets have to be regularly updated and reassessed (Bach et al., 2016: 55 ff.).

The linear-progressive rate increases the levy revenue, as it is rises incrementally across the tiers and thereby causes the levy charges to rise more rapidly, particularly at the onset of the levy (Tabelle 43). As a result, the levy revenue increases by approximately 10 percent compared to the tiered rate to 369 billion euros with a personal allowance of 2 million euros and an allowance for business assets of 5 million euros, and to up to 560 billion euros with a personal allowance of 2 million euros and no allowance for business assets. The revenue is still somewhat more concentrated in the richest 0.1 percent of the population. As a result, the more centrally oriented distribution measures decrease somewhat more than in the tiered rate, while the "top-sensitive" GE(2) measure decreases somewhat less for wealth inequality. With regard to the breakdown of collection costs, the shares of compliance costs and administrative costs decrease slightly due to the higher tax revenue, while the relative revenue shortfall due to the expert valuations even increases slightly, which is as result of the higher marginal levy rates at the onset of the levy.

If the top levy rate of 30 percent only starts to apply at assets subject to the levy of 50 million euros, the levy revenue is, of course, lower (Tabelle 44, Tabelle 45). Compared to the scenarios with the 30 million euro asset threshold, it falls by about 7 to 8 percent. As a result, the revenue is minimally less concentrated in the richest 0.1 percent of the population. There are only minimal differences in the shares of collection costs.

The levy revenue is even lower at the 100 million euro asset threshold for the top levy rate (Tabelle 46, Tabelle 47). Compared to the scenarios with the 30 million euro asset threshold, the revenue falls by about 15 to 18 percent. The levy revenue is somewhat less concentrated

in the wealthiest 0.1 percent of the population. The share of collection costs is minimally increased as a result of the lower revenue.

The bottom part of the tables shows the results of the simulations based on the original HFCS data. Owing to the progressive levy rate, the calculations based on the HFCS alone are even more significantly below the results with the integrated data than the calculations for the tax base (cf. Tabelle 41). This underlines all the more that the results presented here depend to a large extent on the additional estimate of top assets.

Table 43   **Revenue from the capital levy for various allowances with progressive levy rates from 10 percent to 30 percent above 30 million euros, linear-progressive rate**

	Personal allowance 1 million euros			Personal allowance 2 million euros		
	Allowance for business assets and investments in corporations					
	None	2 million euros	5 million euros	None	2 million euros	5 million euros
Levy revenue in billion euros	560	473	437	471	405	
CI 1) lower bound	369					
CI 1) upper bound	419	353	326	350	301	
	274					
Annual levy revenue2) in billion euros	703	594	548	593	509	
	465					
	34	29	26	29	25	
	22					
Distribution of levy revenue by percentile3) of net assets in percent						
Percentile 1-99	2.7	1.7	1.9	0.0	0.0	
Percentile 99.1-99.9	0.0					
Top 0.1%	22.9	16.1	16.8	14.5	7.0	
	7.0					
Gini coefficient	74.3	82.2	81.3	85.5	93.0	
GE(1)	93.0					
GE(2)						
Change in wealth distribution measures by levy revenue in percent						
Percentile 1-99	-1.4	-1.2	-1.1	-1.2	-1.0	-
Percentile 99.1-99.9	0.9					
Top 0.1%	-10.4	-9.6	-9.1	-9.8	-9.1	-
	8.6					
Gini coefficient	-45.0	-45.6	-45.8	-45.7	-46.2	-4
GE(1)	6.3					
GE(2)						
Distribution of levy revenue by percentile3) of gross equivalent income in percent						
Collection costs in % of revenue	11.2	7.6	8.2	2.1	0.2	
	0.2					
Compliance costs4)	14.5	10.2	10.5	12.5	6.8	
	6.8					
Administrative costs5)	74.3	82.2	81.3	85.5	93.0	
	92.9					
Shortfall in revenue from expert valuations						
Change in income distribution measures due to annual levy revenue2) in percent						
	-1.9	-1.6	-1.5	-1.6	-1.4	-
	1.3					
	-11.7	-10.8	-10.2	-11.1	-10.3	-
Levy revenue	9.8					
CI 1) lower bound	-44.2	-44.3	-44.3	-44.4	-44.5	-4
CI 1) upper bound	4.4					
	3.0	3.3	3.5	2.2	2.2	
	2.3					
	0.5	0.5	0.6	0.3	0.3	
	0.3					

0.2 0.1	0.2	0.2	0.1	0.1
2.3 1.9	2.5	2.7	1.8	1.8
Note: Simulations based on HFCS original data				
132 23	73	62	64	27
83 10	*48*	*41*	*32*	*12*
182 36	*98*	*84*	*97*	*41*

1) 95% Confidence Interval; robust standard errors.
2) 6.06 percent of the total levy debt (annuity for repayment over a period of 20 years; 2 percent interest rate).
3) Percentiles of individuals in private households aged 18 and over.
4) Compliance costs of levy-payers. - 5) Costs of tax authorities.

Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

Table 44 **Revenue from the capital levy for various allowances with progressive levy rates from 10 percent to 30 percent above 50 million euros, tiered rate**

	Personal allowance 1 million euros			Personal allowance 2 million euros		
	Allowance for business assets and investments in corporations					
	None	2 million euros	5 million euros	None	2 million euros	5 million euros
Levy revenue in billion euros	466	396	372	388	335	311
CI 1) lower bound	348	296	278	288	249	231
CI 1) upper bound	584	497	466	488	422	391
Annual levy revenue2) in billion euros	28	24	23	23	20	19
Distribution of levy revenue by percentile3) of net assets in percent						
Percentile 1-99	3.3	2.0	2.2	0.0	0.0	0.0
Percentile 99.1-99.9	25.0	17.9	18.6	16.0	7.9	7.9
Top 0.1%	71.8	80.0	79.2	84.0	92.1	92.1
Change in wealth distribution measures by levy revenue in percent						
Gini coefficient	-1.2	-1.0	-0.9	-1.0	-0.8	-0.8
GE(1)	-8.9	-8.3	-7.9	-8.4	-7.9	-7.5
GE(2)	-45.2	-45.7	-45.8	-45.8	-46.2	-46.3
Distribution of levy revenue by percentile3) of gross equivalent income in percent						
Percentile 1-99	13.0	8.8	9.4	2.5	0.2	0.3
Percentile 99.1-99.9	15.3	11.2	11.4	13.6	7.7	7.6
Top 0.1%	71.8	80.0	79.2	84.0	92.1	92.1
Change in income distribution measures due to annual levy revenue2) in percent						
Gini coefficient	-1.6	-1.4	-1.3	-1.3	-1.2	-1.1
GE(1)	-10.0	-9.4	-9.0	-9.6	-9.0	-8.6
GE(2)	-43.9	-44.0	-44.0	-44.1	-44.1	-44.1
Collection costs in % of revenue	3.1	3.4	3.6	2.2	2.2	2.3
Compliance costs4)	0.6	0.6	0.7	0.3	0.3	0.3

Additional row labels appearing in the left column: Gini coefficient, GE(1), GE(2), Percentile 1-99, Percentile 99.1-99.9, Top 0.1%, Administrative costs5), Shortfall in revenue from expert valuations, Levy revenue, CI 1) lower bound, CI 1) upper bound.

0.2 0.1	0.2	0.2	0.1	0.1
2.3 1.9	2.5	2.7	1.7	1.7
Note: Simulations based on HFCS original data				
120 *19*	*67*	*57*	*57*	*23*
75 *9*	*45*	*39*	*29*	*11*
165 *30*	*89*	*76*	*87*	*35*

1) 95% Confidence Interval; robust standard errors.
2) 6.06 percent of the total levy debt (annuity for repayment over a period of 20 years; 2 percent interest rate).
3) Percentiles of individuals in private households aged 18 and over.
4) Compliance costs of levy-payers. - 5) Costs of tax authorities.

Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

Table 45   **Revenue from the capital levy for various allowances with progressive levy rates from 10 percent to 30 percent above 50 million euros, linear-progressive rate**

	Personal allowance 1 million euros			Personal allowance 2 million euros		
	Allowance for business assets and investments in corporations					
	None	2 million euros	5 million euros	None	2 million euros	5 million euros
Levy revenue in billion euros	519	440	409	435	374	
CI 1) lower bound	344					
CI 1) upper bound	388	328	305	323	278	
Annual levy revenue 2) in billion euros	255					
	651	551	512	547	470	
	432					
Percentile 1-99	31	27	25	26	23	
Percentile 99.1-99.9	21					
Top 0.1%						
Distribution of levy revenue by percentile 3) of net assets in percent						
Gini coefficient	2.9	1.8	2.0	0.0	0.0	
	0.0					
GE(1)	23.8	16.8	17.6	15.2	7.4	
GE(2)	7.4					
	73.3	81.3	80.4	84.8	92.6	
Percentile 1-99	92.6					
Percentile 99.1-99.9						
Top 0.1%	Change in wealth distribution measures by levy revenue in percent					
	-1.3	-1.1	-1.0	-1.1	-0.9	-
Gini coefficient	0.9					
GE(1)	-9.7	-9.0	-8.6	-9.2	-8.6	-
GE(2)	8.1					
Collection costs in % of revenue	-45.0	-45.7	-45.8	-45.8	-46.2	-4
	6.3					
Compliance costs 4)	Distribution of levy revenue by percentile 3) of gross equivalent income in percent					
Administrative costs 5)	11.9	8.1	8.7	2.2	0.2	
	0.2					
Shortfall in revenue from expert valuations	14.9	10.6	10.9	12.9	7.2	
	7.2					
	73.2	81.3	80.4	84.8	92.6	
	92.6					
Levy revenue	Change in income distribution measures due to annual levy revenue 2) in percent					
CI 1) lower bound	-1.8	-1.5	-1.4	-1.5	-1.3	-
CI 1) upper bound	1.2					
	-10.9	-10.2	-9.7	-10.4	-9.7	-
	9.2					
	-44.1	-44.2	-44.1	-44.2	-44.3	-4
	4.3					
	3.1	3.3	3.5	2.2	2.2	
	2.3					
	0.5	0.6	0.6	0.3	0.3	
	0.3					

0.2 0.1	0.2	0.2	0.1	0.1
2.3 1.9	2.5	2.7	1.8	1.8
Note: Simulations based on HFCS original data				
127 21	70	60	61	25
80 *9*	*47*	*40*	*31*	*12*
175 *33*	*94*	*80*	*92*	*38*

1) 95% Confidence Interval; robust standard errors.
2) 6.06 percent of the total levy debt (annuity for repayment over a period of 20 years; 2 percent interest rate).
3) Percentiles of individuals in private households aged 18 and over.
4) Compliance costs of levy-payers. - 5) Costs of tax authorities.

Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

Table 46 **Revenue from the capital levy for various allowances with progressive levy rates from 10 percent to 30 percent above 100 million euros, tiered rate**

	Personal allowance 1 million euros			Personal allowance 2 million euros		
Allowance for business assets and investments in corporations	None	2 million euros	5 million euros	None	2 million euros	5 million euros
Levy revenue in billion euros	427	360	339	350	300	279
CI [1] lower bound	319	269	253	260	222	207
CI [1] upper bound	535	451	424	441	377	350
Annual levy revenue[2] in billion euros	26	22	21	21	18	17
Distribution of levy revenue by percentile[3] of net assets in percent						
Percentile 1-99	3.5	2.2	2.4	0.0	0.0	0.0
Percentile 99.1-99.9	27.2	19.8	20.4	17.7	8.8	8.8
Top 0.1%	69.2	78.0	77.2	82.3	91.2	91.2
Change in wealth distribution measures by levy revenue in percent						
Gini coefficient	-1.1	-0.9	-0.8	-0.9	-0.8	-0.7
GE(1)	-8.0	-7.5	-7.2	-7.6	-7.1	-6.8
GE(2)	-44.7	-45.3	-45.3	-45.4	-45.8	-45.8
Distribution of levy revenue by percentile[3] of gross equivalent income in percent						
Percentile 1-99	14.1	9.7	10.3	2.7	0.3	0.3
Percentile 99.1-99.9	16.7	12.3	12.5	15.0	8.6	8.5
Top 0.1%	69.2	78.0	77.2	82.3	91.1	91.2
Change in income distribution measures due to annual levy revenue[2] in percent						
Gini coefficient	-1.4	-1.2	-1.1	-1.2	-1.0	-1.0
GE(1)	-9.1	-8.5	-8.2	-8.7	-8.1	-7.8
GE(2)	-43.3	-43.5	-43.4	-43.5	-43.6	-43.5
Collection costs in % of revenue	3.2	3.6	3.8	2.2	2.2	2.4
Compliance costs[4]	0.7	0.7	0.8	0.3	0.3	0.4

Additional row labels shown in the left column: Administrative costs[5]; Shortfall in revenue from expert valuations.

0.2 0.1	0.3	0.3	0.1	0.1
2.4 1.9	2.6	2.8	1.7	1.8
Note: Simulations based on HFCS original data				
119 19	66	56	56	22
75 9	*45*	*38*	*28*	*11*
164 29	*88*	*74*	*85*	*33*

1) 95% Confidence Interval; robust standard errors.
2) 6.06 percent of the total levy debt (annuity for repayment over a period of 20 years; 2 percent interest rate).
3) Percentiles of individuals in private households aged 18 and over.
4) Compliance costs of levy-payers. - 5) Costs of tax authorities.

Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

Table 47   **Revenue from the capital levy for various allowances with progressive levy rates from 10 percent to 30 percent above 100 million euros, linear-progressive rate**

	Personal allowance 1 million euros			Personal allowance 2 million euros		
	Allowance for business assets and investments in corporations					
	None	2 million euros	5 million euros	None	2 million euros	5 million euros
Levy revenue in billion euros	472 / 310	399	372	391	336	
CI [1] lower bound	353 / 230	298	278	290	249	
CI [1] upper bound	591 / 390	499	467	492	422	
Annual levy revenue [2] in billion euros	29 / 19	24	23	24	20	
Distribution of levy revenue by percentile [3] of net assets in percent						
Percentile 1-99	3.2 / 0.0	2.0	2.2	0.0	0.0	
Percentile 99.1-99.9	25.4 / 8.1	18.2	18.9	16.3	8.1	
Top 0.1%	71.4 / 91.9	79.8	78.9	83.7	91.9	
Change in wealth distribution measures by levy revenue in percent						
Gini coefficient	-1.2 / 0.8	-1.0	-0.9	-1.0	-0.8	-
GE(1)	-8.9 / 7.4	-8.2	-7.9	-8.4	-7.8	-
GE(2)	-44.9 / 6.1	-45.5	-45.6	-45.6	-46.0	-4
Distribution of levy revenue by percentile [3] of gross equivalent income in percent						
Percentile 1-99	12.9 / 0.3	8.8	9.5	2.5	0.2	
Percentile 99.1-99.9	15.7 / 7.8	11.4	11.7	13.9	7.8	
Top 0.1%	71.3 / 91.9	79.7	78.9	83.6	91.9	
Change in income distribution measures due to annual levy revenue [2] in percent						
Gini coefficient	-1.6 / 1.1	-1.4	-1.3	-1.4	-1.2	-
GE(1)	-10.0 / 8.5	-9.3	-8.9	-9.5	-8.9	-
GE(2)	-43.7 / 3.9	-43.8	-43.8	-43.9	-43.9	-4
	3.2 / 2.4	3.5	3.7	2.2	2.2	
	0.6 / 0.3	0.6	0.7	0.3	0.3	

Additional row labels appearing in the left column of the table:

Gini coefficient / GE(1) / GE(2)

Collection costs in % of revenue / Compliance costs [4] / Administrative costs [5]

Shortfall in revenue from expert valuations

Levy revenue / CI [1] lower bound / CI [1] upper bound

0.2 0.1	0.2	0.2	0.1	0.1
2.4 1.9	2.6	2.8	1.8	1.8

Note: Simulations based on HFCS original data

123 20	68	58	59	24
77 9	*46*	*39*	*29*	*12*
169 31	*91*	*77*	*89*	*35*

1) 95% Confidence Interval; robust standard errors.
2) 6.06 percent of the total levy debt (annuity for repayment over a period of 20 years; 2 percent interest rate).
3) Percentiles of individuals in private households aged 18 and over.
4) Compliance costs of levy-payers. - 5) Costs of tax authorities.

Source: Simulations based on the Household Finance and Consumption Survey (HFCS) 2017, including estimated cases of very high net wealth

4.3. Other economic effects

In addition to the static "first-round effects", which were calculated in the previous section based on the microsimulation analyses, taxes and levies trigger additional economic effects.

However, as the capital levy is to be charged on the assets at the beginning of 2020, immediate reactions in response to the levy are no longer possible. Levy-payers can only influence the assessment procedure in their favour, for example by manipulating the valuation or moving assets, as far as this is possible (cf. Section 2.2). In contrast to an ongoing wealth tax or the taxation of investment income, where the assets or earnings from the assets are regularly recognised and valued again, it is no longer possible to avoid the capital levy by making smaller investments in Germany, via financing arrangements and legal structures or by using other tax planning options.

In this respect, there are no direct substitution effects - and therefore there is no excess burden - for the capital levy, i.e. there is no loss of efficiency within the meaning of the standard optimal theory of taxation, which arises from "distortions" of economic decisions. This macroeconomically favourable characteristic of an unforeseen capital levy distinguishes the capital levy from other taxes and levies that are linked to the results of ongoing economic processes (Eichengreen, 1989). The administrative and compliance costs as an additional macroeconomic burden are also much more favourable, measured by revenue of the capital levy, compared to a ongoing wealth tax with the same revenue.

By its very nature, the capital levy has effects on wealth and income by transferring assets to the state. This can cause liquidity and financing problems, especially for company and real estate assets, in particular if the current return on assets is not sufficient to pay the ongoing capital levy and levy-payers have liquidity and loan restrictions, i.e. do not have liquid assets or cannot borrow on normal terms.

The high personal allowances and the separate allowance for business assets largely avoid these problems from the outset, as ordinary citizens are not required to pay the capital levy. As a result, the capital levy is concentrated in the richest one percent and, in particular, in the richest 0.1 percent of the population, most of whom have liquid assets or can obtain loans.

The extension of the capital levy debt over a period of 20 years alleviates remaining hardships, such as low returns. Including interest at 2 percent, this means an annual instalment of 6.06 percent of the total levy debt. For personal net assets of 10 million euros, which does not include any business assets subject to favourable treatment, the effective levy burden is 11.7 percent of the net assets for the personal allowance of 1 million euros and the rate scenario with the highest revenue (linear-progressive levy rate with the peak rate from 30 million euros). The annual instalment is therefore 0.7 percent of net assets. With the higher personal allowance of 2 million euros, this burden falls to 10.1 percent overall or 0.6 percent annually. For personal net assets of 30 million euros, which does not include any business assets subject to favourable treatment, the effective levy burden is 19.0 percent in total and 1.2 percent annually for the personal allowance of 1 million euros and 18.0 percent in total and 1.1 annually for the personal allowance of 2 million euros. In the rate scenarios with the higher wealth threshold of the peak levy rate, the effective burdens are even lower. Even in times of

low interest rates, it should be possible to achieve returns on assets in the double-digit million range that make such burdens tolerable.

However, business assets are often notoriously illiquid. There is additional relief via the specific allowance of 2 or 5 million euros. This means that small and medium-sized enterprises are spared the capital levy from the outset. It could also be possible for levy-payers to reduce the annual levy burden temporarily on company or real estate assets and carry it forward if the return on assets is low or losses are incurred, in particular in the event of an economic downturn (cf. Section 2.2). Finally, a sustained reduction in profitability could allow for revaluation of these assets and a reduction in the remaining levy burden.

In addition, in the medium term, the capital levy may reduce self-financing and therefore the crisis resistance and investment power of medium-sized companies, which often use a large part of their profits for business purposes. In such cases, it might be possible, where appropriate, to allow levy-payers to convert their levy burden into permanent state contributions. The tax authorities would thereby become part-owners in the companies, ideally on the same terms as the other part-owners in the company, including the restrictions on dividend payments, disposal and severance payments that are common in many medium-sized (family) companies. In order to counter politico-economic risks and reservations, such state ownership could be managed by a sovereign fund that enjoys a certain institutional independence from the political decision-making bodies, e.g. by the Deutsche Bundesbank.

The capital levy does not have a direct "technical" effect on the revenue of other taxes and duties, as it is not deductible from income tax or other taxes. However, it reduces the revenue from indirect taxes, as the ongoing burden of the levy reduces disposable income and therefore consumption by levy-payers. In the medium term, the capital levy could lead to higher savings and therefore lower consumption by levy-payers, to the extent that this will partially compensate for the unforeseen reduction in wealth. It is also possible that levy-payers adjust their inheritance plans, which could reduce future inheritance tax revenue.

On the other hand, the use of the levy revenue has positive effects on economic development and therefore increases tax and levy revenue. It makes it possible to reduce public debt or avoid increasing other taxes and levies or avoid cutting public expenditure. Overall, the wider macroeconomic effects of the capital levy are therefore likely to be small, provided that

appreciable effects on small and medium-sized enterprises or on the real estate markets are avoided.

However, if levy-payers expect that such capital levies will be levied at regular intervals, substitution effects similar to those of inheritance tax may well arise in the case of longer-term investment and investment decisions or the choice of residence (Eichengreen, 1989, Kempkes and Stähler, 2015). The very wealthy households could increasingly look for ways to transfer assets to "safe" foreign countries or to move their residence there. Ultimately, these reactions will probably also depend on acceptance of the capital levy by those affected and by the wider public.

4.4.   Estimation risks in the data and microsimulation analyses

Finally, we summarise below the estimation risks in the results of the microsimulation analyses.

95 percent confidence intervals are also given for the point estimates of the simulation results. These take into account the sampling or standard error of the HFCS as a relatively small household sample, the standard errors of statistical imputations of missing values for individual assets of the respondents, and the standard error of estimating additional top wealth. For the tax base and revenue, they are approximately +/-25 percent in relation to the point estimates; for levy-payers they are significantly higher.

Estimates of the revenue and distribution of the capital levy are largely driven by the additional estimate of top wealth. Based solely on the HFCS, microsimulation analyses show only a fraction of the revenue. The additional estimate depends on the quality of the "manager magazin" rich list (2017) on the one hand, and on the assumption of the Pareto distribution on the other.

The quality of the "manager magazin" rich list (2017) is good, at least for the top 300 households that we use as a basis for our additional estimate. The applicable households are defined for the identified families and households resident abroad are excluded. The asset values are generally based on estimates by "manager magazin". The actual assets are likely to be underestimated in this respect, as the private wealth of the families on the list are mostly unknown beyond companies and holdings.

The Pareto distribution is often used to describe the top edge of the income and wealth distribution, for which there are many empirical studies. Initial provisional results for the new SOEP-P sub-sample within the SOEP from 2019 (Schröder et al., 2020) basically confirm our estimate of wealth and wealth distribution for the top percent of the wealth distribution - i.e. the population that would be subject to the capital levy. Initial results for "estate multiplier" estimates of top asset concentration based on inheritance tax statistics also indicate a similar concentration of wealth. Estimates of total assets are compatible with German national accounts and with the financial accounts, provided that they are corrected for under-recording of holdings.

The data was estimated for 2017. By the end of 2019, the wealth of private households is estimated to have increased by 10 percent. The data is therefore likely to underestimate the actual wealth at the beginning of 2020. The coronavirus economic crisis has not yet resulted in any major losses in wealth.

Overall, the data used in the simulation calculations for the top range of wealth distribution in Germany is likely to be highly realistic. It represents the actual economic wealth of private households in the top percentiles of the wealth distribution in Germany. Another question is whether it is also possible from a technical taxation perspective to record these assets, to value them realistically and to apply the capital levy.

Many assets of the rich and super-rich are companies, holdings or real estate, for which there are often no current market values. Asset valuations are notoriously difficult, but in practice they are more likely to be undervalued. In addition, there are potential undervaluations of family businesses, if one takes into account the restrictions on distribution, disposal and severance payments that usually apply in such businesses, as well as in family foundations, where the assets cannot easily be attributed to the beneficiaries. In the case of financial assets, levy-payers can move assets abroad.

We do not take into account the limited duty to pay the levy in the simulation analyses, so we slightly underestimate the revenue. At the same time, the recording and valuation of the foreign assets of residents subject to the levy without restriction may be difficult in some cases. The provisions of double taxation agreements may also prevent a burden with the capital levy.

Owing to a lack of data, we do not take into account the differences in wealth between persons in the household; we have distributed household assets equally among the adults in the household. As a result, we slightly underestimate the revenue from the capital levy.

The introduction of the capital levy is not expected to have negative macroeconomic effects. As the levy is to be charged on assets as at the start of 2020, levy-payers can no longer avoid it via structures. Liquidity and financing problems with real estate and business assets are largely avoided by the high personal allowances, the separate allowance for business assets and the extension of the capital levy debt over a period of 20 years.

Overall, our simulations of the revenue and distributional effects of the DIE LINKE capital levy are a realistic starting point for planning political programmes. In view of the valuation risks for company and real estate assets, however, a moderate under-recording in implementation of the capital levy seems likely. A precautionary discount of an estimated 5 to 15 percent should be applied where appropriate.

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