

A Service of

ZBW

Leibniz-Informationszentrum Wirtschaft Leibniz Information Centre for Economics

Winter, Richard; Zental, Jan

# Working Paper Better Early than Never – The Effects of Anticipated Gift Tax Changes on Business Transfers

CESifo Working Paper, No. 11687

**Provided in Cooperation with:** Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

*Suggested Citation:* Winter, Richard; Zental, Jan (2025) : Better Early than Never – The Effects of Anticipated Gift Tax Changes on Business Transfers, CESifo Working Paper, No. 11687, CESifo GmbH, Munich

This Version is available at: https://hdl.handle.net/10419/314726

#### Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

#### Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



# WWW.ECONSTOR.EU



# Better Early than Never – The Effects of Anticipated Gift Tax Changes on Business Transfers

Richard Winter, Jan Zental



#### Impressum:

CESifo Working Papers ISSN 2364-1428 (electronic version) Publisher and distributor: Munich Society for the Promotion of Economic Research - CESifo GmbH The international platform of Ludwigs-Maximilians University's Center for Economic Studies and the ifo Institute Poschingerstr. 5, 81679 Munich, Germany Telephone +49 (0)89 2180-2740, Telefax +49 (0)89 2180-17845, email office@cesifo.de Editor: Clemens Fuest https://www.cesifo.org/en/wp An electronic version of the paper may be downloaded • from the SSRN website: www.SSRN.com

- from the RePEc website: <u>www.RePEc.org</u>
- from the CESifo website: <u>https://www.cesifo.org/en/wp</u>

# Better Early than Never – The Effects of Anticipated Gift Tax Changes on Business Transfers

# Abstract

Wealth transfer taxes can be important instruments to counter increasing wealth inequality. Yet, inter-generational business transfers, whose distribution is particularly concentrated at the top, are inherently difficult to tax. Many countries treat this asset class preferentially to avoid overburdening family firms, and sophisticated tax avoidance strategies by business owners exploit this preferential treatment to erode the tax base. We analyse how business transfers react to anticipated changes in such preferential tax treatment using administrative data at the individual-transfer level from the universe of German gift tax assessments. We find strong and rapid timing responses of business transfers to expected tax changes. We show that the response is stronger for higher-valued transfers and find heterogeneity in transfer characteristics consistent with a tax avoidance motive. We further estimate that the amount of foregone gift tax revenue due to timing responses is up to 2.8 times the size of actual annual inheritance and gift tax revenue.

JEL-Codes: H000, H230, H250, H260, K340, D800, D810.

Keywords: wealth transfer tax avoidance, business owners, tax uncertainty.

Richard Winter University of Mannheim / Germany r.winter@uni-mannheim.de Jan Zental University of Mannheim / Germany jan.zental@uni-mannheim.de

#### February 10, 2025

We thank Philipp Doerrenberg, Christoph Spengel, Dirk Foremny, Rainer Bräutigam, Heiko Vay, Svea Holtmann, Charlotte Bartels and Konrad Stahl for their comments. We owe special gratitude to discussants of earlier versions of this paper: Isabel Micó-Millán, Theresa Bührle, Johannes König, Cécile Gayet and Georg Thunecke. We also thank participants at various seminars, workshops and conferences for valuable feedback, comments and suggestions. We are thankful to the Research Data Centre (RDC) of the Federal Statistical Office and the Statistical Offices of the Federal States, in particular Kerstin Stockmayer and Kathrin Stief, for data provision and support. Victoria Ahrens, Hendrik Schmidt and Juliane Ott provided valuable research assistance. We acknowledge financial support by the Leibniz ScienceCampus MannheimTaxation.

# 1 Introduction

Taxes on wealth transfers can be important instruments to counter increasing wealth inequality (Nekoei and Seim 2022). A wealth class whose distribution is particularly concentrated at the top are business assets in the form of shares in partnerships and corporations (Kopczuk and Zwick 2020; Saez and Zucman 2016; Smith et al. 2023). The effective taxation of business wealth transfers, however, is prone to avoidance strategies by business owners (Henrekson and Waldenström 2016). As a result, the effective tax rate structures for wealth transfers are often regressive in practice, which counteracts their intended purpose.<sup>1</sup> The measurement of business owners' avoidance responses to wealth transfer taxes is thus key in designing effective tax policies on wealth transfers.

The avoidance of wealth transfer taxes by business owners is facilitated by the existence of preferential tax regimes for business assets in many countries.<sup>2</sup> The intended purpose of these preferential taxation regimes is to secure employment and maintain firm liquidity by reducing the tax burden associated with inter-generational business succession. However, excessive privilege for a specific asset class, especially if it is more prominent at the top of the wealth distribution, undercuts the legitimacy of a tax mainly used as a redistributive tool. As a political consequence, public pressure and judiciary decisions have led to reforms of inheritance and gift taxation in various countries in the past.<sup>3</sup> Business owners may anticipate such legislative changes and the adverse tax consequences for themselves and optimize the timing of their wealth transfers with respect to expected changes in the tax code.

In this study, we analyse how business owners respond to such anticipated changes in the preferential business transfer taxation, where re-timing responses may counteract policy intentions and reduce tax revenues. We exploit two anticipated events in the years 2012 and 2014 that threatened to negatively alter the preferential taxation of business transfers in Germany. We combine this institutional setting with a large administrative dataset containing the universe of German wealth transfers in the form of gifts and inheritances. We use a Differences-in-Bunching methodology to measure behavioural responses in the intra-year distribution of gifts on a weekly level preceding these event dates. As a counterfactual distribution, we use the years 2010 and 2011, where neither announcements nor legislative changes took place. This way, we can identify the excess mass of tax-motivated gift transfers of business assets. Furthermore, we explore the characteristics of transfers within the event windows to document heterogeneity consistent with differing motives underlying tax avoidance. Finally, we use the excess mass estimates from our bunching approach to provide back-of-the-envelope calculations of foregone gift

 $<sup>^1\,\</sup>mathrm{See}$  e.g. OTS (2018) for the case of the UK.

<sup>&</sup>lt;sup>2</sup> See OECD (2021) for an overview.

<sup>&</sup>lt;sup>3</sup> Consider Henrekson and Waldenström (2016) for a description of the Swedish case, which led to the abolishment of the Swedish inheritance tax.

tax revenue to the German State due to behavioural responses.

Our analysis begins with an investigation of the run-up period (Event Window I from hereon) to a debate in the German Parliament regarding the abolition of a well-known tax avoidance scheme called Cash-GmbH.<sup>4</sup> This scheme involved putting cash into a shell company prior to the transfer in order to benefit from the tax exemptions for business assets and allowed wealthy individuals to pass on basically unlimited amounts of wealth almost tax free. For instance, for an individual trying to pass-on a bank deposit of EUR 26 million, this scheme allowed unintended tax savings of up to EUR 8 million.<sup>5</sup>

Next, we consider the period leading up to the last major verdict of the German Constitutional Court in 2014 (Event Window II from here on), when it evaluated the conformity of the preferential treatment provisions with the German constitution. At the time, the provisions had been heavily criticized to be excessive and subject to no means-testing. They were thus argued to be in violation of the principle of equality granted by the German constitution. The precise tax consequences of the verdict were ex-ante unknown as there were several scenarios possible depending on the judgement of the court and the severity of subsequent legislative changes. However, the expectation of a significant increase of the tax burden on (large) businesses was predominant, due to which business owners were incentivised to conclude their succession before the verdict.

We find that transfers of business assets in the form of gifts react very strongly and in an extremely timely manner to the risk of a future tax rate increase. For our first event, which threatened an increase in the effective tax rate (ETR) of up to 30%, we find that the excess number of transfers is more than 9 times higher than the average number of transfers in the counterfactual period. This observation is unexpected given the empirically documented obstacles to timely inter vivos transfers of ownership in the literature (Schmalbeck 2001; Kopczuk 2007) and the short period of opportunity for behavioural responses, as the event could only be anticipated four months in advance. For the verdict of the Constitutional Court, where the exact tax implications were not clear *ex ante*, we still find an excess mass of transfers five times higher than what we would expect absent the event. The observed pattern is particularly pronounced for high-value transfers, with individuals in the highest wealth quartile being almost twice as responsive as the average transfer. This might be due to higher tax literacy, better-informed tax consultancy, or fixed costs of avoidance coupled with higher amounts of wealth at stake compared to lower-value transfers.

Our heterogeneity results with respect to transfer characteristics suggest that transfers made within Event Window I are more likely to benefit a minor or a daughter of the

<sup>&</sup>lt;sup>4</sup> The German abbreviation GmbH stands for *Gesellschaft mit beschränkter Haftung*, which is a legal form akin to a limited liability company (LLC) in both commercial law and tax law. It is restricted to non-listed, privately-held companies.

 $<sup>^5</sup>$  Assuming a 30% tax rate on the cash transfer and abstracting from the costs for setting up a corporation as well as fees for tax advisors and notaries.

donor and that effective tax rates are significantly lower for these transfers. We fail to detect such heterogeneity in Event Window II, which suggests that business transfers in the first event window are fundamentally different from transfers in the second event window. The observed pattern is consistent with a factual transfer of cash rather than control of an actual company.

We further quantify the extent of gift tax avoidance implied by the re-timing of business transfers. To this end, we perform the following thought experiment. Suppose that the excess transfers we identified were not taxed under the relevant schedule at that time, but under the provisions that were expected to be applicable after the respective point of the event windows. How much revenue did the German government lose in this hypothetical scenario due to re-timing responses? To provide a nuanced picture that takes into account the uncertainty individuals faced when forming their transfer decision, we simulate a variety of scenarios that differ in the tightness of applicable tax rules. We estimate the corresponding amount of foregone tax revenue to amount to up to EUR 12 billion, which exceeds the total tax revenue from gifts and inheritances of EUR 4.2 billion in the reference year 2011 by a factor of 2.8. Altogether, our findings suggest that gift tax policy design which disregards the behaviour of business owners has adverse fiscal and distributional consequences.

We contribute to two related strands of the literature. Our main contribution lies in showing the timeliness with which wealthy business owners respond to threats of (adverse) tax changes. Early empirical evidence on the general responsiveness of wealth transfers to taxation was gathered by Bernheim et al. (2004) and Joulfaian (2004). Bernheim et al. (2004) use cross-sectional data from the Survey of Consumer Finances (SCF) to show that intergenerational wealth transfers in the US are responsive to estate and gift tax changes.<sup>6</sup> They find weak evidence that behavioural responses are stronger for highervalue transfers. By utilizing administrative gift tax assessment data, we are able to overcome the incomplete coverage of the wealthiest individuals inherent to surveys such as the SCF. From a macroeconomic perspective, Joulfaian (2004) uses aggregate time series to show large responses of overall gift volume in anticipation to tax changes in the US. His analysis supports the notion that inter vivos giving responds to anticipated tax changes through inter-temporal substitution. Closer to our institutional setting and by using survey data of German firms, Hines et al. (2019) also find that wealth transfer taxes significantly influence the timing of gift transfers. More precisely, they show that German family firms are more likely to conduct a succession after a tax reform in 2009 favourable for transfers of businesses. This finding is consistent with work by Glogowsky (2021), who, using tax return data on German inheritances and gifts, documents that tax

<sup>&</sup>lt;sup>6</sup> Inheritance and gift taxes are levied at the level of the recipient of a wealth transfer whereas estate taxes target the wealth giver (i.e. the decedent). When referring to wealth transfer taxes, we relate to all three tax types. The term bequest taxes comprises both estate and inheritance taxes.

optimisation patterns quickly adapt to the post-reform tax rates. Our approach builds on these insights by exploiting the high-frequency nature of the administrative tax data. This allows us to demonstrate the enormous speed in which inter-temporal shifting among the wealthy occurs. In particular, for both of our events we provide evidence of a trade-off between tax minimization and retaining control: business owners wait until the very last moment before locking in their transfer decision.

Second, we shed new light on the response channels of wealthy individuals to tax policy. Wealth (transfer) tax avoidance channels include deliberately under- or overvaluing assets (Montserrat 2019; Poterba and Weisbenner 2003), shifting housing assets between family members to reduce property taxes (Di Porto et al. 2021) or geographic relocation (Brülhart et al. 2022; Moretti and Wilson 2023). As being wealthy often coincides with owning a business, a growing number of studies specifically examine the role of closely held businesses in their owners' tax avoidance strategies. Alvaredo and Saez (2009) and Duran-Cabré et al. (2019) demonstrate that business owners responded to the Spanish wealth tax by shifting non-business assets into tax-exempt business shells. More recently, Micó-Millán (2024) finds evidence of the same behaviour for a Catalan inheritance tax reform, emphasising that the tax-induced change in asset composition alone accounted for half of the post-reform tax revenue decrease from inheritances. The use of (closely held) firms as tax shelters is further also documented in the context of income shifting between personal and corporate tax bases (Romanov 2006; Alstadsæter et al. 2014) and the labelling of business owners' private consumption as tax-exempt business expenditures (Leite das Neves 2024).

We contribute to this emerging field within the literature by considering a setting in which transferring assets in the form of (closely held) business was essential to avoid high tax rates (Event Window I). Further, by exploiting differences in transfer characteristics between our two events, we can distinguish between mere tax-motivated asset transfers in business ownership (Event Window I), and transfers of actual business control (Event Window II).

In Section 2, we provide an overview about the preferential treatment of business assets under German inheritance and gift tax law. We also depict its development over time and define the two event windows that we use for our empirical approach. In Section 3, we describe our data, and in Section 4 we explain our methodology and provide our main results. We explore characteristics of the transfers within the bunching window in Section 5. The quantitative implications of our main results in terms of foregone tax revenue due to tax avoidance are shown in Section 6, followed by a discussion and conclusion in Section 7.

# 2 Institutional Background

#### 2.1 Taxation of Wealth Transfers in Germany

Tax Treatment of Wealth Transfers. Germany levies an inheritance tax on bequests at death, i.e., a tax on the enrichment of the heir. Gifts are treated in the same way as inheritances under German tax law. From a tax perspective, it should not matter whether wealth is transferred during the lifetime of the donor or only after his demise.<sup>7</sup> The starting point for the tax base is the gross wealth transferred to the recipient. In the case of a gift, the donor is free to choose the amount and the recipient of the transfer.<sup>8</sup> In principle, all types of wealth are subject to the transfer tax.

However, there is an exhaustive list of personal and objective exemptions depending on the relationship between the donor and the recipient as well as the type of asset transferred. The tax liability is based on the gross value of the assets received, after deducting the liabilities of the estate and the exemptions. The tax base is increased by transfers received by the same donor in the ten years preceding the taxable event, i.e., the date of death or the date of the gift. The inheritance and gift tax levied increases over seven tax brackets of taxable bequests. In general, tax rates are lower for close family members and increase as the degree of kinship decreases. Table A1 shows the tax schedules for the three tax regimes during our sample period. The highly progressive rates range from 7 % in tax class I up to 50% for transfers higher than EUR 13 million to unrelated persons.<sup>9</sup>

**Preferentially treated asset classes.** As in most EU countries, the German inheritance and gift tax law grants preferential treatment to certain asset classes, namely, agricultural assets, business assets and substantial shareholdings in corporations.<sup>10</sup> The preferential treatment of these asset classes is generally justified with the notion that the continuance of companies is in the public interest. As productive enterprises secure jobs and foster economic growth, they are argued to benefit society as a whole. However, the distinction

<sup>&</sup>lt;sup>7</sup> Differential tax treatment of *inter vivos* gifts and inheritances would create incentives to exploit one form of transfer in order to avoid taxation of the unfavourable means of transfer.

<sup>&</sup>lt;sup>8</sup> In case of an inheritance, there is a default line of succession with fixed proportions depending on the degree of kinship. This can be overridden to some extent by specifying a last will.

<sup>&</sup>lt;sup>9</sup> As the inheritance and gift tax is designed as a stepwise proportional tax, the legislator grants a special provision (*Härteausgleich*) that prevents the average tax rate to increase substantially at the bracket cut-off points. Instead, the law allows for transition areas characterized by marginal tax rates of 50% if the statutory tax rate is lower than 30%, and 75% if the statutory rate is higher than 30%, until the average tax rate has caught up to the higher level of the next bracket.

<sup>&</sup>lt;sup>10</sup> The definition of business assets comprises shares in partnerships and sole proprietorships. The definition of substantial shareholding refers to the donor of the wealth transfer possessing a minimum share of 25% in a corporation. This minimum share can be reached individually or through joint ownership, under the condition that joint ownership entails joint action inside the firm. See Houben and Maiterth (2013) and Bräutigam and Spengel (2021) for a comprehensive description and critique of this preferential taxation regime. Further, the transfer of self-occupied real estate also receives preferential treatment from German inheritance and gift taxation, albeit in different sections of the tax code.

between justified exemptions in the public interest and excessive privilege is not always clear cut.

Since 2009, the German legislation distinguishes between *productive business assets* and so-called *administrative assets* (*Verwaltungsvermögen*). Stemming from the rationale that only productive business assets should be taxed preferentially, these administrative assets are defined as assets which are not strictly necessary to successfully run the business.<sup>11</sup>

Crucially, the legal definition of administrative assets at the time did not include cash holdings, which was subsequently exploited by wealthy individuals to transfer their private wealth tax neutrally through use of a scheme called "Cash-GmbH". This tax avoidance scheme involved setting up a corporation and depositing cash into the company assets. As cash was not deemed to be harmful administrative assets, the cash within the corporation qualified for preferential treatment and could benefit from the generous exemptions for productive assets.<sup>12</sup> If tax subjects were willing and able to set up a corporation, they could pass-on basically unlimited cash holdings without being subject to the gift tax law, by making use of the provisions for productive assets detailed below.

**Exemptions for productive assets.** Any agricultural assets, business assets and substantial corporate shareholdings that are not classified as administrative assets are in principle eligible for two possible modes of preferential taxation. First, the law allows for a regular exemption of 85% (*Regelverschonung*). This means that only 15 % of the taxable transfer of this asset type is considered in the tax base. The main requirements for the exemption to be applicable are that the transferred business could not be sold in the five years following the transfer and that the average sum of wages over this holding period could not be reduced by more than 20 %. This regular exemption could be replaced by a more generous but also more restrictive optional exemption of 100% (Optionsverschonung). In order to obtain a full exemption, the business should not be sold for a duration of seven years and the average sum of wages over the now seven year holding period could not be lowered. When filing her tax return, the recipient had to decide which exemption model should be applied. She was then locked into this decision, without the possibility to change to the less or more restrictive regime at a later point. If the requirements for the exemptions were violated at the end of the relevant period, the tax was proportionately re-levied. Importantly, the exemption was granted irrespective of the amount of wealth

<sup>&</sup>lt;sup>11</sup> E.g., properties granted for use by third parties, corporate shareholdings of 25% or less, art objects or financial asset shares.

<sup>&</sup>lt;sup>12</sup> An additional benefit of using cash as productive assets was that this cash increased the share of productive assets relative to administrative assets in the company. As the exemption was granted on the overall company value as long as administrative assets were not higher than 50% of the total company value, cash injections could be used to cover for a larger share of non-productive business assets, such as rental property.

transferred or the economic situation of the business in question.

#### 2.2 Legislative Development and Leveraged Reforms

For our analysis, we exploit two events in the legislative development of the inheritance and gift tax law in Germany, which caused a substantial revision of the expectations of tax subjects with regard to their future tax liabilities. The respective windows for behavioural responses to these events had clearly defined end points, which were known to the public at the announcement date. This common feature allows us to cleanly identify transfer allocation within the event windows. Figure 1 illustrates the two event windows we will focus on in our analysis and in the exposition below.

Figure 1: Major Events during the Legislative Development of the Inheritance and Gift Tax



**Notes:** This figure shows the most important legislative events during our sample period. The last major reform which introduced the exemptions for business assets was implemented in 2009. Event Window I starts with the submission of the draft proposal from the German Federal Council regarding the effective abolition of the Cash-GmbH avoidance scheme, effectively banning masked cash transfers through shell corporations, and ends just before the parliament debate on 25 Oct 2012. Event Window II includes the time between the announcement of the verdict of the German Constitutional Court in November 2014 until the day of judgement on 17 December 2014. The court decided on whether the preferential treatment provisions in general were constitutional and had the power to set a retroactive implementation date.

Source: Troll/Gebel/Jülicher/Gottschalk: ErbStG, "XI. Entwicklung der ErbSt von 2009 bis 2016", 2021.

**Event Window I: (Failed) ban of the Cash-GmbH.** As noted in the previous section, an elementary flaw of the newly implemented provisions exempting business assets from inheritance and gift taxation was the administrative asset catalogue. As cash was not explicitly named in the definition of an administrative asset, paying wealth transfer taxes could be circumvented rather easily. In order to close this gaping loophole in the tax code,

the Federal Council (*Bundesrat*) submitted a draft proposal on 6 July 2012 to the German Parliament (*Bundestag*), which included a respective amendment of the administrative asset catalogue. The Parliament decided on 25 October 2012 on this provision change that would ban the transformation of cash into preferentially treated business assets. If the parliament had decided in favour of the legislative change on that day, the scheme would have been rendered impossible with immediate effect. This was also the expected outcome of the debate.

For individuals planning to make use of this tax saving vehicle, the abolition would entail the loss of a factual 100% exemption and in turn an increase in the effective tax rate from zero to about 30%.<sup>13</sup> Especially for wealthy individuals, this change in effective taxation would entail a massive loss of wealth to the family. For instance, a taxable amount of EUR 26 million passed on after the debate would be subject to an increase in the tax burden levied on the transfer by close to EUR 8 million. However, the Parliament could not produce the required majority and the current provision stayed in place until 7 June 2013, when the provision was eventually adjusted. The public discussion of the planned changes to the tax code started on 4 July 2012 after the submission of the draft proposal and culminated in the weeks imminent to 25 October 2012.<sup>14</sup> This is indicated by Figure 2, which shows the monthly count of newspaper articles including the search term "Cash-GmbH" on the Dow Jones Factiva database. The figure shows a clear spike in media attention around the submission of the draft proposal in July 2012, with a surge just prior to the parliament debate in October of the same year and extended coverage afterwards until the loophole was finally closed in 2013.

**Event Window II: Verdict of the Federal Constitutional Court.** In September 2012, the Federal Financial Court (*Bundesfinanzhof*) appealed to the Constitutional Court inquiring whether the preferential treatment of business assets was in violation of the constitution.<sup>15</sup> In its inquiry, the Financial Court argued that the far-reaching or even complete exemption of preferentially treated asset classes were excessive and unsubstantiated. Such an exemption would assume that the wealth transfer tax endangers business continuation. Yet, the actual exemption did not take into account the transferred value or the capacity of the recipient to bear the tax burden. For instance, there were no provisions to verify the existence of sufficient liquid funds to pay the tax, or whether such funds could be acquired in case that the tax would be deferred. It further stated that the notion of preserving jobs as an argument for exempting businesses was flimsy, as the vast major-

<sup>&</sup>lt;sup>13</sup> Assuming a transfer to a close family member in excess of EUR 26 million. Also for transfers of smaller wealth levels, the increase in effective tax rates was still substantially above 0%, see Table A1.

<sup>&</sup>lt;sup>14</sup> The introduction of the new law failed because the law change involved some more controversial provision changes such as tax benefits for same sex partnerships. For more details see Bundesrat 6 July 2012, 302/12.

 $<sup>^{15}\,\</sup>mathrm{Bundesfinanzhof},$  27 Sep 2012, II R 9/11.



Figure 2: Newspaper articles including the term "Cash-GmbH"

**Notes:** This figure shows the monthly count of German newspaper articles containing the search term "Cash-GmbH" from January 2012 until August 2013. The red vertical lines indicate the date of the submission of the draft proposal by the German Federal Council on 6 July 2012 as well as the date of the parliament debate in the German Parliament on 25 October 2012. **Source:** Dow Jones Factiva, accessed on 10 November 2022.

ity of companies taxed had less then 20 employees, which automatically excluded them from the job preservation requirement. After the inquiry of the Financial Court, individuals had to expect that the generous exemption provisions were destined to change for the worse (Mödinger and Kaiser 2018). Tax consultants publicly urged business owners to conclude their succession before the verdict of the Constitutional Court.

At this point it is instructive to consider the possible scenarios business owners could be confronted with, depending on the outcome of the court's decision. The three scenarios are summarized in Table 1. One possible albeit improbable outcome was that the Constitutional Court would dismiss the critique of the Financial Court and approve the existing rules. Second and similarly improbable was the outcome that the court would find all provisions of the wealth transfer tax law in its current form (or only the provisions in question) to be void and in need of a fundamental reform. In that case, the provisions deemed as void would not have been applicable for any transfer occurring after the verdict. Note that the court has the power to declare certain provisions as void but cannot enact new legislation. In that case, the legislator would need to implement a new form of the law in accordance with the court's demands. This outcome would have had a similar effect as the abolition of the Cash-GmbH for companies, if only the provisions for preferential treatment of business assets was deemed to be void. In effect, this "worst case scenario" would have caused a substantial increase in effective tax rates as well. Finally, the court could reach a similar verdict as in 2006 and find that the law in its current form was incompatible with the constitution. This judgment would differ from the previous one in the sense that the law in its current form would remain applicable until the legislator has reformed the current provisions. However, even in that case the legislator could in principle backdate the reform to the day of judgment.

Hence, in order to hedge against Scenario 2 or 3, individuals would need to complete their transfers before the verdict. Despite some outcomes being more probable than others, each one was a possibility and remained so until judgment day.

The Constitutional Court decided on the case in 2014, which was announced at the beginning of the same year. The oral hearing took place on 8 July 2014 and the passing of verdict was announced on 18 November and promulgated on 17 December.<sup>16</sup> Hence, the public knew that the court would decide on the case at some point during 2014 at the beginning of the year. The ruling of the Constitutional Court was salient in the media and public interest was high. Figure 3 shows trends in the Google search index for the term inheritance tax (*Erbschaftsteuer*) during 2014.<sup>17</sup> The figure features two sizeable spikes around the week of the oral hearing in July as well as the day of judgment in December. The first senate of the court declared the provisions granting preferential treatment to business assets to be incompatible with the constitution, i.e., scenario three was realized. In its verdict, the court deemed the exemptions to be excessive and for that reason unconstitutional and demanded an adjustment of the law until end of June 2016.<sup>18</sup>

# **3** Data and Descriptives

#### 3.1 Data

We use German inheritance and gift tax return data provided by the RDC of the Federal Statistical Office and the Statistical Offices of the Federal States for the years from 2007 until 2019.<sup>19</sup> This dataset covers all wealth transfers whose tax determination dates

 $<sup>^{16}</sup>$  See the corresponding press release no. 102/2014 from 18 November 2014.

<sup>&</sup>lt;sup>17</sup> Interestingly, the Google trends index for the term "Cash-GmbH" did not show substantial variation during 2012. We view this as indication that Event Window I was less relevant for the general public but rather for a specific subgroup that was advised by professional tax consultants.

<sup>&</sup>lt;sup>18</sup> After a lengthy legislative process, the provisions in question were adjusted on 4 November 2016 with retroactive application for taxable events since 1 July of that year. Instead of a fundamental reform of the law, the legislator adjusted the provisions selectively to comply with the demands of the court verdict. The main changes included a melt-down of the exemption percentage for major acquisitions, a means test of the recipient, as well as a tightening of the job preservation requirements to include companies with five or more employees.

<sup>&</sup>lt;sup>19</sup> Erbschaft- und Schenkungsteuer-Panel (EVAS 73611).

Decision	Meaning	Implication
Amnesty	Court finds provisions to be in line with the constitution	No change
Void	Inheritance and gift tax law (or just preferential treatment) is void	Day of judgment terminates pref- erential treatment immediately
Incompatible	Not void but incompatible with the constitution	For the time being, law remains applicable but provision change might be applied retroactively to transfers since judgment day.

 Table 1: Possible Decisions of the Constitutional Court and Implications

**Notes:** This table shows the different decisions the German Constitutional Court could have reached in response to evaluating the preferential treatment provisions in 2014, together with the implications each decision would have had on the applicability of the law. The implications of an incompatibility decision were highly uncertain, as neither the degree nor precise timing of tightened provisions were known beforehand.

fell into this period.<sup>20</sup> The data consist of repeated cross-sections, where the unit of observation is an individual tax assessment. As the records are heavily anonymized, we can only track assessments connected to the same transfer, however, there is no identifier for individuals.

The data contain information about giver and recipient characteristics (i.e. birth dates, sex, state, responsible financial office) and relational degree, tax base details and the tax rate as well as taxes paid. They further include three different variables relating to the relevant dates: the date of taxable event, the date of tax generation and the date of tax assessment. For our purposes, the date of taxable event is of main interest, as it allows to track the transmission of wealth at a daily frequency. It coincides in most cases with the date of tax generation, which constitutes the date of the legal recognition for tax purposes.<sup>21</sup> For our analysis, we always keep the most recent date of tax assessment, as deviations between initial and final tax assessments can be substantial. Apart from these time-related variables, our analysis uses different elements of the tax base. Primarily, these are the different asset classes provided for in the inheritance and gift tax returns, i.e. agricultural assets, business assets and company shares (see Section 2 for an elucidation).

<sup>&</sup>lt;sup>20</sup> As inheritance and gift tax returns are usually filed and administered at least one year after the taxable event and with an average time lag of three years (see Figure A2 in the appendix), our dataset effectively covers earlier periods than 2007. On the one hand, the data also contain transfers where the taxable event occurred already in 2006. On the other hand, coverage of taxable events in the years 2018 and 2019 is likely incomplete, as a substantial share of same-year tax cases has not been assessed yet. Both years are (potentially) missing those gifts and inheritances that were filed late or took a long time to administer (for instance due to family conflicts).

<sup>&</sup>lt;sup>21</sup> The date of tax assessment on the other hand is important to understand the data structure and the different steps of the administrative process from initial to final tax determination. Moreover, it is essential to establish uniqueness of observations per transfer date and recipient.



Figure 3: Google Trends index for "Erbschaftsteuer" between 2012 and 2016

**Notes:** This figure shows a search index for the term "Erbschaftsteuer" (=Inheritance Tax) for the period between January 2012 and January 2016. The dashed vertical lines indicate points in time of public interest, namely the day of the oral hearing of the German Constitutional Court on 8 July 2014 as well as the day of verdict on 17 December 2014. **Source:** Google Trends, accessed on 5 May 2022.

Overall, the data provided by the RDC cover about 3 million assessments over the whole sample period from 2007 to 2019. Table 2 shows the sample selection process for our final sample. We first eliminate transfer types that are generally not of interest for our analysis, such as erroneously calculated tax amounts or special cases of inheritance taxation. Second, we eliminate transfers with missing birth dates or missing age information. We then establish uniqueness of transfers by always keeping the last tax assessment for a given transfer case, which additionally ensures that our values correspond to the latest update to the values in the tax returns.<sup>22</sup> These initial selection steps leave us with roughly 2 million unique transfers. We further exclude negative asset transfers and transfers before 2009 and after 2017. Transfer values before 2009 where based on different valuation principles and the preferential treatment provisions were only introduced with the 2009 reform. We exclude observations after 2016 because of the lag between taxable event and tax assessment, which leads to these periods not being representative of overall

<sup>&</sup>lt;sup>22</sup> Unfortunately, the identifier for a given inheritance or gift case is not reliable as a panel identifier. The original tax return number is given by the responsible financial office, which may already be used by another financial office. Furthermore, the tax number is not kept when an individual moves and challenges a tax assessment later. As we are provided with an anonymized identifier based on the tax number, we are unable to distinguish these cases and produce our own identifier based on gender and birth dates of the donor and recipient, their relational degree and the responsible financial office. Our results are robust to relying on the tax return number as the initial identifier.

Selection Step	Obs.	$\Delta$ Obs.
Overall transfers assessed between 2007 and 2019	3,025,788	
Regular transfer types	2,650,154	-375,634
No birth date nor age for nat. pers.	2,480,155	-169,999
Establish uniqueness	2,094,912	-385,243
Restricting to non-negative asset transfers	2,080,392	-14,520
Restricting to transfer years 2009 until 2017	1,324,195	-756, 197
Restricting to gift transfers	281,545	-1,042,650

 Table 2: Sample Selection

**Notes:** This table shows the selection steps taken for our final analysis. Before selection step four, the unit of observation is an individual tax assessment. Therefore, a specific inheritance or gift transfer can occur multiple times, with one observation for each tax re-assessment. Regular transfer types refers to the exclusion of special transfer types such as pre- and post-inheritances, cross-border cases, taxation of family foundations at fixed time intervals, cases with erroneously calculated tax amounts and intended use.

**Source:** Authors' calculations based on data from the RDC of the Federal Statistical Office and the Statistical Offices of the Federal States.

transfers. The initial sample of unique transfers consists of 1.3 million receipts, the vast majority of which (79%) are inheritances. Our period of interest includes 281,545 unique gifts.

#### 3.2 Descriptives

Table 3 provides an overview of the gift sample separated by the major asset class of the transfer.<sup>23</sup> The table illustrates several interesting features of the data. First, the preferentially treated asset classes (agricultural property, business assets, and company shares) are on average of higher overall transfer value compared to transfers of cash and real estate. The distributions of all asset classes are highly skewed to the right, with mean values being several orders of magnitude higher than the median. Second, recipients of preferentially treated assets are on average five to eight years younger when receiving a gift when compared to the recipients of real estate or cash and financial assets.

Third, because of preferential treatment, effective tax rates are substantially lower for agricultural property, business assets and company shares, with an average effective tax rate of less than one percent. We can also see that not all transfers of favoured asset classes are fully exempt from taxation. Incomplete take-up of preferential taxation does not come as surprise. Especially for transfers of low-value assets, applying for preferential taxation came at a cost (restrictions to minimum payroll sums and holding periods, see section 2) while the amounts of assets transferred were below the generally high allowance values. This could incentivize owners of small businesses and especially agricultural asset

<sup>&</sup>lt;sup>23</sup> The major asset class is defined as the asset class that constitutes the largest share of the overall gift value. For instance, a transfer where EUR 10 million of business assets and 5 million of real estate are gifted, the major asset type of the transfer is defined as business asset.

owners to refrain from receiving preferential tax treatment.

Fourth, cash and financial assets have the highest share of recipients below legal age. Finally, gifts of preferentially treated assets are twice as likely to go to a son than to a daughter of the donor. In contrast, the gender distribution of receipts of cash and real estate is close to equality. For comparison, we show the same descriptive table for bequests in Table A2 in the appendix.

For our analysis, we restrict this initial sample to all transfers that include (nonnegative) values for the sum of agricultural assets, business assets and company shares.<sup>24</sup> This definition includes roughly 12,000 transfers in which none of the preferentially treated assets constitute the major asset type of the transfer. This final restriction reduces the sample size to 76,943 gift transfers over the period from 2009 to 2017.

<sup>&</sup>lt;sup>24</sup> Tax law stipulates that the value sum across all three asset categories shall be considered for preferential taxation. Due to the application of the net principle, only positive sums are relevant for tax purposes.

	Obs.	Mean	Std. Dev.	P01	P50	P99
Agricultural property						
Overall value of receipt	$11,\!561$	294.02	527.52	0	160	1,918
Age of Recipient at Transfer	$11,\!558$	40.70	11.71	19	39	75
Effective tax rate (p.p.)	$11,\!561$	0.44	1.98	0	0	11
Share of fav. assets (p.p.)	$11,\!526$	63.40	38.64	0	77	100
Above Allowance	$11,\!561$	0.32	0.46	0	0	1
Minor Recipient	$11,\!558$	0.01	0.08	0	0	0
Son	$11,\!561$	0.52	0.50	0	1	1
Daughter	$11,\!561$	0.14	0.34	0	0	1
Female Giver	$11,\!561$	0.35	0.48	0	0	1
Business assets						
Overall value of receipt	31,950	5,720.97	67,791.89	5	687	73,076
Age of Recipient at Transfer	31,884	40.02	13.38	8	40	78
Effective tax rate (p.p.)	$31,\!938$	0.46	2.28	0	0	13
Share of fav. assets (p.p.)	31,894	82.21	34.83	0	100	100
Above Allowance	$31,\!950$	0.71	0.45	0	1	1
Minor Recipient	$31,\!884$	0.04	0.19	0	0	1
Son	$31,\!950$	0.55	0.50	0	1	1
Daughter	$31,\!950$	0.26	0.44	0	0	1
Female Giver	$31,\!950$	0.31	0.46	0	0	1
Cash and financial assets						
Overall value of receipt	$95,\!379$	172.05	655.07	0	50	1,855
Age of Recipient at Transfer	$94,\!575$	48.68	17.62	4	49	87
Effective tax rate (p.p.)	$95,\!304$	4.36	7.23	0	0	29
Share of fav. assets (p.p.)	520	48.39	48.89	0	26	100
Above Allowance	$95,\!379$	0.62	0.49	0	1	1
Minor Recipient	$94,\!575$	0.05	0.21	0	0	1
Son	$95,\!379$	0.23	0.42	0	0	1
Daughter	$95,\!379$	0.20	0.40	0	0	1
Female Giver	95,379	0.50	0.50	0	1	1
Company shares						
Overall value of receipt	21,789	3,597.52	24,732.95	1	415	58,150
Age of Recipient at Transfer	21,716	40.65	14.37	7	40	79

 Table 3: Descriptive Statistics of Gift Sample

	-		-			
Effective tax rate (p.p.)	21,784	0.72	3.03	0	0	18
Share of fav. assets (p.p.)	21,756	71.92	42.45	0	100	100
Above Allowance	21,789	0.65	0.48	0	1	1
Minor Recipient	21,716	0.04	0.19	0	0	1
Son	21,789	0.44	0.50	0	0	1
Daughter	21,789	0.22	0.42	0	0	1
Female Giver	21,789	0.32	0.47	0	0	1
Real estate						
Overall value of receipt	120,866	266.30	510.92	6	129	1,757
Age of Recipient at Transfer	120,820	45.47	15.07	13	45	81
Effective tax rate (p.p.)	120,850	3.47	5.64	0	0	24
Share of fav. assets (p.p.)	$11,\!123$	57.63	48.15	0	100	100
Above Allowance	120,866	0.42	0.49	0	0	1
Minor Recipient	120,820	0.02	0.13	0	0	1
Son	120,866	0.23	0.42	0	0	1
Daughter	120,866	0.19	0.39	0	0	1
Female Giver	120,866	0.51	0.50	0	1	1

Table 3: Descriptive Statistics of Gift Sample Continued

**Notes:** This table shows descriptive statistics for the sample of gifts after our selection process detailed in Table 2. The overall value of receipt is expressed in Thousand Euros. Above Allowance is an indicator for a transfer above the personal allowance of the recipient, Minor Recipient is a dummy variable equal to one if the recipient is below 18 years old at the time of transfer. Son and Daughter are indicator variables indicating the recipient gender and relation of the recipient to the donor. Female Giver is an indicator equal to one if the giver is female. Summary statistics are given for each asset type separately. For comparison purposes we also show asset classes that are not the main focus of our analysis, namely, cash and financial assets as well as real estate.

### 4 Excess Mass Estimation

#### 4.1 Methodology

The shifts in expectations regarding effective tax rates for preferentially treated asset classes created large incentives for re-timing responses within the event windows described in Section 2. Individuals who expected their effective tax rate to change for the worse after the end point of the respective event window (25 Oct 2012 and 17 Dec 2014), were incentivised to conclude their wealth transfers of preferentially treated assets before these final deadlines.<sup>25</sup> Bunching in the distribution of transfers in the event windows over time allows us to estimate these short-term re-timing responses.

Bunching methods have been used extensively in the literature to estimate causal behavioural effects. The basic methodology was developed in the tax context by contributions of Saez (2010), Chetty et al. (2011) and Kleven and Waseem (2013) and has since then found many applications in the social sciences (see Kleven (2016)) for a recent overview of methods and applications). The basic idea of the bunching approach is to quantify the behavioural responses elicited by a discontinuity in incentives by estimating the excess mass in a distribution of interest. We derive adjustment responses by estimating the excess mass in the distribution of weekly wealth transfers around the event dates. In our particular case, we utilize an alternative to the classical polynomial based approach in which we use the unaffected 2010 to 2011 distribution as a counterfactual. This so-called Difference-in-Bunching approach has been applied in several recent studies, e.g. Brown (2013), Best and Kleven (2017) or Buhlmann et al. (2020), and relies on a suitable reference distribution as counterfactual to the distribution in the event window. The counterfactual distribution allows us to model how transfer behaviour would have looked like absent the events and attribute the excess mass of transfers to behavioural responses. By relying on actual data rather than approximations based on polynomial extrapolation, the method avoids some of the assumptions invoked, which we consider to be violated in our application.<sup>26</sup>

<sup>&</sup>lt;sup>25</sup> From a tax planning perspective it would be optimal to set the transfer date as close to the deadline as possible. One reason for this is the potential of new information coming in, potentially rendering the re-timing no longer necessary. Another reason to delay the transfer for as long as possible was that transferring a business is a complex endeavour, which takes time to plan and execute correctly.

<sup>&</sup>lt;sup>26</sup> For example, the polynomial approach generally assumes that observations farther away from the threshold are not affected by the discontinuity. In a robustness check, we also estimate the excess mass using the polynomial approach and find quantitatively similar results.



#### Figure 4: Evolution of Preferentially Treated Asset Transfers by Type

**Notes:** This figure depicts the evolution of assets transfers eligible for preferential treatment over time, split up between gifts and inheritances at the recipient-receipt level. Each point represents the number of transfers of preferentially treated assets (agricultural property, business assets and company shares) in a specific week.

Figure 4 illustrates our approach graphically. It depicts the annual distributions of transfers of preferentially taxed asset classes in weekly bins throughout our sample period. The figure distinguishes between inheritances and gifts and covers taxable event years from 2009 to 2017. Several patterns are worth emphasizing. First, inheritances are distributed almost uniformly across years. This suggests that the date of death is not strategically chosen for tax planning purposes in our sample. It is also suggestive that the patterns we observe for gifts are not artifacts of some underlying trends in transfer behaviour. In stark contrast, the distribution of gifts features sizeable spikes at specific dates throughout the observed period.

Second, we observe substantial start- and end-of-year bunching as well as mid-year bunching, the latter albeit to a much smaller extent. These patterns can likely be explained by the end of the financial year. This is generally 31 December for most companies and 30 June for agricultural enterprises. The financial year may be relevant for a transfer decision, as valuation is generally based on the firms operating income.<sup>27</sup>

Third, there are irregularities in our event windows of interest, namely, in the third quarter of 2012, as well as in December 2014, as well as around mid-year of 2016, where we observe the highest mid-year spike of our sample period as well as a level-drop in the period afterwards. Finally, we detect a declining trend in inheritances starting in 2017, which we attribute to the administrative lag between taxable event and tax assessment, as well as the effect of the 2016 reform.

From our analysis of the legislative development and the graphical evidence just presented, we have identified the period from January 2010 until July 2012 as candidate for a "regular" transfer distribution without contamination from behavioural responses. By the onset of this period, enough time has passed since the 2009 reform for individuals to become familiar with the adjusted provisions. At this point, expectations for a stable legal framework could be formed. Importantly, the legislative discussions initiated in July 2012 could not be anticipated by the public beforehand. Hence, we have a stable legal framework during that time, and the gift transfer distribution only features the common start-, mid- and end-of-year spikes.

For illustration purposes and normalization, we consider the transfer distribution one year around the event date, i.e., 26 weeks before and after the respective end point of the event window (=normalization window). In order to be able to directly compare the distributions of transfers in our event windows with the counterfactual of the reference year, we have to account for level differences in transfers. Hence, we divide the weekly

<sup>&</sup>lt;sup>27</sup> Valuation of business assets for the purposes of the inheritance and gift tax is generally based on the market value. As this market value is commonly not available, alternative valuation methods such as the simplified income capitalization approach (*Vereinfachtes Ertragswertverfahren* may be used (§§199,200 BewG). Under this approach, the average operating income over the last three years is multiplied with a capitalization factor to reflect future earnings prospects. Hence, valuation is easiest when the transfer occurs just after a financial year end.

bin counts by the total sum of transfers in the normalization window. The normalized bin counts then represent the proportion of transfers in that week relative to the overall transfers occurring in that period.

More formally, let  $n_i$  denote the number of transfers in bin  $i \in \{-26, \ldots, 26\}$  and  $\tilde{n}_i \equiv n_i / \sum_{j=-26}^{26} n_i$  the normalized bin count. After visually identifying the bunching region, we calculate the excess mass  $\hat{b}$  by the difference in bin counts between the transfer distribution in the event window and the counterfactual, normalized by the average bin count of the counterfactual distribution in the bunching region:

$$\hat{b} = \frac{\sum_{i=L}^{U} (\tilde{n}_i - \hat{\tilde{n}}_i)}{\sum_{i=L}^{U} \hat{\tilde{n}}_i / N_i}$$
(1)

where  $N_i$  is the number of bins in the bunching region and  $\hat{n}_i$  is the normalised bin count for the counterfactual year. Hence,  $\hat{b}$  estimates the excess number of transfers in the bunching region relative to the average height of the counterfactual. Multiplying the excess mass with the bin width yields an estimate of the average timing response. Following Buhlmann et al. (2020), we construct standard errors for our excess mass estimates using a non-parametric bootstrap procedure. We randomly sample individual transfers in our estimation sample with replacement and calculate a new sample of counts based on which we then re-estimate the excess mass. This process is repeated 1,000 times yielding a vector of excess mass estimates. We use the standard error of this vector as an estimate for the standard error of  $\hat{b}$ .

#### 4.2 Difference-in-Bunching Estimates

We move on to quantify the observed behavioural responses using the difference-inbunching framework. The results for our two main events of interest are presented in Figures 5a and 5b. Each graph shows weekly normalized bin counts centred around the deadline of interest and the corresponding date in the counterfactual period. The dashed lines at the zero mark indicate the deadline across all figures. The boxes next to the vertical lines display the estimated excess bunching with non-parametrically bootstrapped standard errors in parentheses.

Our chosen reference period seems to constitute a suitable counterfactual for the event period. Outside the bunching regions, the two distributions appear to be remarkably similar.

**Event Window I.** Our first window of interest is the period leading up to the debate about the abolition of the Cash-GmbH on 25 October 2012 in the Bundestag. Recall that the general expectation regarding the outcome of the event was that the Cash-GmbH avoidance scheme would be prohibited with immediate effect by extending the definition of administrative assets to include also excessive cash holdings. Even though the Bundestag

surprisingly did not reach the expected conclusion, expectations had changed beforehand and the transfer decision was already locked in. Therefore, we observe a significant timing response within the event window which is depicted in Figure 5a. The response to the threat of an effective tax rate increase that would entail an increase in tax burden in the millions is large in magnitude. The excess bunching detected constitutes 9.02 times the average size of the counterfactual normalized transfer distribution. As can be seen from the counterfactual distribution, the month of October is not a month where a lot of transfers of preferentially treated assets occur normally, indicating that most of the transfers we observe in that window are purely motivated by tax considerations.

This excess mass of transfer counts also translates in a substantial spike in volume, which is illustrated in Figure 6a. The figure shows the gross value of transfers of agricultural assets, business assets and company shares in the year of 2012. In less than a month, business owners transferred more than EUR 40 billion in anticipation of an adverse tax policy change.

**Event Window II.** A particularly interesting case provides Event Window II, the period leading up to the verdict of the Constitutional court on 17 December 2014. As the concrete tax implications of the verdict of the court where ex ante not known, it provides us with some insight into the beliefs of responding individuals regarding the outcome. As we have illustrated in Section 2, there were three potential outcomes and only some variations of two of them featured immediate detrimental consequences. The risk of retroactive application of any change or the potential voiding of the exemption provisions led a substantial amount of individuals to transfer their assets in the three weeks before the verdict. The results from our estimation are presented in Figure 5b. Our excess mass indicates that the excess of normalized transfer counts is about 5.62 times the average size of the counterfactual in the bunching region and is strongly significant. When compared to the counterfactual distribution, it is apparent that the majority of the estimated excess mass comes from the start-of-year spike normally observed in the transfer distribution. Our results indicate that as a precautionary action to hedge against the possibility of an immediate law change, individuals planning to pass on their business at the beginning of 2015 pulled their transfer forward in time just before the verdict. Figure 6b shows that in terms of volume, the response in the second event window is much more moderate in comparison to the first event window. We see a spike in volume around the oral hearing of the Constitutional Court in July as well as a sharply increasing trend in the months leading up to the verdict, with a substantial spike in December. With an overall volume of business transfers of EUR 10 billion, the response size in December 2014 is equal to only about 25% of the October 2012 volume.

Overall, we detect sizeable timing responses of transfers by business owners preceding expected tax changes. This speaks to the extreme tax literacy of this particular set of individuals, which supports findings by Houben and Maiterth (2013), Mödinger and Kaiser (2018) and Glogowsky (2021) for the German context. Our evidence also shows that the responsiveness is extremely rapid. For our first event window, individuals had only four months to undertake all steps necessary to pass-on a fortune of wealth. In the following sections, we go a step further and investigate response heterogeneity, identify transfer characteristics to speak to the question who bunches, and provide a back-of-the-envelope calculation of the tax consequences.

#### 4.3 Heterogeneous Effects

We repeat the analysis conducted on the main sample on two sets of sample splits to tease out response heterogeneity in our estimates. Of particular interest to us is first, whether the asset classes eligible for preferential treatment respond differently and second, whether wealthy individuals are more responsive than less wealthy ones and whether there are differences for these groups across the two event windows.

**Asset Class.** In a first step, we investigate whether the behavioural response differs across types of preferentially treated asset classes. We subset our data to the three types of transfers, i.e., transfer of agricultural assets, business assets, and company shares and re-estimate the excess mass for each sub-sample. We present the estimated normalized excess masses and two standard error confidence intervals in Figure 7a.

We find that for the first event window, business assets appear to be the most responsive asset class, closely followed by company shares. In comparison, agricultural assets seem to be unresponsive to the abolition of the Cash-GmbH. One contributor to this result might be the fact that transfers of agricultural assets tend to be much smaller in magnitude of wealth transferred, which diminishes the gains from tax planning compared to its cost. It might also more frequently be the case for these assets to fall under the personal exemption thresholds, which makes the provisions for preferential treatment irrelevant. We also detect differences in responses between the two event windows of interest. For the failed ban on the Cash-GmbH scheme, business assets and company shares responded similarly strong, whereas for the verdict of the German Constitutional Court, transfers of business assets are twice as responsive as transfers of company shares.

Wealth Quartile. Second, we are interested in whether wealthy individuals were more responsive to the considered events compared to less wealthy individuals. Given the progressive nature of the tax schedule, more wealthy individuals had higher incentives to respond to the looming threats and given a fixed portion of the costs of avoidance, we expect them to gain more compared to less wealthy ones. To get at this question, we sort individual transfers into quartiles using data between 2009 and 2017.<sup>28</sup> By considering

 $<sup>^{28}</sup>$  We exclude the periods before 2009 for setting the wealth quartiles, as the determination of business



Figure 5: Difference-in-Bunching around Event I and II.

Notes: Figures 5a and 5b display normalized weekly transfer counts for Event Windows I and II detailed in Section 2. The bins for each distribution are expressed as shares of overall transfers occurring around a one-year window around the end point of the event window. Weeks are centred around the end of the event window, where week zero starts with the end point date and includes the six days thereafter. All details are described in Section 4.1. The treated distribution for Figure 5a includes transfers in a one-year window around 25 October 2012 whereas the counterfactual distribution comprises transfers in a the same window around 25 October 2011. The treated distribution for Figure 5b includes transfers in a one-year window around 17 December 2014 whereas the counterfactual distribution comprises transfers in the same window around 17 December 2011. The boxed numbers indicate the excess mass estimate in the three weeks before Event I and II with bootstrapped standard errors in parentheses.

#### Figure 6: Monthly Gift Transfer Volumes



#### (a) Gift Transfer Volume 2012

**Notes:** Figures 6a and 6b display the monthly volumes of gift tax transfers for the years 2012 and 2014 respectively. Considered in the calculation are transfers that involve preferentially treated asset types, such as agricultural assets, business assets or shares in corporations.

the overall distribution of wealth, wealth quartiles are comparable across events and not sensitive to the distribution of transfers in the respective event window.

We find that across both events, the responsiveness of individuals seems to increase in the amount of wealth transferred. Where the amount of bunching is relatively negligible in the lowest quartile, the excess mass estimates increase by up to 10 times as we move through the wealth distribution. We detect the largest response for the highest quartile for Event Window I, which amounts to almost two times the average effect. This result has intuitive appeal: as setting up a corporation for use as a tax saving vehicle only is costly, we expect the largest benefits of pulling forward the transfer for high networth individuals. Furthermore, the prospect of losing preferential treatment was more likely ex ante, increasing the incentives to transfer before the event date at all costs. The response heterogeneity by levels of wealth at stake has distributional consequences for the progressivity of announced tax changes, which is an important consideration for policymakers.

value followed a different method before the 2009 reform, leading to apples to oranges comparisons.



Figure 7: Bunching Heterogeneity.

Notes: This figure shows excess mass estimates for different sample splits with two standard errors confidence bands. Figure 7a illustrates excess mass estimates for the different preferentially treated asset classes (agricultural property, business assets and company shares), while Figure 7b depicts excess mass estimates for each wealth quartile across the different event windows.

# 5 Characteristics of Bunchers

After documenting significant behavioural responses to the legislative developments, we investigate whether transfers made inside the bunching windows identified in the previous section differ from transfers outside the bunching windows in terms of observable characteristics. The observed transfer characteristics might shed some light on the transfer motives and provide further indication of tax avoidance intent. Based on prior literature, we identify several characteristics which we expect do differ between transfers within the bunching windows and those outside of them.

First, we expect transfers within the bunching windows to be characterized by even lower effective tax rates and higher use of tax exemptions compared to the overall sample. As responding individuals show an acute awareness of legislative developments and threats, we expect them to be able to optimise the transfer from a tax perspective, making full use of any exemptions available.

Second, it is generally understood that family firm owners have difficulties relinquishing control, especially when they are the founder (Handler 1994; Sharma 2004). From this perspective, we would expect recipients of family businesses to be generally of a more mature age and ready to take over the business from their predecessor, even if inheritance tax planning is at play. As transfers of cash are less tied to a desire to retain factual control over the asset, we would, on average, expect more transfers to benefit a minor compared to regular business transfers. Consistent with this notion, our descriptive results in Table3 show that the share of minors is the highest for gift transfers of cash and financial assets. Finding a significantly higher share of minor recipients within our event windows would be consistent either with the threat of the legislative change to be perceived as so detrimental that it outweighs the desire to retain control, or with a masked cash transfer.

Finally, Bennedsen et al. (2007) among others show that male descendants are favoured in obtaining control of the family business in a succession event. As pointed out by Kubíček and Machek (2019), this can be due to a multitude of reasons such as primogeniture, gender stereotypes, or willingness to join and lead on the recipient side. Several studies show that male heirs are more likely to receive transfers of business assets in general (Ahrens et al. 2015; Kubíček and Machek 2019; Tisch and Schechtl 2023), which is consistent with the observed patterns in Table 3. Based on these findings, we expect transfers in the first bunching window in particular to more likely benefit a female recipient compared to transfers outside. To the extent that these transfers constitute cash transfers masked as business successions, we should see a higher incidence of female ownership more akin to transfers of non-business assets.

To investigate differential transfer characteristics, we estimate Ordinary Least Squares (OLS) regressions using the following specification:

$$y_{i} = \alpha + \beta_{1} \operatorname{BW} \operatorname{Event} \operatorname{I}_{i} + \beta_{2} \operatorname{BW} \operatorname{Event} \operatorname{II}_{i} + \sum_{k=2}^{4} \gamma_{k} \mathbb{1} \left\{ \operatorname{Wealth} \operatorname{Transfer} \operatorname{Quartile}_{i} = k \right\} + \sum_{j=1}^{4} \delta_{j} \mathbb{1} \left\{ \operatorname{Age} \operatorname{Quartile}_{i} = j \right\} + \eta_{1} \operatorname{Company} \operatorname{Shares}_{i} + \eta_{2} \operatorname{Business} \operatorname{Assets}_{i} + \varepsilon_{i},$$

$$(2)$$

where *BW Event I* and *BW Event II* are indicators for transfers located in Bunching Window I and II respectively. We control for other determinants of transfer characteristics such as quartiles of the wealth transfer amount and donor age based on the distribution of the respective variables between 2009 and 2017, as well as for the major asset type transferred. As outcomes, we consider the effective tax rate (ETR), the share of favourably treated assets, and a set of indicators equal to one if the recipient was of minor age, a son or daughter of the donor, and whether the gift donor was female. We show the result of this exercise in Table 4. The table shows the coefficient estimates for the two indicator variables of interest with robust standard errors in parentheses.

We find that transfers in the bunching windows feature a significantly lower effective tax rate. In comparison to the sample average of 0.08%, taxes on transfers made during the first event window's bunching window were 50% lower, while transfers made during the second bunching window were about 13% lower on average. This suggests a higher level of tax expertise among individuals who choose to locate just before the event deadlines. Additionally, we document that the proportion of transferred assets within the bunching windows that is taxed preferentially is higher than that outside of them, which accounts for the lower effective tax rates.

Next, we consider the characteristics of the recipients as outcomes. First, we find differing results regarding transfers to recipients of minor age between the two bunching windows. In case of the first bunching window, transfers are more likely to go to a minor recipient. Compared to the sample average of 2.8%, transfers to a minor occur 39% more frequently in the bunching window, holding wealth, the age of the donor, and the asset type constant. This finding is in line with evidence from Finland that transfers of firm ownership to minor children are a common method to avoid later inheritance and gift taxes (Paukkeri et al. 2023). However, for the second bunching window we find the opposite effect: transfers to a minor occur about 29% less frequently compared to the sample mean. This suggests that transfers immediately before the abolition of the Cash-GmbH avoidance scheme were driven more by pure tax avoidance motives than transfers prior to the verdict of the German Constitutional Court in 2014. If we consider the transfer of business assets that exploits a loophole in the administrative asset catalogue as a mere transfer of liquid funds rather than the actual control of a business, these

patterns become more intuitive.

Second, our results suggest that transfers preceding the abolition of the Cash-GmbH are more likely to go to a daughter compared to transfers outside the bunching window. The coefficient estimate suggests that after controlling for other transfer characteristics, transfers in the first bunching window are about 19% more likely to benefit a daughter of the donor compared to the average over the whole sample. Interestingly, there is no significant difference in gender recipient patterns between transfers in the second bunching window compared to transfers outside of it. There are two main explanations for this pattern. On the one hand, this again could be indicative that the transfers during the first bunching window are more similar to a transfer of cash than a transfer of a company. Hence, viewing the first bunching window as an opportunity to pass on cash to the next generation could rationalize this result. Alternatively, it might also be the case that these quasi-cash transfers are more easily split among several descendants. In a succession case where the son receives the business and the daughter financial assets as compensation, we would not see the funds received by the daughter in our sample. However, if shares in a cash-holding corporation are transferred during the bunching window, this transfer will show up in our data and hence increase the share of female recipients in that period only.

Overall, these tests are consistent with the behavioural responses to the first legislative event being driven by individuals explicitly exploiting the tax loophole in the administrative asset catalogue, whereas for the second event, responses are generally more similar to regular business transfers and would therefore be consistent with a hedging motive regarding detrimental future developments.

	Dependent Variable:							
	ETR	Share Fav. Assets	Minor Rec.	Son	Daughter	Female Giver		
BW Event I	$-0.004^{***}$ (0.001)	$0.101^{***}$ (0.008)	$\begin{array}{c} 0.011^{***} \\ (0.006) \end{array}$	$-0.025^{*}$ (0.013)	$\begin{array}{c} 0.041^{***} \\ (0.012) \end{array}$	$0.02 \\ (0.013)$		
BW Event II	$-0.001^{*}$ (0.001)	$0.016^{**}$ (0.007)	$-0.008^{**}$ (0.003)	$0.01 \\ (0.011)$	$0.009 \\ (0.009)$	$0.005 \\ (0.01)$		
Wealth Controls	Х	Х	Х	Х	Х	Х		
Age Controls	Х	Х	Х	Х	Х	Х		
Sample mean	.008	.728	.028	.483	.218	.339		
$R^2Adj.$	0.08	0.14	0.01	0.1	0.03	0.02		
Observations	76,917	$76,\!687$	76,798	76,937	$76,\!937$	$76,\!937$		

Table 4: Characteristics of Bunchers.

**Notes:** This table presents the results of estimating Equation 2 using Ordinary Least Squares. The coefficients are displayed for regressing different outcome variables on indicators for transfers located within the bunching window of Event Windows I and II. All specifications control for wealth transfer quartile and age quartile as well as the major asset type. Robust standard errors are given in parentheses below the coefficient estimates. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% significance level respectively. Results are robust to different specifications of the control variables. **Source:** Authors' calculations based on data from the RDC of the Federal Statistical Office and the Statistical Offices of the Federal States.

# 6 Quantification of Tax Avoidance

Armed with an estimate of the normalized excess mass in the distribution of taxable transfers, we can quantify the extent of tax avoidance using a back-of-the-envelope calculation of the forgone tax revenue due to re-timed transfers. The quantification exercise is based on the following thought experiment. Suppose that the excess transfers we identified in the previous section were not taxed under the relevant schedule at that time, but under the provisions that were expected to be applicable after the respective end point of the event windows. How much revenue did the German government lose in this hypothetical scenario due to re-timing responses?

To answer this question, we back out the overall number of transfers that are due to tax planning in a first step. Let  $\hat{b}_T$  be the estimated excess mass of the transfer count distribution for event window T = 1, 2. Based on the observed number of transfers in the bunching window  $N_T = \sum_{t=L_T}^{U_T} n_t$ , we can calculate the excess number of transfers using

$$N_T^E = N_T - \frac{N_T}{\hat{b}_T} = \frac{(\hat{b}_T - 1)}{\hat{b}_T} N_T.$$
 (3)

Intuitively, we subtract from the overall number of transfers the

regular transfers, which can be computed as  $1/\hat{b}_T \times N_T$ . The number of transfers left after this transformation can be interpreted as excess transfers in the sense that they would not have occurred in the absence of the events.

In a second step, we exploit the detailed information about taxable transfers in our data to recalculate the tax base and final tax burden of each transfer in the bunching window under the hypothetical scenario. In order to reflect the uncertainty taxpayers faced when deciding on pulling forward their transfer, we entertain a variety of hypothetical scenarios. For the baseline scenario, we simply add back the full amount of tax exemptions for preferentially treated assets to the actual gift tax base. Afterwards, we conduct the same calculation steps that lead from the tax base to the actual amount of determined tax. This implies applying the (progressive) tax rate schedules as stated in the respective version of the tax code.<sup>29</sup> Conceptually, this approach assumes that for both event windows, the extreme case scenario realizes, i.e., the exemptions for preferentially treated asset classes are void, meaning that companies are fully taxed on their assets.

As the complete voiding of the preferential treatment provisions was a rather unrealistic outcome for the 2014 verdict of the Constitutional Court, we vary the negative tax consequences to provide a more nuanced picture. In our first set of alternative scenarios, we consider different exemption shares to be applied to the overall tax base. This would have been one way the legislator could have addressed concerns by the court that the

<sup>&</sup>lt;sup>29</sup> This means that actual tax rates varied by transfer size, albeit they increased relative to the initially applicable tax rates (especially for large transfers of business assets and with little amounts of other transfers). The highest applicable tax rate was 30%.

privilege for business assets was excessive. Therefore, in addition to the complete voiding of the provision, which would correspond to an exemption share of 0, we calculate hypothetical scenarios based on an exemption share of 25, 50 and 75 percent.

Another possibility, which was proposed by researchers and politicians in the aftermath of the verdict, is a so-called flat tax.<sup>30</sup> A low, flat tax rate in combination with a broad tax base has the potential to raise equal if not more revenue while simultaneously curbing tax avoidance opportunities exploiting tax exemptions. For this alternative set of scenarios, we implement flat tax rates of 10, 12.5, and 15 percent while simultaneously reducing the exemption share for preferentially treated asset classes to zero. Note that we still allow for personal exemptions that would also apply to other types of assets, such as real estate or cash.

Figure 8 illustrates the tax consequences of the hypothetical scenarios in terms of the effective tax rate, based on the taxable acquisition of the transfer. The figure displays effective tax rates for an exemplary transfer to a spouse (tax class I), resulting from applying the tax schedule for different values for the exemption share. It is apparent that removing parts of the exemption share leads to substantial increases in effective tax rates across the wealth distribution. For very large inheritances, a flat tax of 15 percent would correspond to a decrease of the exemption share to 50 percent of the taxable acquisition.

By computing the difference between the recalculated hypothetical burden and the actual taxes paid and aggregating the individual changes over the bunching interval, we get a measure of the overall change in tax revenue if every transfer would have been subject to the hypothetical scenario tax schedule. We then compute the share of this revenue change due to tax planning by multiplying the overall revenue change with the share of excess transfers in total transfers. Hence, our estimate of foregone tax revenue  $R^F$  can be expressed as:

$$R^{F} = \sum_{i \in I_{T}} \left[ TB_{i}^{h} - TB_{i}^{r} \right] \times \frac{N_{T}^{E}}{N_{T}}$$
$$= \sum_{i \in I_{T}} \left[ TB_{i}^{h} - TB_{i}^{r} \right] \times \frac{(\hat{b}_{T} - 1)}{\hat{b}_{T}}, \tag{4}$$

where  $TB_i^h$  and  $TB_i^r$  denote the hypothetical and real tax burden of individual *i* and  $I_T$  denotes the set of individual transfers in the bunching window.

Figure 9 shows the result of this exercise. For the two event windows, the foregone tax revenue is plotted for each of the seven hypothetical scenarios. The dashed horizontal lines depict the average foregone revenue across scenarios for each event, while the solid horizontal line corresponds to the overall revenue from inheritance and gift taxation in Germany in 2011 as a reference point.

<sup>&</sup>lt;sup>30</sup> See, for example, Bach and Thiemann 2016, or the plenary protocol 18/180 of the Bundestag from 24 June 2016, available under https://dserver.bundestag.de/btp/18/18180.pdf#P.17773.



Figure 8: Effective Tax Rates in Hypothetical Scenarios

**Notes:** This figure shows the effective tax rates in the hypothetical scenarios we consider for our revenue loss calculations, exemplary shown for tax class I. The shaded areas visualize effective tax rate structures for different shares of exemption for qualifying asset types based on the value of taxable acquisition. The dashed lines on the other hand visualize the alternative flat tax rates of 10, 12.5 and 15 percent we employ. Effective tax rates are calculated assuming a transfer to a spouse, implying the maximum personal deduction of EUR 500,000 and tax class I. The calculated rates further accommodate the equitable compensation provided by the law in the region around an increase in the average statutory tax rate (*Härteausgleich*) as well as the deduction amount for low acquisitions (*Abzugsbetrag*).

For each scenario, the computed revenue loss constitutes a lower bound, as it is based on the assumption that behavioural responses only take place within the bunching windows. However, Cash-GmbHs were possible from 2010 until mid-2013, which means that the revenue loss is likely to be even higher. The different scenarios allow us to provide some bounds on the revenue effect.

The amounts of foregone tax revenue differ substantially across events, which is both due to very different estimated amounts of hypothetical tax revenues as well as a higher "share of bunchers".<sup>31</sup> A lower-bound estimate of the foregone tax revenue is provided by the least strict tightening of the preferential treatment provision, granting only a 75% exemption as opposed to a factual full exemption in most cases. In this case, the foregone revenue from tax avoidance of EUR 3.2 billion amounts to 76% of the total revenue from inheritance and gift taxation in Germany (from all transfers) in 2011. If these transfers had instead been taxed without preferential treatment exemption, the German government would have obtained additional revenues of EUR 12 billion, which constitutes 2.8 times the actual tax revenue from 2011. For Event Window I, this is a reasonable scenario, as the excess mass is very likely to stem from tax planning vehicles only. This is because a major reason for the bunching right before the event date was to prevent administrative assets like cash and real estate from not being exempt from inheritance and gift taxes.<sup>32</sup> The average foregone revenue of roughly EUR 6 billion is still 1.5 times higher than the reference revenue, indicating substantial revenue losses due to tax planning. Note that while the initial purpose of the preferential treatment of certain assets was to alleviate concerns of overburdening firms with inheritance and gift taxes, the fiscal consequences of this tax avoidance scheme were enormous. This becomes evident when comparing the magnitude of our findings to evidence of tax expenditures for (family) businesses in other countries.<sup>33</sup>

For Event Window II, the foregone revenue estimates are much more moderate. The lower bound estimate of a reduced exemption of 75% would have implied a revenue gain of EUR 0.435 billion, which amounts to approximately 10% of the 2011 revenue. If the extreme scenario of a voiding of the preferential treatment provisions was realized, the additional revenue would have totalled EUR 2 billion or approximately 48% of the 2011 revenues. The average foregone revenue across the different scenarios amounts to EUR 1.093 billion, or 26% of the reference revenue.

<sup>31</sup> See Table A3 in the Appendix.

<sup>&</sup>lt;sup>32</sup> In effect, administrative assets were excluded from gift tax exemptions after the reform, with two special cases depending on their value relative to the transferred amount of business assets. Above 90%, the entire amount of transferred business assets became fully ineligible for gift tax exemptions. Below 10%, their amount was considered negligible and therefore did not lead to reduced gift tax exemptions.

<sup>&</sup>lt;sup>33</sup> See Figure 3.17 in OECD 2021, where for Belgium 0.5% and for the Netherlands 8% of the actual tax base are foregone due to tax expenditures.



Figure 9: Foregone Tax Revenue Across Hypothetical Scenarios

**Notes:** This figure illustrates the foregone tax revenue to the German state under the different hypothetical scenarios considered. Each bar represents the difference in tax revenue in the respective scenario net of the taxes actually paid. The first four scenarios show differences in taxes for lower shares of preferential treatment, ranging from 75% to 0%. The last three scenarios consider the revenue effects of a flat tax between 10 and 15% on the taxable transfer with no exemption for preferentially treated asset types. The dashed horizontal lines constitute the average foregone revenue across the different scenarios for each event window. The solid black line represents the overall revenue from the inheritance and gift tax for the reference year 2011 (EUR 4,221,122 Thousand).

**Source:** Authors' calculations based on data from the RDC of the Federal Statistical Office and the Statistical Offices of the Federal States.

# 7 Discussion and Conclusion

Our findings show that the anticipation of tax changes substantially influences the timing of business transfers to the next generation. The speed with which business transfers react to changes in the tax environment is surprising. This is particularly the case for the ban of a favourable tax avoidance scheme (Event Window I), which induced business owners to transfer more than EUR 40 billion in less than a month, and only four months after the event could be anticipated. Prior literature suggests that successions within family businesses are prone to trigger conflicts within the family.<sup>34</sup> Against this background, we provide evidence that an external threat in the form of substantial increases in effective taxation leads to temporarily coordinated and timely family action. This has implications for the design and communication of tax policy changes, as anticipated tax changes will come at the loss of a large part of the potential tax base.

We further document heterogeneous behaviour across asset classes in Section 4.3. An apparent difference concerns the insensitivity of transfers of agricultural assets to the same events that induce enormous reactions for business assets and company shares. In principle, owners of agricultural property can apply to the same preferential tax treatment as the other two classes. The documented insensitivity might be explained by either missing awareness to the existence of these incentives, low general tax planning activities (because transfer values are low) or the deterrence effect that compliance with tax regulations would entail. Moreover, we show that the ability or willingness to exploit tax incentives increases substantially with business wealth. Business transfers in the highest quartile are more responsive to the treat of taxation than business transfers in the lowest quartile by a factor between 4 (Event Window II) and 15 (Event Window I). This has distributional consequences for the progressivity of the tax code, as the subjects deemed to pay a higher share of taxes are precisely the ones most able to circumvent taxation.

Event Window I most clearly allows the identification of tax avoidance, given that bunching at the unusual mid-year date (25 October 2012) is hardly explainable by nontax-planning reasons. Our results from Section 5 lend further support to this notion, as transfers during the reaction window differ from regular transfers in ways that are consistent with a tax avoidance motive. We quantify the amount of foregone tax revenue to an upper bound of approximately EUR 12 billion or 2.8-times the actual amount of overall tax revenues from gifts and inheritances in 2011. Our results imply that the conventional argument which disregards the importance of wealth transfer taxes as fiscal instruments due to their low quantitative relevance (compared to other tax sources like income or consumption) neglects the shifts in the underlying tax base due to avoidance behaviour.<sup>35</sup>

However, our quantification of foregone tax revenues only partially captures the overall welfare loss due to the extreme timeliness of tax planning responses. Two other sources of welfare loss are conceivable: Non-productive rent-seeking and rushed company succession. First, the (short-term) use of tax advisors and lawyers to minimize the tax burden associated with a business succession is costly. Tax advisory cost comprises a time component for the preparatory tax advisory process, and a share of the transfer value when

 $<sup>^{34}\,\</sup>mathrm{See}$  Kubíček and Machek (2020) for a recent overview.

<sup>&</sup>lt;sup>35</sup> See also Escobar et al. (2019) for another example in the Swedish setting of how the tax elasticity of tax-favoured gift transfers reduces the inheritance tax base.

the actual tax declaration is prepared.<sup>36</sup> Legal costs arise with, for instance, notary fees associated with setting up a new firm (as it was likely the case during Event Window I). Taken together, legal and advisory fees for a single tax-motivated business succession range from five-digit to small six-digit numbers. Moreover, in such situations, the tax advisory cost does not reflect an activity that creates economic value.<sup>37</sup> Instead, it shifts the incidence of wealth transfer taxes to individuals with a lower tax base plasticity, causing dead-weight losses to society.<sup>38</sup>

Second, business successions ought to be carefully prepared in advance. Otherwise, the decision to transfer control and ownership could pertain long-lasting negative consequences for the firm and its stakeholders. From a welfare perspective, the efficient allocation and management of capital is key. Surveying all German chambers of industry and commerce reveals that the recommended time span for a business succession ranges from one to up to ten years, with the majority suggesting that a succession duration of five years is optimal.<sup>39</sup> Our results show that the motivation to avoid increases in wealth transfer taxes drastically shortens the succession period of businesses. Albeit we cannot directly observe the transfer of mere ownership versus actual company control, our identification of the characteristics of bunching business owners reveals that at least during Event Window II, actual company control was passed onto the next generation. This raises the question whether such transfers had been planned long in advance, and are only executed at short notice due to tax reasons. If this is not the case, immediate tax risks may motivate a hastened succession in some firms. Future research might answer the question whether these firms subsequently suffer from inferior performance or prolonged intra-family conflict.

Our results yield two major policy implications: taxing wealth transfers at uniform rates and considering wealth taxes as a backstop to wealth transfer tax avoidance. First, our findings for Event Window I shed new light on the exploitation of business shells for tax purposes in the German context. Our findings are also in line with a growing body of international evidence that ranges from the avoidance of wealth (transfer) taxation to the evasion of consumption taxation using businesses as a vehicle. In our setting, we expect this avoidance response to be driven by a very progressive nominal tax rate structure, with the highest tax rate being equal to 50% of the transfer value. In the presence of ample tax planning opportunities, a higher difference between ordinary tax rates and tax rates under preferential taxation increases the incentives for wealth-transferring individuals

<sup>&</sup>lt;sup>36</sup> Both cost components are subject to the German tax advisor fee regulation, although the latter component can be reduced by up to 90% on the tax advisor's discretion. Figure A3 in the Appendix depicts the value-based component.

<sup>&</sup>lt;sup>37</sup> Weisbach (2002) argues that "tax planning, ..., produces nothing of value".

 $<sup>^{38}</sup>$  Scheuer and Slemrod (2020) introduce the concept of plasticity to describe the ease with which the super-rich can change between different tax bases.

<sup>&</sup>lt;sup>39</sup> Figure A4 in the Appendix provides the distribution of recommended succession periods.

to exploit a business shell.<sup>40</sup> This provides a strong argument for policy makers to refrain from (inherently difficult) tax discrimination between business and non-business assets. In other words, a reduction of tax rate differentials across assets classes, possibly accompanied by a lowering of the overall tax rate structure, would reduce behavioural distortions due to tax code progression. By simulating the foregone tax revenues for both events using a flat tax rate of 15% in Section 6, we find that such approaches, despite the likely reduction in administrative costs, significantly reduce the negative fiscal consequences of tax avoidance.

The second policy implication of our results is that unified systems of wealth transfer taxation, which target both inheritances and gifts, suffer from a high elasticity of the gift tax base. Our estimates of foregone tax revenue show how timing responses strongly reduce overall tax revenues from wealth transfers. Policy instruments that mitigate the negative fiscal consequences exist. The retroactive closure of loop holes in the tax code would be an option to limit avoidance responses and the actual regressivity of the wealth transfer tax system. One could, for instance, date back the applicability of the revised tax regulation to the date of announcement. Yet, in the context of the responsiveness of the wealth transfer tax base, Hey (2010) argues that "...mere budget effects cannot be considered to be an announcement effect justifying retroactivity." Another, more implementable policy instrument to mitigate tax-motivated wealth transfer tax avoidance could be the taxation of (net) wealth. As the taxation of wealth is known to also evoke avoidance reactions, particularly by wealthy individuals, certain provisions would hence need to be met.<sup>41</sup> First, our results lend support to a tax that targets only very wealthy individuals through sizeable individual tax allowances, which could increase political support and public legitimacy. Second, due to the geographic mobility of wealthy tax payers and the difficulty to enforce cross-border direct taxation of wealth, taxation of (net) wealth ought to take place within a coordinated, multinational framework.<sup>42</sup> Finally, tax rate differentiation between different asset classes should be avoided to reduce the type of asset shifting documented in our work. We argue that, despite the known limitations of and obstacles to (net) wealth taxation as an individual policy instrument, our results support viewing wealth taxes as a backstop to the virtual non-taxation of wealth transfers by wealthy individuals through re-timing of transfers and the use of tax-advantaged business shells.

<sup>&</sup>lt;sup>40</sup> Note that the short-term timing responses documented in this work merely provide one example among manifold options to avoid German inheritance and gift taxes as a business owner.

<sup>&</sup>lt;sup>41</sup> Advani and Tarrant (2021) provide a recent overview of behavioural responses to wealth taxes.

<sup>&</sup>lt;sup>42</sup> An example would be the global minimum tax on billionaires proposed by Zucman (2024), critically discussed by Amaddeo (2024).

# References

- Advani, Arun, and Hannah Tarrant. 2021. "Behavioural Responses to a Wealth Tax." *Fiscal Studies* 42 (3-4): 509–537. ISSN: 1475-5890. https://doi.org/10.1111/1475-5890.12283.
- Ahrens, Jan-Philipp, Andreas Landmann, and Michael Woywode. 2015. "Gender Preferences in the CEO Successions of Family Firms: Family Characteristics and Human Capital of the Successor." *Journal of Family Business Strategy*, Ownership, Governance and Value in Family Firms, 6, no. 2 (1, 2015): 86–103. ISSN: 1877-8585. https://doi.org/10.1016/j.jfbs.2015.02.002.
- Alstadsæter, Annette, Wojciech Kopczuk, and Kjetil Telle. 2014. "Are Closely Held Firms Tax Shelters?" *Tax Policy and the Economy* 28 (1): 1–32. ISSN: 0892-8649. https: //doi.org/10.1086/675586.
- Alvaredo, Facundo, and Emmanuel Saez. 2009. "Income and Wealth Concentration in Spain from a Historical and Fiscal Perspective." Journal of the European Economic Association 7 (5): 1140–1167. ISSN: 1542-4774. https://doi.org/10.1162/JEEA.2009. 7.5.1140.
- Amaddeo, Francesca. 2024. "Toward a Global Minimum Tax on Ultra-High-Net-Worth Individuals?" European Taxation - Journal Articles & Opinion Pieces IBFD 64 (9). https://doi.org/10.59403/3tebz7e.
- Bach, Stefan, and Andreas Thiemann. 2016. "Hohe Erbschaftswelle, niedriges Erbschaftsteueraufkommen." *DIW Wochenbericht* Nr. 3.
- Bennedsen, Morten, Kasper Meisner Nielsen, Francisco Perez-Gonzalez, and Daniel Wolfenzon. 2007. "Inside the Family Firm: The Role of Families in Succession Decisions and Performance." *The Quarterly Journal of Economics* 122 (2): 647–691.
- Bernheim, B. Douglas, Robert J. Lemke, and John Karl Scholz. 2004. "Do Estate and Gift Taxes Affect the Timing of Private Transfers?" *Journal of Public Economics* 88 (12): 2617–2634.
- Best, Michael Carlos, and Henrik Jacobsen Kleven. 2017. "Housing Market Responses to Transaction Taxes: Evidence From Notches and Stimulus in the U.K." *The Review of Economic Studies* 85 (1): 157–193. ISSN: 0034-6527. https://doi.org/10.1093/restud/rdx032.
- Bräutigam, Rainer, and Christoph Spengel. 2021. "Die Begünstigungen für Betriebsvermögen bei der ErbSt – Handlungsbedarf vor dem Hintergrund der Corona-Krise und der Vorgaben des BVerfG." *Steuer und Wirtschaft - StuW* 98, no. 2 (1, 2021): 131–138. ISSN: 2366-1461. https://doi.org/10.9785/stuw-2021-980205.
- Brown, Kristine M. 2013. "The Link between Pensions and Retirement Timing: Lessons from California Teachers." *Journal of Public Economics* 98 (1, 2013): 1–14. ISSN: 0047-2727. https://doi.org/10.1016/j.jpubeco.2012.10.007.
- Brülhart, Marius, Jonathan Gruber, Matthias Krapf, and Kurt Schmidheiny. 2022. "Behavioral Responses to Wealth Taxes: Evidence from Switzerland." American Economic Journal: Economic Policy 14, no. 4 (1, 2022): 111–150. ISSN: 1945-7731, 1945-774X. https://doi.org/10.1257/pol.20200258.

- Buhlmann, Florian, Philipp Dörrenberg, Johannes Voget, and Benjamin Loos. 2020. How Do Taxes Affect the Trading Behavior of Private Investors? Evidence from Individual Portfolio Data. SSRN Scholarly Paper 3710523. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.3710523.
- Chetty, Raj, John N. Friedman, Tore Olsen, and Luigi Pistaferri. 2011. "Adjustment Costs, Firm Responses, and Micro vs. Macro Labor Supply Elasticities: Evidence from Danish Tax Records \*." *The Quarterly Journal of Economics* 126, no. 2 (1, 2011): 749–804. ISSN: 0033-5533. https://doi.org/10.1093/qje/qjr013.
- Di Porto, Edoardo, Enrica Martino, and Henry Ohlsson. 2021. "Avoiding Taxes by Transfers within the Family." *International Tax and Public Finance* 28 (1): 1–23. ISSN: 0927-5940.
- Duran-Cabré, José Ma., Alejandro Esteller-Moré, and Mariona Mas-Montserrat. 2019. "Behavioural Responses to the (Re)Introduction of Wealth Taxes. Evidence From Spain." SSRN Electronic Journal, ISSN: 1556-5068. https://doi.org/10.2139/ssrn. 3393016.
- Escobar, Sebastian, Henry Ohlsson, and Hakan Selin. 2019. "Taxes, Frictions and Asset Shifting: When Swedes Disinherited Themselves." No 2019:6, Working Paper Series, IFAU - Institute for Evaluation of Labour Market and Education Policy.
- Glogowsky, Ulrich. 2021. "Behavioral Responses to Inheritance and Gift Taxation: Evidence from Germany." *Journal of Public Economics* 193 (C). https://doi.org/10. 1016/j.jpubeco.2020.10.
- Handler, Wendy C. 1994. "Succession in Family Business: A Review of the Research." Family Business Review 7 (2): 133–157. ISSN: 1741-6248. https://doi.org/10.1111/j. 1741-6248.1994.00133.x.
- Henrekson, Magnus, and Daniel Waldenström. 2016. "Inheritance Taxation in Sweden, 1885–2004: The Role of Ideology, Family Firms, and Tax Avoidance." *The Economic History Review* 69 (4): 1228–1254. https://doi.org/10.1111/ehr.12280.
- Hey, Johanna. 2010. "Legislation 'by' Press Release: The Role of Announcements in the Debate about Retroactive Tax Legislation." In *Retroactivity of Tax Legislation*, 2010 EATLP Congress, Leuven, 27-29 May 2010, 129–137. European Association of Tax Law Professors and authors. ISBN: 978-90-816475-0-2.
- Hines, James R., Niklas Potrafke, Marina Riem, and Christoph Schinke. 2019. "Inter Vivos Transfers of Ownership in Family Firms." International Tax and Public Finance 26 (2): 225–256. https://doi.org/10.1007/s10797-018-9508-1.
- Houben, Henriette, and Ralf Maiterth. 2013. "Erbschaftsteuer Als Reichenbesteuerung Mit Aufkommenspotential?" Vierteljahrshefte zur Wirtschaftsforschung / Quarterly Journal of Economic Research 82 (1): 147–175. https://doi.org/10.3790/vjh.82.1. 147.
- Joulfaian, David. 2004. "Gift Taxes and Lifetime Transfers: Time Series Evidence." Journal of Public Economics 88 (9-10): 1917–1929.

- Kleven, Henrik J., and Mazhar Waseem. 2013. "Using Notches to Uncover Optimization Frictions and Structural Elasticities: Theory and Evidence from Pakistan." The Quarterly Journal of Economics 128 (2): 669–723.
- Kleven, Henrik Jacobsen. 2016. "Bunching." Annual Review of Economics 8 (1): 435–464. https://doi.org/10.1146/annurev-economics-080315-015234.
- Kopczuk, Wojciech. 2007. "Bequest and Tax Planning: Evidence from Estate Tax Returns." The Quarterly Journal of Economics 122 (4): 1801–1854.
- Kopczuk, Wojciech, and Eric Zwick. 2020. "Business Incomes at the Top." Journal of Economic Perspectives 34 (4): 27–51. https://doi.org/10.1257/jep.34.4.27.
- Kubíček, Aleš, and Ondřej Machek. 2019. "Gender-Related Factors in Family Business Succession: A Systematic Literature Review." *Review of Managerial Science* 13, no. 5 (1, 2019): 963–1002. ISSN: 1863-6691. https://doi.org/10.1007/s11846-018-0278-z.
  - ———. 2020. "Intrafamily Conflicts in Family Businesses: A Systematic Review of the Literature and Agenda for Future Research." *Family Business Review* 33, no. 2 (1, 2020): 194–227. ISSN: 0894-4865. https://doi.org/10.1177/0894486519899573.
- Leite das Neves, David. 2024. The Firm as Tax Shelter: Micro Evidence and Aggregate Implications of Consumption Through the Firm. Working paper presented at the 80th Annual Congress of the International Institute of Public Finance.
- Micó-Millán, Isabel. 2024. "Inheritance Tax Avoidance Through the Family Firm." Documentos de trabajo - Banco de España, no. 46, 1. ISSN: 0213-2710.
- Mödinger, Patrizia, and Magrit Kaiser. 2018. Auswirkungen von Steuerrechtsänderungen Am Beispiel Der Erbschaft- Und Schenkungsteuerstatistik. Wirtschaft und Statistik 6/2018. Statistisches Bundesamt.
- Montserrat, Mariona Mas. 2019. "What Happens When Dying Gets Cheaper? Behavioural Responses to Inheritance Taxation," 34.
- Moretti, Enrico, and Daniel J. Wilson. 2023. "Taxing Billionaires: Estate Taxes and the Geographical Location of the Ultra-Wealthy." American Economic Journal: Economic Policy 15, no. 2 (1, 2023): 424–466. ISSN: 1945-7731, 1945-774X. https://doi. org/10.1257/pol.20200685.
- Nekoei, Arash, and David Seim. 2022. "How Do Inheritances Shape Wealth Inequality? Theory and Evidence from Sweden." *The Review of Economic Studies* (31, 2022): rdac016. ISSN: 0034-6527. https://doi.org/10.1093/restud/rdac016.
- OECD. 2021. "Inheritance Taxation in OECD Countries," https://doi.org/10.1787/ e2879a7d-en.
- OTS. 2018. Inheritance Tax Review First Report: Overview of the Tax and Dealing with Administration. Presented to Parliament pursuant to section 186(4)(b) of Finance Act 2016 1. Office of Tax Simplification UK Her Majesty's Stationary Office.
- Paukkeri, Tuuli, Terhi Ravaska, and Marja Riihelä. 2023. The Role of Privately Held Firms in Income Inequality. The IFS, November 29, 2023. https://doi.org/10.1920/ wp/ifs.2023.3623.

- Poterba, James M., and Scott J. Weisbenner. 2003. "Inter-Asset Differences in Effective Estate-Tax Burdens." *American Economic Review* 93 (2): 360–365. ISSN: 0002-8282. https://doi.org/10.1257/000282803321947353.
- Romanov, Dmitri. 2006. "The Corporation as a Tax Shelter: Evidence from Recent Israeli Tax Changes." *Journal of Public Economics* 90, no. 10 (1, 2006): 1939–1954. ISSN: 0047-2727. https://doi.org/10.1016/j.jpubeco.2006.03.003.
- Saez, Emmanuel. 2010. "Do Taxpayers Bunch at Kink Points?" American Economic Journal: Economic Policy 2 (3): 180–212. ISSN: 1945-7731. https://doi.org/10.1257/ pol.2.3.180.
- Saez, Emmanuel, and Gabriel Zucman. 2016. "Wealth Inequality in the United States since 1913: Evidence from Capitalized Income Tax Data." The Quarterly Journal of Economics 131, no. 2 (1, 2016): 519–578. ISSN: 0033-5533, 1531-4650. https://doi. org/10.1093/qje/qjw004.
- Scheuer, Florian, and Joel Slemrod. 2020. "Taxation and the Superrich." Annual Review of Economics 12 (Volume 12, 2020 2020): 189–211. ISSN: 1941-1383, 1941-1391. https://doi.org/10.1146/annurev-economics-081919-115106.
- Schmalbeck, Richard. 2001. "Avoiding Federal Wealth Transfer Taxes." In InW. G. Gale, J. R. Hines, Jr., & J. Slemrod (Eds.), Rethinking Estate and Gift Taxation. Brookings Institution Press. Rethinking Estate and Gift Taxation. Brookings Institution Press.
- Sharma, Pramodita. 2004. "An Overview of the Field of Family Business Studies: Current Status and Directions for the Future." *Family Business Review* 17, no. 1 (1, 2004): 1–36. ISSN: 0894-4865. https://doi.org/10.1111/j.1741-6248.2004.00001.x.
- Smith, Matthew, Owen Zidar, and Eric Zwick. 2023. "Top Wealth in America: New Estimates Under Heterogeneous Returns<sup>\*</sup>." The Quarterly Journal of Economics 138, no. 1 (1, 2023): 515–573. ISSN: 0033-5533. https://doi.org/10.1093/qje/qjac033.
- Tisch, Daria, and Manuel Schechtl. 2023. The Gender (Tax) Gap in Parental Transfers. Evidence from Administrative Inheritance and Gift Tax Data. Preprint. SocArXiv, April 25, 2023. https://doi.org/10.31235/osf.io/kfetw.
- Weisbach, David A. 2002. "Ten Truths about Tax Shelters Symposium on Corporate Tax Shelters: Part I." *Tax Law Review* 55 (2): 215–254.
- Zucman, Gabriel. 2024. "A Blueprint for a Coordinated Minimum Effective Taxation Standard for Ultra-High-Net-Worth Individuals."

# Appendix A: Additional Tables and Figures

Taxable bequests (EUR 1,000)	before 2009		Taxable bequests (EUR 1,000)	in 2009		since 2010		010		
	Ta	x Cl	ass	-			Tax	Class	5	
	Ι	Π	III	-	Ι	Π	III	Ι	Π	III
52	7	12	17	75	7	30	30	7	15	30
256	11	17	23	300	11	30	30	11	20	30
512	15	22	29	600	15	30	30	15	25	30
$5,\!113$	19	27	35	6,000	19	30	30	19	30	30
12,783	23	32	41	13,000	23	50	50	23	35	50
$25,\!565$	27	37	47	26,000	27	50	50	27	40	50
$\geq 25,565$	30	40	50	$\geq 26,000$	30	50	50	30	43	50

Table A1: Inheritance and Gift Tax Schedules under the Different Regimes

**Notes:** This table displays the (progressive) tax rate schedule for gifts and inheritances during three different periods of German Tax Law, out of which the tax rates after the onset of 2010 are most relevant to our empirical setting. Tax classes generally relate to the degree of kinship (with I denoting close family and III non-related recipients), albeit a receipt of assets that are treated preferentially (i.e. business assets, (closely held) company shares and agricultural assets) is by law tantamount to being a recipient within tax class I.

**Source:** Troll/Gebel/Jülicher/Gottschalk: ErbStG, "X. Reform der ErbSt 2009" and "XI. Entwicklung der ErbSt von 2009 bis 2016", 2021.



#### Figure A1: International Wealth Transfer Tax Regimes

**Notes:** This figure displays the depicted maximum inheritance tax rates when recipients are close family members, with purple (green) colour fill as an indication that business assets are (not) treated preferentially. Tax rates to third parties can be higher. **Source:** OECD (2021).



# Figure A2: Structure of Coverage between First and Subsequent Tax Determination Dates

**Notes:** This figures displays the distribution of (yearly) tax assessment dates of gift and tax returns relative to the year of the taxable event.

	Obs.	Mean	Std. Dev.	P01	P50	P99
Agricultural property						
Overall value of receipt	10,389	186.06	653.35	3	78	1,389
Age of Recipient at Transfer	$10,\!380$	58.05	15.81	16	58	89
Above Allowance	$10,\!389$	0.78	0.41	0	1	1
Minor Recipient	$10,\!380$	0.01	0.12	0	0	1
Son	10,389	0.07	0.26	0	0	1
Daughter	$10,\!389$	0.05	0.22	0	0	1
Female Giver	10,389	0.27	0.45	0	0	1
Effective tax rate (p.p.)	4,681	6.62	7.61	0	4	27
Share of fav. assets (p.p.)	$4,\!543$	41.29	39.04	0	33	100
Count of recipients per transfer	4,681	2.22	2.40	1	1	13
Business assets						
Overall value of receipt	14,212	2,726.53	22,511.47	14	689	35,385
Age of Recipient at Transfer	$14,\!197$	51.29	17.26	9	52	87
Above Allowance	14,212	0.82	0.38	0	1	1
Minor Recipient	$14,\!197$	0.04	0.20	0	0	1
Son	$14,\!212$	0.29	0.45	0	0	1
Daughter	$14,\!212$	0.22	0.42	0	0	1
Female Giver	$14,\!212$	0.28	0.45	0	0	1
Effective tax rate (p.p.)	7,019	3.27	5.79	0	0	27
Share of fav. assets (p.p.)	6,538	59.84	44.00	0	85	100
Count of recipients per transfer	$7,\!019$	2.02	1.62	1	2	8
Cash and financial assets						
Overall value of receipt	650,438	252.10	2,090.02	7	70	2,417
Age of Recipient at Transfer	649,181	60.46	15.96	16	61	91
Above Allowance	$650,\!438$	0.90	0.30	0	1	1
Minor Recipient	649,181	0.01	0.11	0	0	1
Son	$650,\!438$	0.06	0.23	0	0	1
Daughter	$650,\!438$	0.05	0.22	0	0	1
Female Giver	$650,\!438$	0.59	0.49	0	1	1
Effective tax rate (p.p.)	$322,\!558$	12.05	8.80	0	11	29
Share of fav. assets (p.p.)	43,241	31.40	44.15	0	0	100
Count of recipients per transfer	$322,\!568$	2.02	1.89	1	1	10
Company shares						

 Table A2:
 Descriptive Statistics of Bequest Sample

Overall value of receipt	3,688	4,919.16	49,672.84	10	891	43,916
Age of Recipient at Transfer	$3,\!680$	48.79	17.96	8	50	85
Above Allowance	$3,\!688$	0.84	0.37	0	1	1
Minor Recipient	3,680	0.05	0.22	0	0	1
Son	$3,\!688$	0.28	0.45	0	0	1
Daughter	3,688	0.24	0.42	0	0	1
Female Giver	3,688	0.25	0.43	0	0	1
Effective tax rate (p.p.)	$1,\!692$	4.42	6.83	0	1	29
Share of fav. assets (p.p.)	1,576	52.65	44.35	0	74	100
Count of recipients per transfer	$1,\!692$	2.18	1.66	1	2	8
Real estate						
Overall value of receipt	333,020	254.78	1,252.19	6	94	2,052
Age of Recipient at Transfer	332,643	57.58	16.12	15	58	89
Above Allowance	333,020	0.83	0.37	0	1	1
Minor Recipient	332,643	0.02	0.12	0	0	1
Son	333,020	0.09	0.28	0	0	1
Daughter	333,020	0.08	0.27	0	0	1
Female Giver	333,020	0.53	0.50	0	1	1
Effective tax rate (p.p.)	177,924	11.21	9.04	0	10	29
Share of fav. assets (p.p.)	37,474	34.14	45.59	0	0	100
Count of recipients per transfer	$177,\!927$	1.87	1.62	1	1	8

Table A2: Descriptive Statistics of Bequest Sample Continued

**Notes:** This table shows descriptive statistics for the sample of bequests after our selection process detailed in Table 2. Overall receipts are expressed in Thousand Euros. Above Allowance is an indicator for a transfer above the personal allowance of the recipient, Minor Recipient is a dummy variable equal to one if the recipient is below 18 years old at the time of transfer. Son and Daughter are indicator variables indicating the recipient gender and relation of the recipient to the donor. Female Giver is an indicator equal to one if the bequestor is female. Summary statistics are given for each asset type separately. For comparison purposes we also show asset classes that are not the main focus of our analysis, namely, cash and financial assets as well as real estate.

Scenario	Actual tax	Counterfactual Scenario	$\Delta$ Revenue	Excess Mass	Share Avoiders	Foregone Revenue
Panel A: Even						
75% exempted	93,031.99	3, 322, 189.30	3,229,089.10	9.02	0.89	2,873,889.30
50% exempted	93,031.99	6,723,778.00	6,630,579.60	9.02	0.89	5,901,215.84
25% exempted	93,031.99	10, 145, 452.00	10,052,155.00	9.02	0.89	8,946,417.95
0% exempted	93,031.99	13,609,604.00	13,516,209.00	9.02	0.89	12,029,426.01
10% flat tax	93,031.99	4,330,831.50	4,237,697.00	9.02	0.89	3,771,550.33
12.5% flat tax	93,031.99	5,564,546.10	5,471,339.20	9.02	0.89	4,869,491.89
15% flat tax	93,031.99	6,798,260.70	6,704,981.50	9.02	0.89	5,967,433.54
Panel B: Even	nt Window	II (2014)				
75% exempted	79,900.50	610, 556.56	530, 656.06	5.62	0.82	435, 137.97
50% exempted	79,900.50	1,223,944.00	1,144,043.50	5.62	0.82	938, 115.67
25% exempted	79,900.50	1,880,818.50	1,800,918.00	5.62	0.82	1,476,752.76
0% exempted	79,900.50	2,542,909.30	2,463,008.80	5.62	0.82	2,019,667.22
10% flat tax	79,900.50	945,278.86	865,378.37	5.62	0.82	709,610.26
12.5% flat tax	79,900.50	1,211,968.80	1,132,068.30	5.62	0.82	928, 296.01
15% flat tax	79,900.50	1,478,658.70	1,398,758.20	5.62	0.82	1,146,981.72

 Table A3:
 Calculation of Foregone Tax Revenue

Notes: This table illustrates our calculations of foregone tax revenue for the different scenarios. Panel A displays the calculation steps for Event Window I, whereas Panel B displays the same for Event Window II. Each panel shows the overall taxes paid for the transfers within the respective bunching windows, which tax revenue would have been collected in the respective hypothetical scenario as well as the difference between counterfactual and actual revenue. Multiplying the difference in tax revenue with the share of avoiders, calculated as  $(\hat{b} - 1)/\hat{b}$ , where  $\hat{b}$  is the estimated excess mass of transfers in the bunching window, yields an estimate for the foregone tax revenue. To put the numbers into perspective, we relate the foregone revenue to the overall volume of collected inheritance and gift tax in 2011, which amounts to EUR 4,221,122 Thousand.



Figure A3: Tax Advisory Fee Schedule based on Transfer Values

**Notes:** This figure depicts the absolute amounts of tax advisory fee in EUR based on the cost of preparing a tax declaration for gifts or inheritances. The depicted amounts can be reduced by a factor of up to 90% on the discretion of the tax advisor.

Source: German tax advisor fee regulation (Steuerberatervergütungsverordnung), Annex 1, Table A.



Figure A4: Recommended duration of business successions

**Notes:** This figure shows the recommendation count for a specific duration period of intergenerational business succession by all German chambers of industry and commerce. Out of overall 79 chambers, 36 provided specific recommendations about the ideal succession duration period on their websites. Often, these recommendations relate to a time span, which mean that multiple years are optimal from the viewpoint of the guidelines. This results in the sum of counts displayed in the figure being larger than 36.

**Source:** Websites of all (regional) German chambers of industry and commerce (*Industrie- und Han*delskammern), accessed in early September 2024.

### **Appendix B: Additional Event Analysis**

**Event Window III: The 2016 reform.** As a final exercise we estimate the excess mass for the retroactive reform implementation date on 1 July 2016 which is illustrated in Figure B1. Also the third event window features sizeable bunching in the distribution immediately before the reform date. Interesting in that case is that there seems to be excess mass in the entire region on the left of the event window endpoint with missing mass in the distribution for the entire region to the right. As the distribution of transfers appears to be increased almost for the entire left-hand side, determination of the bunching window is rather difficult. We provide a lower-bound estimate by considering the excess mass within three weeks before the reform implementation. That way, we probably underestimate the true reaction as increasing the bunching window only increases the estimated excess mass. Nevertheless, we find strong and significant bunching even in the direct vicinity of the event date.



Figure B1: Difference-in-Bunching around 2016 reform.

**Notes:** Figure B1 displays normalized weekly transfer counts for the year surrounding 30 June 2016, the retroactive implementation date of the last major reform of the German Inheritance and Gift Tax Law. The bins for each distribution is expressed as a share of overall transfers occurring around a one-year window around the event window endpoint. Weeks are centred around the end point, where week zero starts with the event date and includes the six days thereafter. All details are described in Section 4. The treated distribution for Figure B1 includes transfers in a one-year window around 1 July 2016 whereas the counterfactual distribution comprises transfers in the same window around 1 January 2010 and 2011. The boxed number indicated the excess mass estimate in the three weeks before the event window deadline with bootstrapped standard errors in parentheses.



Figure B2: Heterogeneity Excess Mass 2016 Reform

**Notes:** This figure shows excess mass estimates and two standard error confidence bounds for different sample splits for the mid-2016 reform. Figure B2a shows excess mass estimates for the different preferentially treated asset classes (agricultural property, business assets and company shares) whereas Figure B2b shows excess mass estimates for the different wealth quartiles.