// NO.19-037 | 09/2019

DISCUSSION PAPER

// ANNA THERESA BÜHRLE AND
CHRISTOPH SPENGEL

Tax Law and the Transfer of Start-up Losses: A European Overview and Categorization

Leibniz Association

ZEW

Tax Law and the Transfer of Start-up Losses:

A European Overview and Categorization

Anna Theresa Bührle

ZEW and University of Mannheim
theresa.buehrle@zew.de

Christoph Spengel

University of Mannheim and ZEW
spengel@uni-mannheim.de

-This version: September 11th, 2019-

Abstract:

Most of the European Member States employ anti-loss trafficking rules. They aim to prevent the acquisition of mere corporate shells with high tax loss carryforwards for the tax asset to be utilized in profitable companies. However, other corporations can unintentionally be affected by the anti-abuse regulations if there is a change in ownership or activity. The transfer restrictions have been argued to impair start-up financing, as investors are faced with the risk of losing accumulated loss carryforwards in the corporation upon the entering of new or the capital increase of existing investors.

This study provides an overview over the design and development of loss transfer restrictions in the EU28 over a time period of 19 years (2000 – 2018). Different aspects of the regulations are analyzed against the background of their impact on start-ups. Finally, the rules are categorized with respect to their strictness. Over time, more countries introduced restrictions. At the same time, the regulations became more lenient, offering start-ups more opportunities to maintain their loss carryforwards and, therefore, decreasing the risk for investors.

JEL: M13, H25, H32, L52

Keywords: tax loss carryforward, loss trafficking, loss transfer, entrepreneurship, start-ups

Acknowledgements:

We gratefully acknowledge financial support from the MaTax Science Campus and the German Research Foundation sponsored Graduate School of Economic and Social Sciences of the University of Mannheim.

1. Introduction

Loss trafficking, i.e. the acquisition of shell companies with significant tax loss carryforwards but without any economic activity for no other purpose than the transfer of tax loss carryforwards, is widely deemed abusive. The majority of the European Member States have anti-loss trafficking restrictions in place to counter such transactions, relying on criteria such as a change in ownership or activity. The reasoning behind it relates to the notion that decision-making should not be (exclusively) motivated by tax considerations. However, the reliance on general criteria to identify so-deemed abusive deals has the potential to affect other transactions as well. Economically, these restrictions result in external investors not being able to offset their losses. Being forced to forfeit loss carryforwards means losing a tax shield that could have led to substantial tax savings in the future, thus reducing the value of the corporation. As a result, denying the transfer of loss carryforwards could entice investors to refrain from funding risky projects.

External financing is particularly important for start-ups, since they are often financially constrained. They have not yet been able to build up financial reserves and do only have insufficient collateral to obtain bank credits (Carpenter & Petersen, 2002b, 2002a; Cosh, Cumming, & Hughes, 2009; Da Rin, Nicodano, & Sembenelli, 2006). Small- and medium-sized enterprises (SMEs) are an important part of the economy, accounting for almost 100% of businesses in the European Union (EU) and providing a considerable portion of overall employment (European Commission, 2018). Especially innovative start-ups are considered an important driver of innovation. Fostering an attractive environment for entrepreneurship is therefore important for a country's economy and advancement. Restricting the possibilities to offset losses and, as a result, increasing the risk for investors could jeopardize this goal. Possible negative effects could entail difficulties to obtain start-up financing or disincentives to go public.

The objective of this study is firstly to examine anti-tax loss trafficking rules across the EU28 Member States from 2000 to 2018. While temporal restrictions on losses such as tax loss carrybacks and carryforwards have already been investigated in the theoretical and empirical literature, this study is, to the best of our knowledge, the first to provide a comprehensive overview over restrictions of the transfer of tax loss carryforwards and their development over time. The regulations concern a narrow part of corporate tax law and are, if even mentioned, only described on a very general basis in tax databases commonly used in research. The data was collected using tax guides, supplemented by other studies and appended by referring directly to national tax law. The design of anti-tax loss trafficking rules is heterogeneous across the EU28 Member States, with a wide range of conditions and exceptions. Therefore, in a second part, the restrictions will be categorized to construct a more comparable variable. The strictness of

anti-tax loss trafficking regulations could influence the decision-making of founders and investors, thus impacting the attractiveness of the EU28 Member States (as well as the EU as a whole) as a location for innovative businesses. The results can provide guidance for policy makers by giving them the opportunity to explore alternative designs enacted in other countries. Investors can compare the ranking of the different regulations and their restrictiveness in the EU28 Member States that are of interest to them. The newly created variable can also be used for future research on the topic.

The remainder of this study is structured as follows. Chapter 2 provides an introduction to the treatment of tax losses with a focus on adverse effects it could potentially have on start-up development. Chapter 3 discusses the reasoning behind restrictions of tax loss transfers. Chapter 4 reviews empirical literature in the field. Chapter 5 examines different aspects of anti-tax loss trafficking regulations across the EU28 Member States. Chapter 6 categorizes the regulations. Finally, chapter 7 summarizes.

2. Start-ups and tax loss restrictions

While a lot of public attention and research focuses on multinational corporations, SMEs account for a considerable part of the economic activity and growth. According to the 2018 annual report on European SMEs, they significantly contributed to the recovery after the financial crisis. 99.8% of non-financial businesses in the EU are categorized as SMEs, providing 66.4% of overall employment in the sector (European Commission, 2018). Young and innovative companies are considered the driver of a country's technological and economic progress.

Start-ups often suffer from credit constraints as they lack sufficient collateral (Carpenter & Petersen, 2002b, 2002a; Cosh et al., 2009; Da Rin et al., 2006). Market failures such as externalities and information asymmetries aggravate this problem (Mina, Lahr, & Hughesy, 2013, Crawford & Freedman, 2010), leading to suboptimal investment in innovative projects (García-Quevedo, Segarra-Blasco, & Teruel, 2018). Venture capital (VC) funds bridge the funding gap with private equity. They typically support innovative ventures in their start-up phase and aim to exit after a number of years, mostly via a sale of the start-up or an initial public offering (IPO) (Schwienbacher, 2008). Apart from the loosening of financing constraints, venture capitalists provide additional support and guidance to start-ups, helping them to realize their full potential (Da Rin, Hellmann, & Puri, 2013; Hellmann & Puri, 2002; Lerner, 1994). Therefore a vital VC market plays an important role in the development of start-ups and innovation.

In their initial stage, most start-ups invest into their projects without generating corresponding income, resulting in an overall loss (EY, 2013). Losses are treated asymmetrically for tax purposes. While profits are taxed immediately, losses can only be deducted against past (loss carryback) or future profits (loss carryforward), often subject to temporal or relative constraints.

If the tax code allows for loss carrybacks, the taxpayer can offset current losses with past profits and claim a tax refund or tax credit. Remaining losses are to be carried forward and can be offset against future profits. Depending on the national regulations (see Bräutigam, Spengel and Stutzenberger (Bräutigam, Spengel, & Stutzenberger, 2017) for an overview), loss carrybacks as well as carryforwards can be limited in time or amount. Some countries limit the deductible amount to a percentage of the current income or a percentage of the total amount of loss carryforwards, others provide absolute thresholds, or a combination of both. Losses are usually carried forward at their nominal value, i.e. they are not adjusted for inflation or the time value of money. Therefore, unused losses effectively loose in economic value the longer they are carried forward. These loss regulations alone already discriminate against start-up investment, as the loss relief cannot be immediately claimed. Instead, in contrast to mature firms that can consolidate with other investments that already generate positive taxable income, start-ups have to wait until their project turns profitable to be able to benefit from accumulated losses (Crawford & Freedman, 2010).

Besides temporal restrictions on the offset of losses within a company, another important aspect of tax loss provisions concerns the transfer of losses between incorporated entities. Anti-loss trafficking rules can lead to the forfeiture of accumulated loss carryforwards in certain cases, such as a change in activity or a change in ownership (for more details, please refer to chapter 5). While these regulations are designed as anti-abuse measures to prevent the tax-driven acquisition of loss-making companies without any real activities, it has been argued that they distort investment, especially in case of start-up financing.

The above-mentioned tax loss provisions might prevent investors from funding start-up research and development (R&D) expenditure if – due to the regulations potentially worthless – losses have accumulated (Haufler, Norbäck, & Persson, 2014). First, loss transfer restrictions might negatively affect the financing decision of investors. Considering that the expenditure might not be tax-deductible later on, they might decide to forego or reduce the investment in a start-up. Second, they might also decrease the probability and price of acquisitions or IPOs in the exit case. Corporations could be reluctant to go public if, due to the change in the ownership

structure after an exit, anti-loss trafficking rules might apply. Depending on the specific regulation, the loss carryforwards accumulated in the start-up cannot be used at all, or with strict limitations.

The potential distortions caused by tax loss restrictions likely differ in their severity depending on the design of the regulation. If investors and founders take anti-tax loss trafficking regulations into account when deciding where to locate and invest, the restrictions have real economic consequences.

An exception to the denial of loss transfer between different corporate entities are group taxation regimes, where loss offset is allowed within a controlled group of companies via consolidation or loss compensation payments. However, as this study focuses on SMEs und start-ups outside of corporate groups, group taxation schemes will not be considered here.

3. Reasoning behind anti-tax loss transfer regulations

Reasons often brought forward to argue for the restriction of tax loss transfers relate to the notion that only the person incurring the tax loss should reap its benefits (Donnelly & Young, 2002; Hoenig, 2014; Nijhawan, 2015). However, pressing for the forced forfeiture of tax loss carryforwards after a change in ownership ignores that the denial may well lead to the new shareholders not being able to use the loss carryforwards, but it also denies the off-set for the old shareholders. Investors are thus not compensated for the investment they lost. As a result, the regulation aiming to restrict the benefits of loss carryforwards to its so-deemed rightful owner ends up denying the deduction altogether.

It is also voiced that it should only be allowed to set off losses if the activity that gave rise to them is continued (Hoenig, 2014; Nijhawan, 2015; Poitevin, 2003). The restriction to a similar or the same activity is said to encourage a corporation to continue loss-making activities in order to maintain loss carryforwards (Hoenig, 2014). According to Nijhawan (2015), this incentive is not set if the restriction not just requires the activity to be continued, but also allows the set-off of loss carryforwards only against profits from said activity. However, Hoenig (2014) states that, considering other regulations in tax law, it seems arbitrary to restrict the use of loss carryforwards to activities that gave rise to it while a taxpayer's income is usually calculated based on the net of all of his activities.

One of the major arguments alleged for the regulations relates to the principle of tax neutrality. The principle requires that taxes do not affect decision-making. Denying the transfer of losses is argued to prevent transactions which are driven entirely by tax considerations and do not

have any real economic reason other than the offset of losses. Even so, the allowance of tax loss carryforwards itself is borne out of efforts to mitigate the asymmetric treatment of profits and losses. The forfeiture of tax loss carryforwards thus does not improve but impair the neutrality of the tax system. Additionally, Poitevin (2003) brings forward the argument that, if loss carryforwards are transferable, firms in financial distress can use them as a collateral to obtain external financing, reducing imperfections in financial markets. Secondly, Hoenig (2014) calls in question why tax-driven transactions should even be considered undesirable in the context of loss trafficking. He points out that it should not make a difference whether a corporation's shareholders recoup their suffered losses by setting them off themselves ore being compensated through acquisition prices. That said, while it is at a state's discretion to circumvent transactions that are deemed to be abusive, trade sales and public offers of start-ups will generally not fulfill this scope, but they can still be affected by the restrictions.

Denying the use of loss carryforward transfers introduces distortions due to its limitation to corporations. In partnerships, the transparency principle leads to the apportionment of losses to the respective partners; they can be set off against other income of the individuals. In corporations, the separation principle causes the loss to be trapped at the level of the corporation; the shareholders are unable to utilize it outside of the corporate sphere. Due to the transfer restriction, they are not even able to be compensated for the losses after the sale of the corporation, leading to asymmetric distribution of risk between partnerships and corporations. In partnerships, investors are able to set off the resulting tax loss carryforwards against profits from other investments if the company is unsuccessful. In corporations, the investment is ultimately lost if the start-up is not turning profitable.

All in all, while anti-loss trafficking rules targeted at the so-deemed abusive transfer of tax loss carryforwards can, unintentionally, negatively affect corporate start-ups. Most companies seeking external finance will choose to incorporate (Crawford & Freedman, 2010). Restricting the transfer of loss carryforwards increases the risk for investor and discriminates against corporate start-ups, thus possibly leading to distortions in financing, legal form and location decisions. Seedtable's list of "100 European Start-ups to watch in 2019"[1] is comprised entirely of corporations, indicating a substantial share of incorporated entities in the European high-tech start-up ecosystem and therefore a potentially high relevance of loss transfer restrictions.

[1] Seedtable, https://www.seedtable.com/startups-europe (09.09.2019).

4. Empirical evidence

To the best of our knowledge there exists no empirical study investigating the effect of anti-tax loss trafficking rules. There is, however, an increasing literature relating to the effects of temporal loss restrictions such as tax loss carrybacks and carryforwards.

It has been shown that the permission of loss carrybacks, i.e. the loosening of tax loss restrictions, can lead to overinvestment and delay the exit of unprofitable firms (Bethmann, Jacob, & Muller, 2018). Similarly, the existence of loss carryforwards (Auerbach & Poterba, 1987) and the limitation of carryforward periods, i.e. the tightening of tax loss restrictions, has been shown to decrease investment incentives (Dreßler & Overesch, 2013). Dreßler and Overesch (2013) refrain from clearly arguing for or against temporal loss restrictions due to negative investment effects in case of restrictive regulations on the one hand and potential distortions of competition in case of generous regulations on the other hand.

Strict tax regulations concerning losses also negatively impact the perception of risk. Haufler, Norbäck and Persson (2014) model the effect of limited loss offset provisions on the riskiness of projects and find risk-reducing effects, i.e. the tax policy discourages inventors from starting risky ventures. Several empirical studies confirm that stricter tax loss provisions have a negative effect on risk-taking (Langenmayr & Lester, 2018; Sureth-Sloane & Mehrmann, 2017).

Focusing on start-ups, Mintz (1988) finds that, due to the uncertainty of the future profits and concomitant uncertainty about the value of current losses, they face a significantly higher potential tax rate than other firms in the same industry. In a subsequent paper, Cooper and Knittel (2010) add to those results. When comparing new to established firms, on average the results show higher losses and lower loss utilization rates as well as higher expected tax rates. They conclude that especially new firms and certain industries are disproportionally affected by the negative effects of asymmetric tax loss treatment. Due to their inability to immediately pool tax losses with profitable projects, start-ups face a far higher risk of not being able to deduct their investments (Henrekson & Sanandaji, 2011). Similarly, other research shows that especially small companies that would be eligible for loss offset do not claim their refund due to tax complexity (Zwick, 2018).

Taken together, the empirical literature suggests that tax loss regulations matter, and they matter more for young compared to mature companies. While more restrictive loss provisions might reduce overinvestment and mitigate concerns with respect to the delayed exit of unprofitable companies, they discriminate against risky investments. This disproportionally hits small and newly established firms. Transferring the conclusions drawn in the area of temporal tax loss

restrictions to anti-tax loss trafficking rules, the possible distortions addressed in the previous chapter are likely to predominantly affect SMEs and start-ups.

5. Transfer of tax losses in the EU28 Member States

The majority of EU28 Member States have introduced specific anti-abuse rules targeting so-deemed abusive transfer of tax losses. While the design of the national regulations shows great heterogeneity across countries, they share similar elements.[2] Estonia and Latvia occupy a special position due to the unique features of their tax law. Corporate taxes are only levied on profit distributions; tax loss carryforwards or carrybacks are not relevant in this system.

5.1. Change in ownership

A change in shareholding can trigger the anti-abuse regulation. As such, the regulation only concerns acquisitions conducted as share deals; in asset deals, the tax loss carryforwards generally remain with the corporation that incurred the loss. If the restrictions are tied to changes in shareholding, not just the sale of the corporation but any substantial investment resulting in a change in the ownership structure could pose a threat to accumulated loss carryforwards within a start-up.

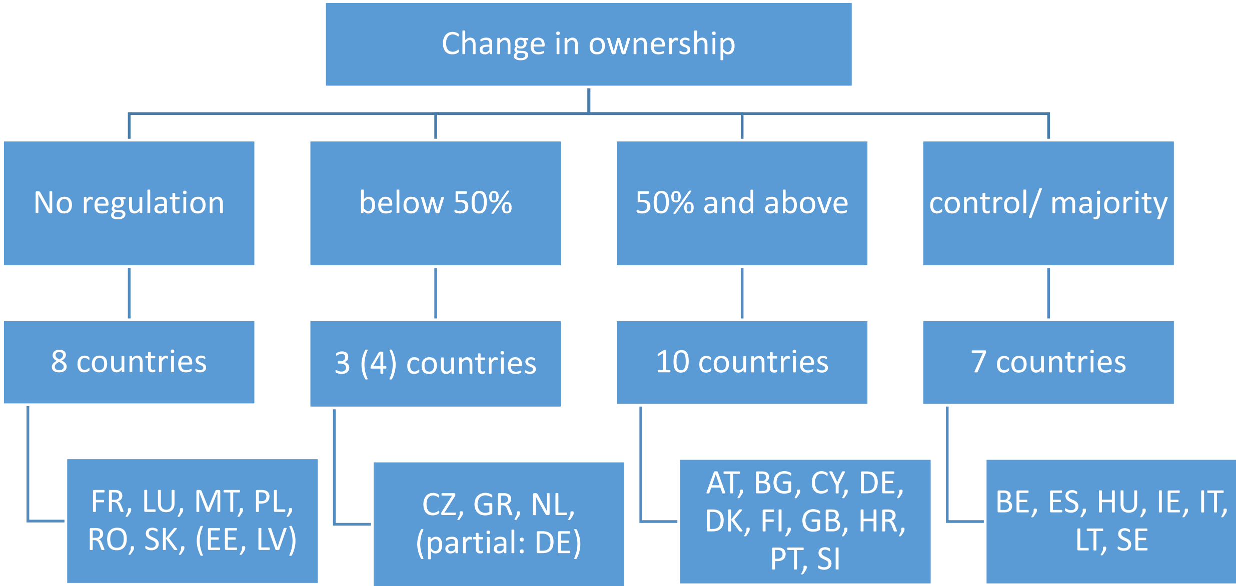

Figure 1: Definition of change in ownership (in 2018)

[2] The data was collected using the IBFD Country Analyses, a number of tax guides (PwC, EY, KPMG), various other references (BDI & KPMG, 2011; OECD, 2011) and, as most information was available on a broad basis only, by referring directly to the national tax law. A detailed overview of the elements of the national restrictions can be found in the appendix.

What constitutes a harmful change in ownership differs depending on the national regulation (Figure 1). While seven of the EU28 Member States that rely on this criteria refer to changes in control or majority (commonly assumed to be fulfilled upon the transfer of more than 50% of a company's shares), others clearly specify minimum thresholds ranging from of 25% (e.g. Czech Republic) to 75% (e.g. Austria). Just three countries employ the anti-abuse rules already for change in ownership below 50%.

The German regulations in place since 2008 lead to the pro rata denial of loss carryforwards upon a change in ownership between 25 and 50% and a full denial from 50%. However, in 2017 the German Federal Constitutional Court has declared the pro rata regulations unconstitutional (Decision from 29.3.2017, 2 BvL 6/11).

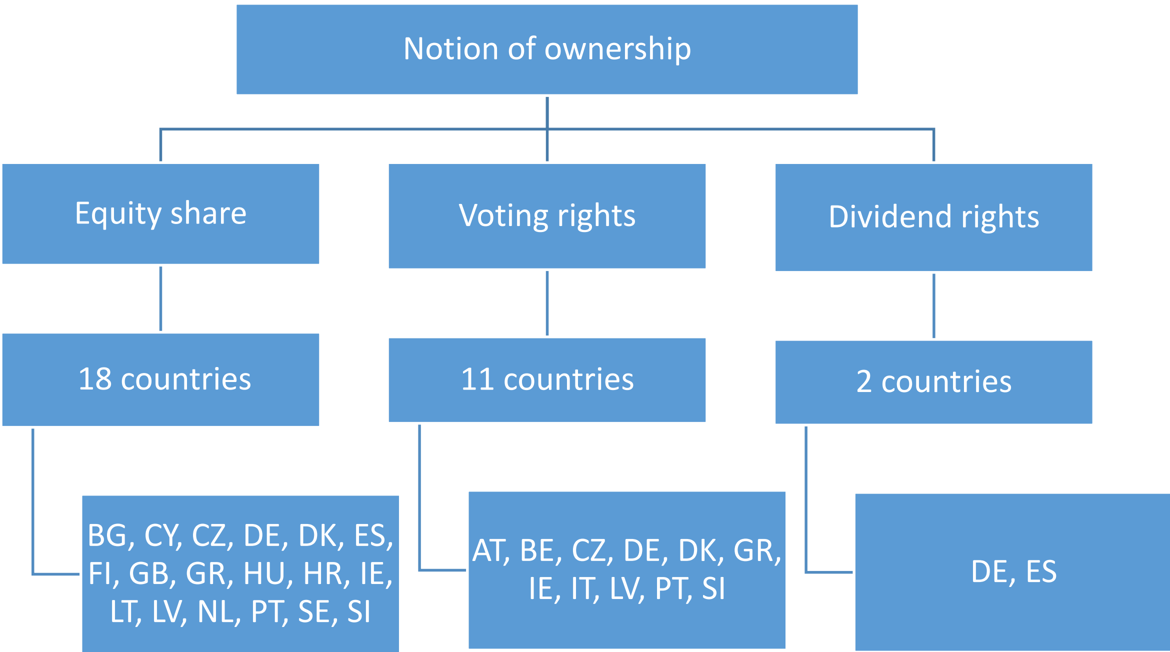

Figure 2: Type of ownership (in 2018)

The notion of ownership differs between the EU28 Member States (Figure 2). The share of equity, voting and dividend rights can coincide, but different share classes or voting agreements can lead to different distributions of types of holdings of a company. The majority of the EU28 Member States exclusively refers to a change in ownership in equity rights (e.g. Finland), others to changes in the share of voting rights (e.g. Italy). However, it is possible that administrative practice extends the concept of ownership to prevent circumventions of the tax law. The wording of the tax law in some Member States covers changes in both types of ownership (e.g. Greece). Germany and Spain are the only two countries that also include changes in the rights for dividends as a possible trigger.

Apart from the acquisition of emitted shares of a company, increases in share capital with a concomitant change in the ownership structure can also potentially lead to the forfeiture of tax loss carryforwards. This explicitly applies in Germany, Finland, the Netherlands and Sweden. For start-ups, this restriction could be harmful in the funding process as the entrance of every new investor could already lead to the extinguishment of loss carryforwards.

5.2. Change in activity

While some countries did or do only rely on the ownership criteria, several countries require a change in activity in addition to a change in ownership for the restriction to apply. France and Portugal occupy a special position as they do not require a change in ownership, but instead deem a change in activity already as sufficient to deny the deduction of tax loss carryforwards. The forced forfeiture of losses after a change in activity can have serious negative consequences, especially in the initial stages where the development of a business plan might lead to the shift of the company's economic focus.

The definition of a change in activity differs across countries. In general, the regulations can be sub-divided into three groups (Figure 3): Five of the Member States refer to financial statement figures, sometimes having detailed thresholds requiring the company to maintain certain percentages of assets and employees for a minimum time period or a certain level of turnover generated by the company's activities. Four countries depend on the commercial orientation of the company, defining changes in product portfolio or targeted sales markets as a change in activity. Seven generally refer to a continuation of the activity or nature of the original trade as necessary requirement to maintain loss carryforwards.

In the Czech Republic, the company has to prove that at least 80% of its revenue is generated by the same activity that was conducted during the time the tax losses in question were assessed, otherwise a harmful change in activity is assumed. Spain links it to different or an additional group of activities (based on the national classification of economic activities) that generate revenue exceeding 50% of the average turnover of the previous two years. France and Greece rely on changes in turnover of more than 50% compared to the preceding year due to additional or ceased activities, with France allowing the average number of employees and the gross value of fixed assets as alternative criteria. The Netherlands define a harmful change in activity as a decrease in the original activities to less than 30%. Relevant factors to determine the activity of a corporation depend on the industry and include employment, turnover and assets.

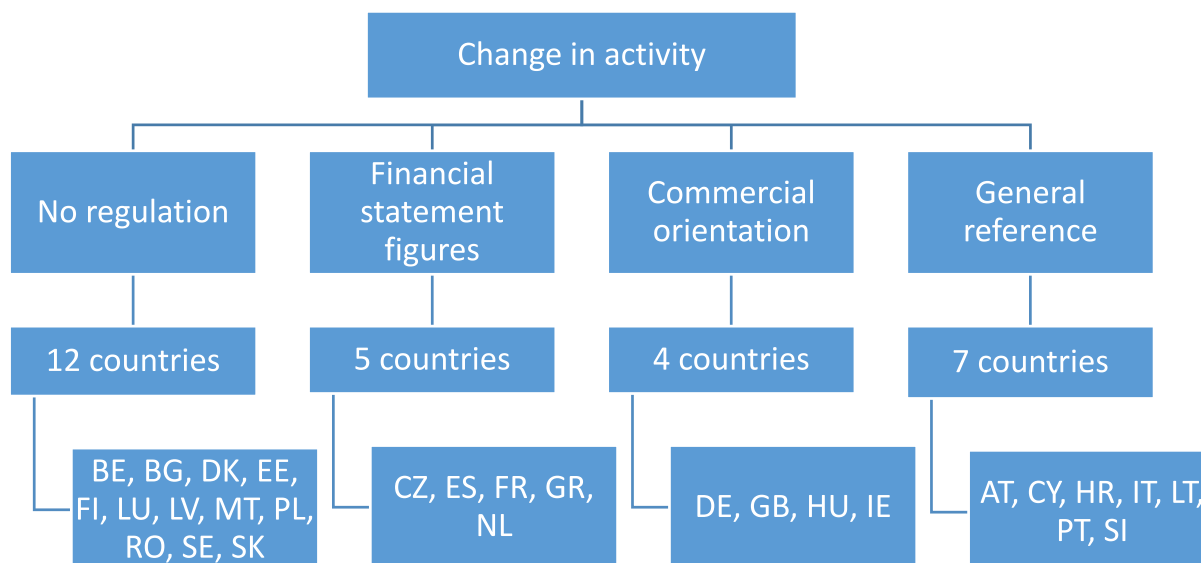

Figure 3: Definition of change in activity (in 2018)

To capture the commercial orientation of the corporation, services, products sold, sales market targeted, and customer relationships are considered. In Germany, the activities since the foundation of the company or at least the previous three years are taken as benchmark. If losses are carried over based on the activity exemption, loss carryforwards can be offset as long as the activities are continued. If the activity requirement ceases to be fulfilled, remaining loss carryforwards are forfeited. Great Britain also takes the three years before the change in activity into consideration, but limits the relevant time after the change in ownership to five years. Hungary requires the continuation of the company's activities for at least two years with the generation of corresponding revenue. Ireland defines a change in activity as harmful if it occurs within a three-year-period of the change in ownership.

5.3 Exemptions

5.3.1 Overview

To ensure that the anti-loss trafficking restrictions affect cases that are considered abusive but exclude transactions that are not targeted, regulators have introduced exemptions for specific cases (Figure 4). These escape clauses will be discussed in detail in the following sub-chapters.

Overall, exemptions are provided for reorganizations in response to financial distress or the availability of hidden reserves. Transactions within groups where the ultimate owner remains can be disregarded, too, as well as changes in the ownership structure of quoted companies. Some countries provide the opportunity to bring forward evidence of economic and financial reasons to refute the abuse assumption. The regulations mentioned are explicitly stated in the

respective EU Member States' tax law. In addition, some EU Member States could employ exemptions based on administrative directives or more informal practices.

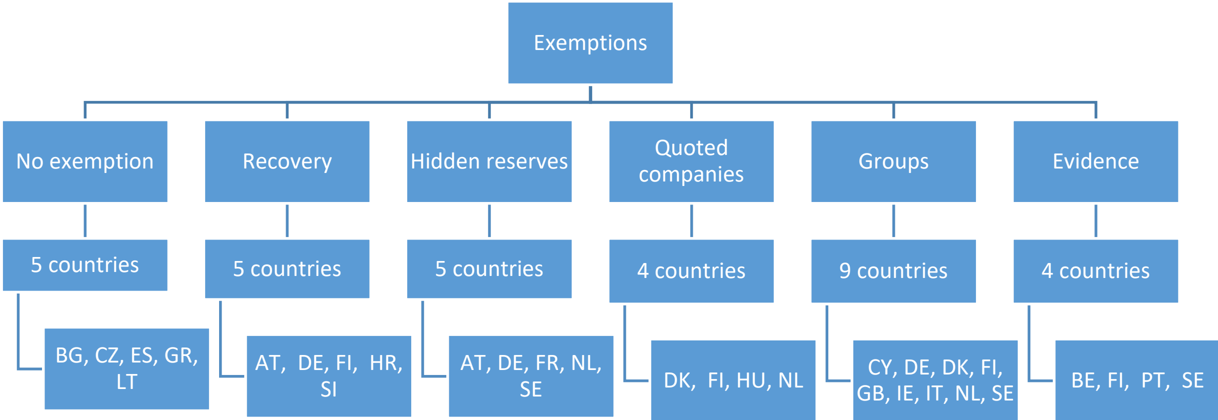

Figure 4: Explicit exemptions (in 2018)

5.3.2 Recovery

Austria and Germany implemented the so-called "Sanierungsklausel" (recovery clause) in their regulations, which allows the transfer of losses, even if the requirements of the anti-loss trafficking rules have been fulfilled, in case of reorganizations to save the company. The reorganization has to aim to safeguard a substantial part of the jobs (Austria) and to maintain the company's main business structures (Germany). Similarly, Croatia and Slovenia do not apply the regulation if the change in activity results from efforts to maintain employment and to financially recover the company. In Finland, special permission to utilize loss carryforwards is granted upon application if it is necessary for the continuation of the company's business. One of the reasons accepted are reorganizations, where the effects on employment are also of importance.

Taken together, the exemptions for recovery display similar features. One shared objective is the safeguard of jobs, where the specific demands tied to this aim can differ between the countries depending on the wording of the regulation and administrative practice.

5.3.3 Hidden reserves

After criticism from the industry as well as the scientific community regarding the excessive nature of its anti-loss trafficking regulation, Germany added exceptions, amongst them the so-called hidden reserve clause. It allows the transfer of loss carryforwards up to the amount of hidden reserves in case of a change in ownership. While the German wording simply demands the presence of hidden reserves, Austria explicitly requires their disclosure (leading to a tax-

effective step-up). Similarly, the Netherlands allow step-ups in the book value of the company's assets to utilize otherwise lost loss carryforwards. In France, changes in the activity of accompany lead to a fictive liquidation of the company. As a consequence, hidden reserves incorporated in the companies assets can be revealed and set off against loss carryforwards. While this treatment does not offer the possibility to maintain loss carryforwards after the activity and business purpose of a company has changed, they are not lost per se. As in the Austrian case, capital gains obtained by tax-effective step-ups can be set off against the accumulated loss carryforwards. Sweden allows the deduction of losses up to double the purchase price (reduced by related capital contributions) of the transferred shares. If the purchase price greatly exceeds the value of the loss carryforward it is presumed that the price compensates for hidden reserves, negating the abuse assumption (BDI & KPMG, 2011).

5.3.4 Quoted companies

Quoted companies have limited influence on the trading of their shares on public stock markets. They often do not know when a relevant change in ownership occurs that could affect their existing loss carryforwards. Four countries account for the difficulties in tracking the ownership structure of widely held public companies and include an exemption in their tax law.

Denmark and Hungary exclude listed companies in general from the scope of the anti-loss trafficking restrictions. Finland exempts listed companies to the extent that their shares are traded on a regulated market, i.e. only changes in non-listed shares can lead to the forfeiture of losses. In the Netherlands, the regulations include a provision according to which regular trading does not lead to an extinction of loss carryforwards, as long as the company could not have known that a significant change in ownership took place.

5.3.5 Groups

Restructuring within a group might result in a change in the direct ownership structure while the ultimate holding remains unaffected. Such transactions are excluded from the scope of the anti-avoidance regulations in nine countries. What constitutes a group differs from country to country.

The German "Konzernklausel" (group clause) restricts the application of the anti-abuse clause to changes with less than 100% direct or indirect shareholding chains. Great Britain, Ireland and Cyprus just require a 75% ownership relation for the non-application. The Dutch fiscal authorities do not apply the restrictions on loss carryforwards if the harmful change in ownership can be attributed to a shareholder that, directly or indirectly, already held at least one third

of the shares before the transaction. Similarly, in Finland changes within the ownership structure of a group are amongst the reasons accepted to obtain permission to use loss carryforwards. A company belongs to a group if a limited company exercises dominant influence over it, usually determined based on the absolute voting majority. Italy also relies on the concept of control, regularly achieved by direct or indirect holdings in excess of 50% of the share capital.

In Sweden and Denmark, changes of ownership are determined at the parent level. Therefore, restructuring within a group does not trigger the regulation as long as it does not affect the ultimate share holding. Swedish groups are build by decisive influence over other companies, typically achieved by holding more than half of the voting rights or otherwise exerting control. Denmark only requires a minimum shareholding of 25%. In those cases, solely changes in ownership of the ultimate parent results in the forfeiture of loss carryforwards.

5.3.6 Evidence of economic and financial justifications

Five countries explicitly provide the opportunity to justify changes in the ownership structure or activity. Belgium refers to legitimate reasons of financial or economic nature, Finland to a necessity for the continuation of the company's business. In Portugal, a request can be made to the Ministry of Finance (before changes in ownership or activity triggering the regulation take place) in special cases of economic interest. Sweden may grant exemptions if the change in ownership has socio-economic significance and would not take place if the exemption would not be granted. However, this option is applied very restrictively.

5.3.7 Relevance of exemptions for start-ups

The exemptions summarized above apply to companies of all sizes and ages. One major reason for the re-introduction of the activity criteria in Germany in 2016 was the relief of restrictions on start-ups (Berger & Tetzlaff, 2019). However, the wording of the tax law now includes all companies to avoid illegal state aid cases. Similarly, to the best of our knowledge, none of the EU28 Member States, except for Italy, employs exemptions specifically limited to start-ups. Since 2017, young Italian companies have the possibility to transfer all tax losses incurred in their first three fiscal years of activity to a listed corporation that has at least 20% shareholding in the start-up. The price paid to the start-up for the transferred loss carryforwards is not included in its taxable income, i.e. it is received tax-free. Other than that, start-ups have to rely on the general rules to utilize their loss carryforwards.

The exemptions for recovery, quoted companies and groups will regularly be of little relevance to start-ups. While they are often financially constraint, changes in ownership or activity do not occur due to financial distress but are part of strategic decisions in the development process of

the start-up. Privately held start-ups cannot make use of the exclusion of listed corporations. In addition, start-ups that have been established independently will not benefit from the group exemption. While there are start-ups that have been founded as a spin-off of a regular company and are thus part of a corporate group, this particular group will not be as dependent on external investors as they can rely on funding from within their group.

While the hidden reserve clauses seem, at first glance, beneficial for start-ups, their applicability is limited. Hidden reserves are commonly defined as the difference between book and market value tied to material or immaterial business assets of the company. Start-ups that have yet not been able to build up any hidden reserves on their assets will not be able to exploit the exemption. The determination and pricing of self-generated goodwill will prove to be difficult, if at all accepted as hidden reserve within the meaning of the national law. Sweden's amount limitation rule provides leeway in a sense that hidden reserves do not have to be realized per se, but instead are assumed to be compensated for in the purchase price.

For start-ups without the ability to set off hidden reserves, the remaining option is to bring forward evidence of financial and economic reasons to refute the abuse assumption. This entails administrative efforts and therefore costs that are imposed on the company.

6. Categorization of anti-loss trafficking regulations

As apparent from the preceding overview, the design of the regulations varies greatly across the EU28 Member States. Despite this heterogeneity, a classification into broad categories can be undertaken based on the strictness of the regulations. The easier it is to maintain loss carryforwards despite changes in activity or ownership, the more lenient the restriction.

The absence of anti-loss trafficking rules is classified as the most lenient Category 0. In those cases, there is no explicitly codified restriction on the deduction of tax loss carryforwards after a change in ownership or activity.

In case of explicit regulations, abuse is blanketly assumed based on codified criteria. The burden of proof of the opposite rests upon the taxpayer. In those cases, the cumulative requirement of a change in activity and ownership is the least restrictive measure. As both criteria have to be fulfilled, the forfeiture of loss carryforwards can be avoided if the start-up's business activity is maintained (and properly documented) for the required periods, even if a new investor enters or existing investors increase their stake in the enterprise. On the other hand, an adjustment in the business strategy to account for changing preferences or to gain access to a new customer

base will not lead to unintended negative tax consequences if it does not coincide with a change in the ownership structure.

The forfeiture of losses after a change in activity imposes a more serious restriction on start-ups than the cumulative requirement. Nevertheless, as summarized in chapter 5.2, most countries rely on broad definitions of a corporation's activity. While this lack of guidance may lead to legal uncertainty, it also gives corporations leeway in avoiding the application of the restriction. Changes in activity will generally have to be far reaching in order to trigger the regulations. As long as the corporation maintains its activities, investments, trade sales and IPOs do not lead to the forfeiture of loss carryforwards.

Compared to activity-based clauses, anti-abuse regulations solely relying on a change in ownership are more restrictive. Within this category, any substantial investment (and in some countries, even a capital increase from existing shareholders) could pose a threat to accumulated loss carryforwards within a start-up. If the corporation plans to go public, they will have to take into account the value of its accumulated loss carryforwards that will be lost in the process. The precisely defined thresholds do not leave any room for interpretation once they have been crossed.

Anti-abuse regulations either relying on a change in ownership or a change in activity fall in the most restrictive category. The fulfillment of each criteria on its own (and, of course, if they are reached cumulatively) leads to the forfeiture of a corporation's loss carryforwards.

Based on this reasoning, four categories are defined as follows:

Table 1: Categories of anti-loss trafficking rules

Category	*Description*
Category 0	No explicit anti-loss trafficking rule
Category 1	Denial of loss transfer after change in ownership and activity (cumulative requirement)
Category 2	Denial of loss transfer after change in activity
Category 3	Denial of loss transfer after change in ownership
Category 4	Denial of loss transfer after change in ownership or activity (fulfillment of one criteria sufficient)

Other elements that could be used to categorize the regulations have been discussed in chapter 5. However, a more fine-grained classification would inflate the number of categories and defeat the purpose of such a measure. Instead, the other elements could be included in an empirical specification as separate variables.

Table 2 depicts the categorization of the loss carryforward restrictions for the EU28 Member States. 17 out of the 28 countries considered had anti-loss trafficking rules in place since before 2000, with the rules being introduced around the 80s and 90s. This entailed the majority of the EU15 countries (except Greece and Luxembourg), Bulgaria, Cyprus, Hungary and Latvia. Ownership-based system were enacted in slightly more countries compared to cumulative regimes (eight compared to seven); two countries had an activity-based scheme in place.

17 of the EU28 Member States did not change their regulations since 2000. Amongst them, six never introduced regulations and thus fall in Category 0 (Estonia, Luxembourg, Malta, Poland, Romania, Slovak Republic); Category 1 and Category 3 fill five countries each (Austria, Cyprus, England, Ireland and Italy in Category 1, Belgium, Bulgaria, Denmark, Finland and Sweden in Category 3). France with its activity-based rule is the only one placed in the second category.

Over the course of the time period considered here, five countries, mainly Eastern Member States around their accession to the EU, newly introduced restrictions (Czech Republic, Greece, Croatia, Lithuania, Slovenia), mostly relying on cumulative criteria. Merely Slovenia introduced an ownership-based system, placing it in Category 3. However, it quickly changed to a cumulative regime after two years, consequently dropping to Category 1. Five countries changed existing regulations (Germany, Spain, Greece, Portugal, Slovenia). The majority introduced the activity-requirement in addition to the ownership criteria and moved from the third to the first category. Germany switched its system in 2008, changing from the first to the third category, but later re-introduced the additional activity requirement. Portugal added the ownership criteria to the activity criteria as mutually exclusive condition, thus dropping from Category 2 to 4. In contrast, just two countries abolished the restriction: Hungary had an ownership-based system in place in 2000, abolished it in 2001 and over a decade later re-introduced a cumulative system. Latvia switch to a corporate tax system levying taxes on distributions, thus rendering loss carryforwards (and therefore anti-tax loss trafficking rules) irrelevant.

As of 2018, only Luxembourg, Poland, Latvia, Malta, Romania and the Slovak Republic remain without anti-abuse rules targeted at the transfer of loss carryforwards. .

Table 2: Category Allocation to the EU28

Country	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*
AT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BE	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
BG	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CZ	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DE	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3	1	1	1
DK	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
EE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	1
FI	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
FR	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
GB	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
HU	3	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
HR	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
IE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
IT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LT	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LV	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
MT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NL	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PT	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4
RO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SE	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
SI	0	0	0	0	0	3	3	1	1	1	1	1	1	1	1	1	1	1	1
SK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes:

EE (2000-2018): taxation of profit distributions only; no relevance of loss carryforwards

ES (2000-2014): regulation only applies to inactive companies.

LV (2018): taxation of profit distributions only; no relevance of loss carryforwards

NL (2000): regulation only applies to inactive companies.

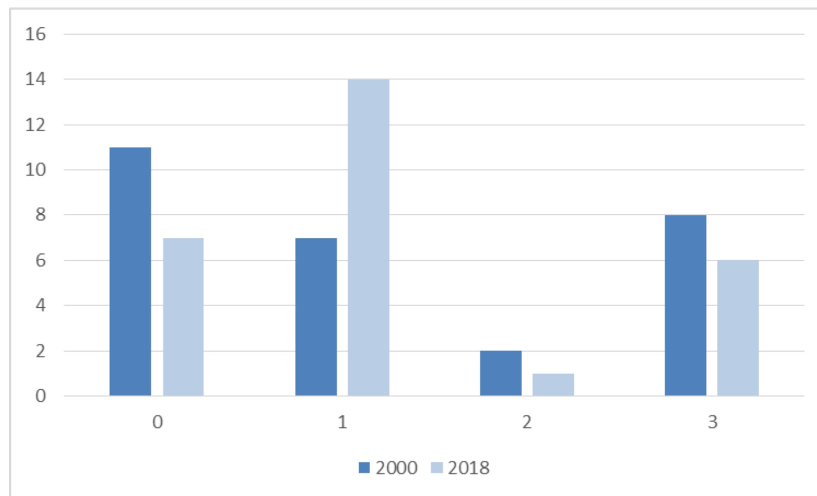

Figure 5: Development of categories over time

The general trend shows a movement towards the cumulative system (Figure 5). From 2000 to 2018, the amount of EU28 Member States employing this type of regulation doubled from seven to 14 countries. Where existing restrictions were in place they were changed (three countries), and if new restrictions were introduced, they usually incorporate a combination of the activity and ownership criteria (four countries). This potentially benefits start-ups as it decreases the risk of forfeitures of loss carryforwards.

Nevertheless, some countries still employ rather restrictive regulations. Even though exemptions mitigate concerns that they will negatively affect the environment for young, innovative corporations, the restrictions still entail risks and administrative burdens. If they indeed exert a negative influence on the funding and development of start-ups, this could impact the location decision of founders and thus the local start-up environment. Whether and to what extent this effect is present remains an empirical question

7. Summary

(1) The majority of the European Member States have anti-loss trafficking restrictions in place to counter the acquisition of companies for no other purpose than the transfer of tax loss carryforwards. The restrictions rely on a change in ownership, a change in activity, or both as condition to assume abusive transactions. However, acquisitions or public offerings of start-ups with accumulated losses can unintentionally be affected as well. The specific design of the regulation shows great heterogeneity across countries, with differing definition of ownership and activity, thresholds and special exemptions.

(2) Arguments against the trafficking of loss carryforwards are based on the notion that losses should be tied to a person or activity, or the principle of tax neutrality. However, the

restrictions only affect corporations. Denying the transfer of losses prevents investors from recouping their unsuccessful investments, thus increasing their risk when investing in incorporated entities as compared to partnerships.

(3) European SMEs account for a considerable part of the economic activity and employment. Young and innovative companies are considered the driver of a country's technological and economic progress. Impairing the start-up environment thus could have adverse effects on growth and innovation in the EU. Investors and companies incorporate limitations on the amount and timing of loss carryforwards and carrybacks into their decision making. Empirical findings indicate that temporal tax loss restrictions disproportionally affect SMEs and start-ups. Similarly, anti-abuse regulations have been argued to impair the funding and development of start-ups if accumulated loss carryforwards have to be forfeited after an increase in capital, the entry of a new investor or an IPO.

(4) This study provides an overview over the restrictions on the transfer of loss carryforwards in the EU28 Member States from 2000 to 2018. A classification scheme is suggested based on the strictness of the regulation, ranging from the absence of specific restrictions to the forced forfeiture of loss carryforwards in the case of a change in ownership or a change in activity. This index can serve as guidance for policy makers and investors, providing an overview over different designs and their development as well as a comparison across the EU28 Member States.

(5) The majority of countries introduced or changed to a regime with the cumulative requirement of a change in ownership and a change in activity. On the one hand, more countries employ specific restrictions compared to 2000. On the other hand, regulations became more lenient over time, decreasing the risk for start-ups to get caught up in the anti-abuse regulations. Empirical research is needed in order to determine whether the restrictions exert a significant negative influence on start-up funding as well as their activities and location decisions, or whether the exemptions mitigate these risks.

Appendix

Country	Introduction	Law	Period	Ownership: Type	Ownership: Percentage	Ownership: Level of change	Ownership: Capital increase	Activity: Criteria	Excemption: Quoted	Excemption: Group	Excemption: Recovery	Excemption: Hidden Reserves	Excemption: Evidence
AT	1988	8 (4) c) KStG	2000-2018	voting	75%[3]	direct	-	nature or conduct, assets	-	-	x	x	-
BE	1997	207 (3) ITC	2000-2018	voting	control	direct or indirect	-	-	-	-	-	-	x
BG	1998	119 (2) CITA	2000-2018	equity	50%	direct	-	-	-	-	-	-	-
CY	?	13 (1), (2)	2000-2018	equity	50%	direct	-	nature or conduct	-	x	-	-	-
CZ	-	-	1998-2003	-	-	-	-	-	-	-	-	-	-
	2004	38na (1) - (3)	2004-2018	equity, voting	25%	direct	-	income	-	-	-	-	-
DE	1990	8 (4) KStG	2000-2007	equity, voting, dividends	50%	direct	x[4]	assets	-	-	x	-	-
		8c KStG	2008-2009	equity, voting, dividends	25%-50%	direct or indirect	x	-	-	-	x[5]	-	-
		8c KStG	2010-2015	equity, voting, dividends	25%-50%	direct or indirect	x	-	-	x	x	x	-

[3] Not legally codified, but adminstrative practice.
[4] Not legally codified, but adminstrative practice.
[5] Introduction in 2010, retroacive application.

		8c, 8d KStG	2016-2018	equity, voting, dividends	25%-50%	direct or indirect	x	product portfolio, establishments, sales markets	-	x	x	x	-
DK	1988	15 (7)-(9) LL / 12 D SEL	2000-2018	equity, voting	50%	parent level	-	-	x	x	-	-	-
EE	-	-	2000-2018	distribution tax, no LCF available									
ES	1996	25	2000-2014	equity, dividends	majority	direct or indirect	-	-[6]	-	-	-	-	-
		26 (4) / 43 (2) ISS	2015-2018	equity, dividends	majority	direct or indirect	-	turnover	-	-	-	-	-
FI	1993	122 (1) EVL	2000-2018	equity	50%	direct or indirect	x	-	x[7]	x[8]	x[9]	-	x[10]
FR	1985	221 (5) CGI	2000-2018	-	-	-	-	turnover, employees, assets	-	-	-	x	-
GB	1988	Part 14 CTA	2000-2018	equity	50%	direct or indirect	-	product portfolio, establishments, sales markets	-	x	-	-	-
GR	-	-	2000-2013	-	-	-	-	-	-	-	-	-	-

[6] Regulation only applies if company has been inactive before.
[7] Not legally codified, but adminstrative practice.
[8] Not legally codified, but adminstrative practice.
[9] Not legally codified, but adminstrative practice.
[10] Not legally codified, but adminstrative practice.

	2014	27 (5) NITC	2014-2018	equity, voting	33%	direct or indirect	-	turnover[11]		-	-	-	-
HU	1997	?	2000	equity	50%	direct	-	-	-	-	-	-	-
	-	-	2001-2011	-	-	-	-	-	-	-	-	-	-
	2012	17 (9)	2012-2018	equity	majority	direct or indirect	-	product portfolio, establishments, sales markets	x	-	-	-	-
HR	-	-	2000-2009	-	-	-	-	-	-	-	-	-	-
	2010	17 (5) - (8)	2010-2018	equity	50%	direct	-	activity	-	-	x	-	-
IE	1976	27 CTA 1976, 401 TCA 1997	2000-2018	equity, voting	substantial	direct	-	product portfolio, establishments, sales markets	-	x	-	-	-
IT	1998	84 TUIR	2000-2018	voting	majority	direct	-	activity	-	x	-	-	-
LT	-	-	2000-2001	-	-	-	-	-	-	-	-	-	-
	2002	43 (2), (3)	2002-2006	equity	66%	direct	-	activity	-	-	-	-	-
		43	2007-2018	equity	control	direct	-	activity	-	-	-	-	-
LU	-	-	2000-2018	-	-	-	-	-	-	-	-	-	-
LV	1995	14 (2), (3)	2000-2017	equity, voting	50%	direct or indirect	-	turnover	-	-	-	-	-
	-	-	2018	distribution tax, no LCF available									

[11] Introduction in 2018, retroactive application.

MT	-	-	2000-2018	-	-	-	-	-	-	-	-	-	-
NL	1970	20 (5) VpB	2000	equity	substantial	direct or indirect	-	-[12]	-	x	-	x[13]	-
		20a VpB	2001-2018	equity	30%	direct or indirect	x[14]	employees, turnover, assets	x	x	-	x	-
PL	-	-	1998-2018	-	-	-	-	-	-	-	-	-	-
PT	1995	47 (8) CTC	2000-2005	-	-	-	-	activity	-	-	-	-	x
		47 (8), 52 (8) CTC	2006-2018	equity, voting	50%	direct	-	activity[15]	-	-	-	-	x
RO	-	-	2000-2018	-	-	-	-	-	-	-	-	-	-
SE	1983	40 IL	2000-2018	equity	control	parent level	x	-	-	x	-	x	x
SI	-	-	2000-2004	-	-	-	-	-	-	-	-	-	-
	2005	29 (5) ZDDPO-1	2005-2006	equity, voting	25%	direct or indirect	-	-	-	-	-	-	-
		36 (5) ZDDPO-2	2007-2018	equity, voting	50%	direct or indirect	-	activity	-	-	x	-	-
SK	-	-	2000-2018	-	-	-	-	-	-	-	-	-	-

[12] Only applies to companies that have reduced or terminated activity before the change in ownership.
[13] Not legally codified, but practice based on court decisions.
[14] Applies if participation was below 33% before capital increase.
[15] Requirement not cumulative. The fulfillment of each criteria on its own triggers the regulation.

References

Auerbach, A. J., & Poterba, J. M. (1987). Tax Loss Carryforwards and Corporate Tax Incentives. In *The Effects of Taxation on Capital Accumulation* (Vol. I, pp. 305–342). https://doi.org/10.3386/w1863

BDI, & KPMG. (2011). *Verlustnutzung nach Anteilseignerwechsel. Ein Vergleich des §8c KStG mit entsprechenden Regelungen in ausgewählten Industrie- und Schwellenländern*. Retrieved from https://bdi.eu/media/presse/publikationen/marketing/BDI-KPMG-Studie_2011.pdf

Berger, J., & Tetzlaff, G. (2019). Nachträglicher Antrag für fortführungsgebundenen Verlustvortrag. *NWB*, (17), 1214–1218.

Bethmann, I., Jacob, M., & Muller, M. A. (2018). Tax Loss Carrybacks: Investment stimulus versus misallocation. *Accounting Review*, *93*(4), 101–125. https://doi.org/10.2308/accr-51956

Bräutigam, R., Spengel, C., & Stutzenberger, K. (2017). *The Development of Corporate Tax Structures in the European Union from 1998 to 2015 Qualitative and Quantitative Analysis* (ZEW Discussion Paper No. No. 17-034). https://doi.org/10.2139/ssrn.3038789

Carpenter, R. E., & Petersen, B. C. (2002a). Capital Market Imperfections , High-Tech Investment, and New Equity Financing. *The Economic Journal*, *112*(477), F54–F72.

Carpenter, R. E., & Petersen, B. C. (2002b). Is the Growth of Small Firms Constrained By Internal Finance? *The Review of Economics and Statistics*, *84*(May), 298–309.

Cooper, M., & Knittel, M. J. (2010). The implications of tax asymmetry for U.S. corporations. *National Tax Journal*, *63*(1), 33–62.

Cosh, A., Cumming, D., & Hughes, A. (2009). Outside enterpreneurial capital. *Economic Journal*, *119*(540), 1494–1533. https://doi.org/10.1111/j.1468-0297.2009.02270.x

Crawford, C. & Freedman, J. (2010). *Small Business Taxation.* In: Mirrlees, J.Adam, S., Besley, T., Blundell, R., Bond, S., Chote, R., Gamamie, M., Jonson, P., Myles, G., Poterba, J. (Eds.). Dimensions of Tax Design. The Mirrlees Review. Oxford University Press, New York, p. 1028-1099.

Da Rin, M., Hellmann, T., & Puri, M. (2013). *A Survey of Venture Capital Research*. *Handbook of the Economics of Finance* (Vol. 2). Elsevier B.V. https://doi.org/10.1016/B978-0-44-453594-8.00008-2

Da Rin, M., Nicodano, G., & Sembenelli, A. (2006). Public policy and the creation of active venture capital markets. *Journal of Public Economics*, *90*(8–9), 1699–1723. https://doi.org/10.1016/j.jpubeco.2005.09.013

Donnelly, M., & Young, A. (2002). Policy Options for Tax Loss Treatment: How Does Canada Compare? *Canadian Tax Journal*, *50*(2), 429–488.

Dreßler, D., & Overesch, M. (2013). Investment impact of tax loss treatment-empirical insights from a panel of multinationals. *International Tax and Public Finance*, *20*(3), 513–543. https://doi.org/10.1007/s10797-012-9240-1

European Commission. (2018). *Annual Report on European SMEs 2017-2018. SMEs growing beyond borders*. https://doi.org/10.2873/248745

EY. (2013). *Economic impact of tax proposals affecting research-intensive start-up businesses and qualified small business companies*. Retrieved from http://energystorage.org/system/files/resources/att00040.pdf

García-Quevedo, J., Segarra-Blasco, A., & Teruel, M. (2018). Financial constraints and the failure of innovation projects. *Technological Forecasting and Social Change*, *127*(June 2017), 127–140. https://doi.org/10.1016/j.techfore.2017.05.029

Haufler, A., Norbäck, P. J., & Persson, L. (2014). Entrepreneurial innovations and taxation. *Journal of Public Economics*, *113*(December 2013), 13–31. https://doi.org/10.1016/j.jpubeco.2014.03.002

Hellmann, T., & Puri, M. (2002). Venture Capital and the Professionalization of Start-up Firms : Empirical Evidence. *The Journal of Finance*, *57*(1), 169–197. https://doi.org/10.2307/2697837

Henrekson, M., & Sanandaji, T. (2011). Entrepreneurship and the theory of taxation. *Small Business Economics*, *37*(2), 167–185. https://doi.org/10.1007/s1118700992422

Hoenig, M. (2014). Trafficking in Net Operating Losses: What's So Bad. *Tax Notes Special Report*, *149*, 919–939. Retrieved from https://taxprof.typepad.com/files/145tn0919.pdf

Langenmayr, D., & Lester, R. (2018). Taxation and corporate risk-taking. *Accounting Review*, *93*(3), 237–266. https://doi.org/10.2308/accr-51872

Lerner, J. (1994). Venture capitalists and the decision to go public. *Journal of Financial Economics*, *35*, 293–316.

Mina, A., Lahr, H., & Hughesy, A. (2013). The demand and supply of external finance for innovative firms. *Industrial and Corporate Change*, *22*(4), 869–901. https://doi.org/10.1093/icc/dtt020

Mintz, J. M. (1988). An Empirical Estimate of Corporate Tax Refundability and Effective Tax Rates. *The Quarterly Journal of Economics*, *103*(1), 225–231. https://doi.org/10.2307/1882651

Nijhawan, A. (2015). When Is " Loss Trading " Permissible ? A Purposive Analysis of Subsection 111 (5). In *Canadian Tax Foundation Conference Report* (pp. 1–26).

OECD. (2011). *Corporate Loss Utilisation through Aggressive Tax Planning*. Retrieved from https://www.uscib.org/docs/Corporate_Loss_Utilisation_through_Aggressive_Tax_Planning.pdf

Poitevin, M. (2003). *Effects of the Fiscal Treatment of Tax Losses on the Efficiency of Markets and the Incidence of Mergers*. Retrieved from https://journals.openedition.org/economiepublique/441

Schwienbacher, A. (2008). Innovation and Venture Capital Exits. *The Economic Journal*, *118*(553), 1888–1916.

Sureth-Sloane, C., & Mehrmann, A. (2017). *Tax Loss Offset Restrictions and Biased Perception of Risky Investments*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3046543

Zwick, E. (2018). *The Costs of Corporate Tax Complexity*. Retrieved from http://www.nber.org/papers/w24382

Download ZEW Discussion Papers from our ftp server:

http://ftp.zew.de/pub/zew-docs/dp/

or see:

https://www.ssrn.com/link/ZEW-Ctr-Euro-Econ-Research.html
https://ideas.repec.org/s/zbw/zewdip.html

IMPRINT

ZEW – Leibniz-Zentrum für Europäische Wirtschaftsforschung GmbH Mannheim

ZEW – Leibniz Centre for European Economic Research

L 7,1 · 68161 Mannheim · Germany
Phone +49 621 1235-01
info@zew.de · zew.de

Discussion Papers are intended to make results of ZEW research promptly available to other economists in order to encourage discussion and suggestions for revisions. The authors are solely responsible for the contents which do not necessarily represent the opinion of the ZEW.