

Corporate tax benefits as behavioural policy tools: fiscal innovation and evidence from Portugal

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Abstract

Purpose – This study aims to analyse the evolution and increasing concentration of corporate tax benefits in Portugal between 2013 and 2023, focusing on innovation- and investment-related instruments. It examines how fiscal mechanisms such as SIFIDE (Tax Incentive System for Corporate R&D) and RFAI (Fiscal Regime for Investment Support) operate as behavioural levers for sustainable economic transformation, aligning with Sustainable Development Goal (SDG) policy objectives.

Design/methodology/approach – A quantitative and exploratory design was adopted, using official administrative data from the Portuguese Tax and Customs Authority. Descriptive statistics, one-way ANOVA and linear regressions were used to assess benefit distribution, structural differences and temporal trends. Visual analysis supported the identification of fiscal concentration dynamics and policy inflection points. Model assumptions were tested to ensure statistical robustness.

Findings – Deductions from tax liability became the dominant benefit type, representing most corporate income tax (IRC)-related tax expenditure. Within this category, SIFIDE accounted for 43.3% of total allocations, confirming its structural centrality and behavioural role. RFAI represented 28.0%, retaining relevance as a complementary investment tool. Regression results show that SIFIDE experienced significant and sustained growth, while other instruments declined or stagnated. These findings reveal a pattern of fiscal targeting through structurally embedded incentives.

Originality/value – Grounded in empirical evidence, this study proposes a conceptual framework positioning fiscal innovation as a strategic driver of behavioural change. It identifies three guiding principles, impact, simplicity and applicability, and highlights SIFIDE's potential as a policy lever for SDG-aligned transformation. It contributes to innovation governance literature and suggests avenues for future research on equity, ESG alignment and behavioural effectiveness.

Keywords Portugal, Sustainable innovation, Corporate income tax, SDGs, Tax incentives, SIFIDE, RFAI, Fiscal behaviour

Paper type Research paper



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1. Introduction

Corporate tax incentives have long been used as strategic instruments of fiscal policy to stimulate innovation, attract investment and promote sustainable economic development. In the context of increasing global emphasis on green growth and digital transformation, these instruments have evolved beyond their traditional economic roles to serve as behavioural tools that influence corporate decision-making and internal transformation processes (Musgrave and Musgrave, 1989; Ravšelj and Aristovnik, 2018). Tax benefits are no longer viewed merely as static technical mechanisms but as dynamic governance instruments that reflect policy priorities and induce firm-level adaptation in times of both crisis and stability.

Corporate income tax (IRC) remains the main tax instrument levied on businesses in Portugal. In 2023, tax benefits granted under IRC amounted to €1.8bn, equivalent to 20% of the total IRC revenue (Cabral *et al.*, 2025).

Portugal offers a compelling case study in this regard. Since 2013, the country has expanded the use of corporate income tax (IRC) benefits, especially SIFIDE (Tax Incentive System for Corporate R&D) and RFAI (Fiscal Regime for Investment Support), to support research, development and territorial investment. These instruments are framed within broader fiscal and innovation policy agendas aligned with the United Nations' Sustainable Development Goals (SDGs), particularly SDG 8 – Decent Work and Economic Growth and SDG 9 – Industry, Innovation and Infrastructure (United Nations, 2015).

While SIFIDE primarily targets R&D expenditures and is administered through the ANI (National Innovation Agency, 2024), RFAI is directed at productive investment and employment generation, especially in underdeveloped regions. Evidence from previous evaluations suggests that SIFIDE has positively influenced firms' R&D investment trajectories, while RFAI contributes to regional development and job creation through capital expenditure incentives (Billings, 2009; Ferreira *et al.*, 2019). However, the effectiveness and equity of these tools have come under scrutiny. Recent studies indicate that access to these fiscal instruments is highly concentrated among large firms with robust fiscal planning capacities, potentially undermining their inclusiveness and broader policy impact (Carbonnier *et al.*, 2022).

Theoretical foundations for understanding the behavioural impact of tax incentives lie in fiscal innovation theory, institutional economics and sustainability-oriented innovation frameworks. Incentives such as SIFIDE and RFAI serve not only as financial levers but also as signals of strategic alignment, shaping organisational behaviour, internal planning and ESG commitments (Scott, 2008; Williamson, 2000). These instruments also function within governance environments characterised by varying degrees of credibility, stability and administrative complexity, factors that influence how effectively firms internalise and respond to fiscal stimuli (North, 1990).

Despite their policy relevance, empirical assessments of IRC incentives in Portugal remain limited. A small but growing set of studies examines SIFIDE at firm level (Ferreira *et al.*, 2019; Walter *et al.*, 2022, 2023), but coverage of the broader IRC benefit mix and long-horizon, cross-category analysis is scarce. Evidence on RFAI is largely confined to administrative or official sources rather than peer-reviewed evaluation (e.g. Cabral *et al.*, 2025; OECD, 2023). To address this gap, we assemble administrative series for 2013–2023 across all IRC benefit categories and interpret the patterns through a behavioural-policy lens.

By examining how fiscal instruments like SIFIDE and RFAI operate as behavioural levers within corporate ecosystems, this study bridges the domains of innovation management, responsible fiscal governance and sustainable development. In line with the United Nations' SDGs and the journal's focus on technological and managerial transformation, our findings provide practical insights into how public policy can serve as a catalyst for inclusive and

innovation-driven economic recovery (e.g. [Ferreira et al., 2019](#); [OECD, 2023](#); [Walter et al., 2022, 2023](#)).

Guided by this rationale and to address the documented evidence gaps, we articulate four research questions (RQs) that guide the empirical analysis:

RQ1. How did corporate tax benefits evolve in Portugal between 2013 and 2023?

RQ2. Which benefit types have the highest fiscal impact and structural relevance?

RQ3. Which benefit types show sustained growth trends?

RQ4. To what extent do SIFIDE and RFAI serve as fiscal innovation instruments aligned with sustainable business strategy and the SDGs?

Answering these questions advances innovation-policy evaluation for Portugal and informs policy makers (on portfolio design, accountability and safeguards) and firms (on the predictability and behavioural signals embedded in tax incentives).

In doing so, the paper contributes to both fiscal and innovation studies by linking policy design with real-world application, and by evaluating whether tax benefits fulfil their strategic function as inclusive, innovation-driven behavioural tools for sustainable development.

To integrate these dimensions, this study develops a conceptual framework that positions fiscal policy, specifically instruments such as SIFIDE and RFAI, as behavioural levers for sustainable corporate transformation. This model, introduced later in the paper, connects tax architecture, firm strategy and sustainability outcomes under guiding principles of impact, simplicity and applicability.

Anchored in this fiscal logic, the article analyses administrative series for 2013–2023 to map the evolution and concentration of IRC benefits, particularly SIFIDE and RFAI, and to assess how far fiscal innovation aligns with sustainable development objectives.

The remainder of the paper is organised as follows: Section 2 develops the theoretical framework and the institutional/legal background for SIFIDE and RFAI; Section 3 details the data and methods; Section 4 presents the results and an integrated discussion; Section 5 outlines the paper's contributions to innovation science, distinguishing theoretical and practical implications; and Section 6 concludes with limitations and avenues for future research.

2. Theoretical framework

The strategic use of corporate tax incentives resides at the intersection of fiscal policy, institutional design and organisational behaviour. Understanding their behavioural impact requires a multi-theoretical approach that bridges public finance theory, institutional economics and organisational change. These frameworks collectively help to explain how tax instruments such as SIFIDE and RFAI shape firm-level responses to external fiscal stimuli, promote sustainable business practices and foster innovation capacity ([North, 1990](#); [Scott, 2008](#)).

2.1 Fiscal instruments and investment behaviour

From a classical economic perspective, tax incentives influence corporate decisions by altering marginal cost–benefit structures. According to the optimal taxation framework ([Mirrlees, 1971](#)), fiscal policy must balance economic efficiency and distributive equity, particularly when shaping investment behaviour under uncertainty. As firms often face irreversible decisions involving innovation or long-term capital deployment, a predictable

and targeted fiscal environment can significantly reduce perceived risks and enable forward planning (Dixit and Pindyck, 1994; Mooij and Ederveen, 2008).

Within this logic, corporate tax incentives such as SIFIDE and RFAI operate not merely as accounting tools but as behavioural levers, mechanisms that influence firms' strategic choices in innovation, R&D allocation and regional investment. These tools can affect both the intensity and direction of investment decisions, thereby contributing to broader public objectives such as technological upgrading and territorial cohesion (Ferreira *et al.*, 2019; Ravšelj and Aristovnik, 2018). This aligns with literature highlighting the persistent gap between the intended policy goals of R&D tax incentives and their actual innovation outcomes, underscoring the need for rigorous impact evaluation.

2.2 Institutional theory and policy credibility

The role of institutional quality is critical in determining the effectiveness of tax incentives. As proposed by North (1990), institutional frameworks, comprising rules, norms and enforcement mechanisms, condition the credibility and uptake of fiscal instruments. In contexts where policy signals are consistent and administratively coherent, firms are more likely to internalise incentives as stable elements in their strategic calculus.

In institutional theory, organisations conform to and are constrained by three interrelated pillars, the regulative, normative and cultural-cognitive pillars, which together shape what is considered legitimate and appropriate behaviour (Scott, 2008). In this view, tax incentives operate within an institutional architecture that reduces transaction costs and uncertainty when rules are clear, stable and enforceable (North, 1990). A credible and predictable policy environment also addresses the classic "time-inconsistency" problem: firms invest when they believe rules will not be reversed or arbitrarily changed (Kydland and Prescott, 1977). Accordingly, the behavioural effect of instruments such as SIFIDE and RFAI depends on credible commitment and administrative coherence, which condition how firms internalise these incentives in strategic planning (Jensen, 2013; Spiller and Levy, 1994).

Institutional economics suggests that tax incentives are embedded within wider governance logics. Their behavioural impact is thus shaped not only by statutory design but also by the perceived reliability of implementation, policy continuity and regulatory transparency. When institutional environments are fragmented or unstable, incentives risk being interpreted as short-term windfalls rather than as drivers of structural transformation (Hamzah *et al.*, 2021; Jensen, 2013).

2.3 Organisational change and strategic adaptation

Tax incentives also have implications at the organisational level. Theories of organisational change emphasise how external policy stimuli can trigger internal transformation. Firms may restructure investment pipelines, reallocate resources or modify innovation strategies to align with available incentives. These adjustments reflect not only financial motivations but also managerial agency and institutional learning (Baz *et al.*, 2024; Pederzini, 2016).

A historical-organisational perspective, as illustrated in recent studies, shows that firms do not passively absorb fiscal policy. Instead, they interpret, adapt and often respond strategically, depending on internal organisational culture, leadership capacity and long-term positioning (Carbonnier *et al.*, 2022; Labeaga *et al.*, 2021). These patterns also point to the influence of intermediaries such as fiscal advisors and consultancy firms, whose expertise in navigating complex eligibility rules can concentrate benefits among firms with greater advisory capacity. These behaviours tend to become more visible during periods of economic disruption or policy transition, when tax incentives may act as catalysts for corporate resilience and transformation.

2.4 Sustainability-oriented innovation

Finally, the concept of sustainability-oriented innovation adds a normative and strategic dimension to the understanding of tax benefits. As argued by [Boons and Lüdeke-Freund \(2013\)](#), sustainable innovation encompasses both technological advancement and governance alignment with long-term societal goals. Tax incentives, when aligned with sustainable development frameworks such as the SDGs, can function as policy instruments that link firm-level innovation to broader environmental and social outcomes.

This alignment becomes critical when evaluating instruments like SIFIDE and RFAI, whose stated purposes include fostering R&D, employment and regional equity. Their potential to serve as transformative levers depends on their ability to balance accessibility with impact, and to integrate economic incentives with societal imperatives ([OECD, 2023](#); [Wang et al., 2024](#)).

2.5 Institutional and legal background: SIFIDE and RFAI

Within the Portuguese corporate tax system (IRC), fiscal benefits are not only legal entitlements but strategic policy instruments. Two of the most relevant mechanisms in this context are SIFIDE and RFAI, both of which are designed to promote long-term innovation and capital formation, respectively ([Cabral et al., 2025](#); [Ravšelj and Aristovnik, 2018](#)).

SIFIDE, introduced under Decree-Law No. 162 / 2014 ([Ministry of Finance, 2014](#)) and governed by the EBF – Tax Benefits Statute ([Ministry of Finance, 2024](#)), allows companies to deduct a percentage of their R&D expenditure from their corporate income tax liability. The primary objective is to foster private investment in innovation, stimulate technological development and support knowledge-intensive sectors. Its application is centralised and validated by the National Innovation Agency (ANI)[1], which ensures compliance with eligibility criteria and enables robust tracking of R&D engagement across sectors and firm sizes.

RFAI, codified in the CFI – Investment Tax Code ([Ministry of Finance, 2014](#)), grants deductions based on qualifying investments in tangible and intangible assets in pre-approved economic activities. It is targeted at supporting productive investment and regional development, particularly in sectors considered strategic for the national economy (e.g. manufacturing, ICT, tourism and scientific R&D). Unlike SIFIDE, RFAI is decentralised and lacks a comprehensive national database of beneficiaries, making its fiscal incidence harder to track at firm level.

Crucially, both SIFIDE and RFAI constitute tax expenditures, that is, they represent revenue the State forgoes to achieve broader economic and social outcomes. As such, these instruments carry both opportunity and accountability: every euro not collected must be justified by measurable returns in innovation, productivity or social cohesion. This understanding follows international good-practice guidance, which defines tax expenditures as revenue forgone used to pursue policy goals and recommends transparent reporting, periodic evaluation and review to ensure value for money ([Appelt et al., 2016](#); [OECD, 2010, 2023](#)).

This highlights the importance of examining not only their uptake but their equity, accessibility and alignment with long-term policy goals.

By integrating insights from both critical fiscal studies and innovation policy evaluation, the present study situates the analysis of SIFIDE and RFAI within a broader governance and equity framework, enabling a more comprehensive assessment of their effectiveness.

3. Methodology

This study adopts a quantitative and exploratory research design to examine the evolution and strategic application of corporate tax benefits in Portugal under the corporate income tax

(IRC) framework between 2013 and 2023. The analysis focuses on two principal fiscal instruments, SIFIDE and RFAI, with the objective of understanding their behavioural and structural significance in promoting innovation, investment and sustainability-oriented business practices.

We used simple visualisations (stacked bars, lines, boxplots) to inspect temporal composition and dispersion; figure notes document plotting choices (Cleveland, 1993).

3.1 Data source and structure

The empirical analysis is based on administrative data provided by the Portuguese Tax and Customs Authority. The data set comprises annual records of the total amount of IRC tax benefits granted, disaggregated by benefit category and expressed in euros (AT, 2024). These data were compiled, processed and validated, ensuring temporal consistency across the 11-year period and allowing robust intertemporal comparisons. The main variables analysed include the benefit type, the corresponding year and the annual deduction amount, with values aggregated by category per year. This structure yielded a balanced panel of 77 potential observations, corresponding to seven categories of benefits over eleven years (2013–2023); however, seven cells with zero values were excluded, resulting in 70 effective observations.

According to the AT's official notes, these figures correspond to amounts declared by corporate taxpayers in their annual tax returns and may be subject to subsequent correction by the Tax Authority. The data set does not provide a separate breakdown between initially claimed and subsequently verified expenditure.

3.2 Statistical techniques

We ran a one-way ANOVA to test mean differences in annual amounts across benefit categories, checking normality (Shapiro–Wilk) before estimation; where relevant, Tukey HSD was used for pairwise contrasts (Field, 2018; Hair *et al.*, 2019).

Secondly, a series of simple linear regressions was estimated to analyse temporal trends within each benefit category. In each case, the annual benefit amount was treated as the dependent variable and the year as a continuous independent variable, coded from 2013 to 2023. The goal was to assess the direction and magnitude of temporal variation, particularly in terms of sustained growth or decline. The assumptions of linear regression were verified systematically. Linearity was checked using scatterplots and residual plots, the normality of residuals was tested with the Shapiro–Wilk statistic, homoscedasticity was assessed using the Breusch–Pagan test and independence of residuals was evaluated via the Durbin–Watson statistic. Each model reports estimated coefficients, standard errors, *t*-values, *p*-values and R^2 , allowing for a precise interpretation of the evolution of each incentive type (Hair *et al.*, 2019; Wooldridge, 2013).

This approach follows applied evaluations of tax incentives and innovation that rely on regression analysis to study trends and behavioural relationships at different aggregation levels (e.g. Carbonnier *et al.*, 2022; Ferreira *et al.*, 2019; Labeaga *et al.*, 2021).

4. Results and discussion

The analysis of corporate tax benefits under Portugal's corporate income tax regime (IRC) between 2013 and 2023 reveals a structurally diverse but increasingly concentrated fiscal ecosystem. According to the official classification of the Portuguese Tax and Customs Authority (AT), corporate tax benefits are grouped into seven legally recognised categories, which structure the allocation of tax expenditures and define the scope of eligible fiscal relief mechanisms. These categories are:

- (1) deductions from the taxable base;
- (2) deductions from income;
- (3) deductions from tax liability;
- (4) exclusion from autonomous taxation;
- (5) permanent tax exemptions;
- (6) temporary tax exemptions; and
- (7) tax rate reductions (AT, 2024).

Until 2018, the use of these categories was relatively balanced, with moderate variation in fiscal volume between them. However, from 2019 onward, the structure of IRC-related tax benefits underwent a notable transformation, marked by the growing prominence of the category “deductions from tax liability”. This group, which includes some of the most behaviourally targeted instruments, such as those linked to R&D and productive investment, emerged as the fiscal centrepiece of Portugal’s corporate incentive policy. A stacked bar analysis of total benefit volumes per year illustrates this transition clearly: while other categories experienced either stagnation or modest growth, deductions from tax liability expanded consistently, absorbing a majority share of total IRC-based tax expenditures by 2023.

This trend towards consolidation around a single group reflects not only budgetary priorities but also a policy shift favouring targeted, long-term instruments over broader or temporary measures. Deductions from tax liability offer a direct fiscal incentive tied to specific corporate behaviours, especially research investment and capital formation, and are thus more aligned with strategic economic planning. As such, they became the primary channel through which fiscal policy sought to influence firm conduct.

Given this structural reorientation, the analysis proceeds by narrowing its focus to the internal composition of this dominant category. Within deductions from tax liability, the available instruments differ widely in design, target audience and temporal scope. The most significant, both in fiscal weight and consistency of use, are SIFIDE and RFAI. These two instruments together account for more than 71% of the total volume allocated through this category between 2013 and 2023, signalling their centrality in the government’s fiscal strategy.

Other instruments, although present, operate at a much smaller scale. These include the DLRR – Deduction for Retained and Reinvested Profits by SMEs), the IFR – Fiscal Recovery Incentive and sector-specific or regionally bound mechanisms such as deductions for entities in the Madeira Free Trade Zone. Additional incentives include contractual investment benefits, extraordinary investment credits and support for venture capital firms (SCR) and venture capital investors (ICR). A small portion is also attributed to residual or one-off instruments classified under “Others”.

When plotted over time, the internal dynamics of this group reveal a clear and accelerating concentration of fiscal effort in SIFIDE, which experienced uninterrupted growth from 2016 onward, reaching over €656m in 2023. RFAI follows as the second most-used instrument, though with a more cyclical profile that reflects its linkage to broader capital investment trends. The other instruments mentioned remain relatively marginal, both in absolute value and trajectory. Their usage is sporadic, often linked to temporary economic measures or sector-specific provisions and shows no sustained growth trend.

This pattern of selective intensification suggests a deliberate state strategy: rather than proliferating a wide array of tax incentives, fiscal policy has evolved towards a concentrated portfolio anchored in high-impact, behaviourally oriented instruments. SIFIDE exemplifies this shift by offering consistent, rule-based incentives for research and development, which are increasingly integrated into the long-term planning of Portuguese firms. RFAI

complements this logic by encouraging investment in capital assets and employment in eligible regions, supporting spatial and sectoral cohesion.

Together, these instruments embody the dual priorities of modern fiscal governance: stimulating innovation while reinforcing territorial and productive investment. Their dominance within the broader system of IRC benefits supports the interpretation that Portugal has not only refined its tax expenditure architecture but is also using it as a strategic lever to align private sector behaviour with public development goals.

4.1 General Evolution of Tax Benefits (2013–2023)

The aggregate evolution of corporate tax benefits in Portugal between 2013 and 2023 reveals a pronounced transformation in both volume and structure. Initially distributed more evenly across multiple categories, fiscal expenditure under the IRC regime has increasingly concentrated in a few dominant instruments. This trend becomes evident when examining the evolution of the seven major categories of tax relief: deductions from the taxable base, deductions from income, deductions from tax liability, exclusions from autonomous taxation, permanent exemptions, temporary exemptions and tax rate reductions.

The stacked bar chart of total tax benefits by category (Figure 1) clearly illustrates this trajectory. In the early years of the period, particularly between 2013 and 2016, permanent tax exemptions and deductions from income represented a substantial share of the fiscal

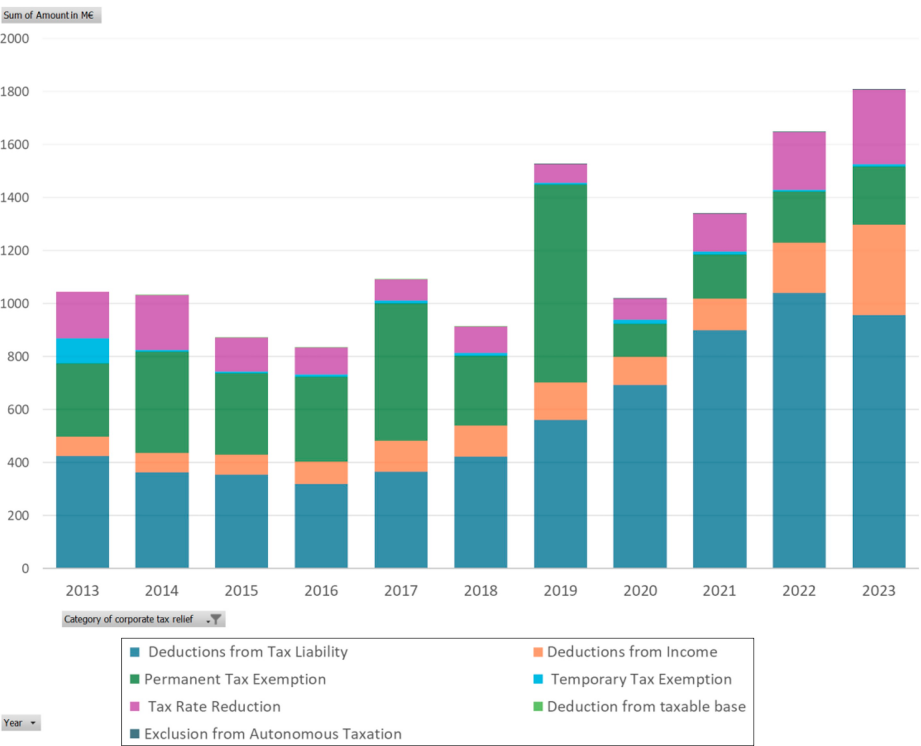


Figure 1. Annual evolution of corporate tax benefits in Portugal by category (2013–2023)
Source: Authors' own work

envelope. However, starting in 2018, the fiscal emphasis shifted significantly: deductions from tax liability became the leading category, increasing from approximately €424m in 2018 to over €1bn in 2022, before slightly decreasing to €956m in 2023. In each of the last four years, this category alone accounted for more than half of all IRC tax benefits granted.

Several categories, such as temporary exemptions and exclusion from autonomous taxation, remained relatively stable or decreased in fiscal weight, suggesting reduced policy emphasis or the phasing out of certain instruments. Similarly, deductions from income maintained modest growth, especially in 2023, but did not match the exponential expansion observed in tax liability deductions. The fiscal design appears to have evolved towards targeted instruments with higher behavioural leverage and policy alignment, particularly those tied to research, development and productive investment.

Within the dominant category of deductions from tax liability, further disaggregation shows clear variation in the contribution of specific instruments. The line graph illustrating the evolution of individual benefits (Figure 2) reveals that SIFIDE and RFAI are the most consistently used benefits throughout the period. SIFIDE shows continuous and robust

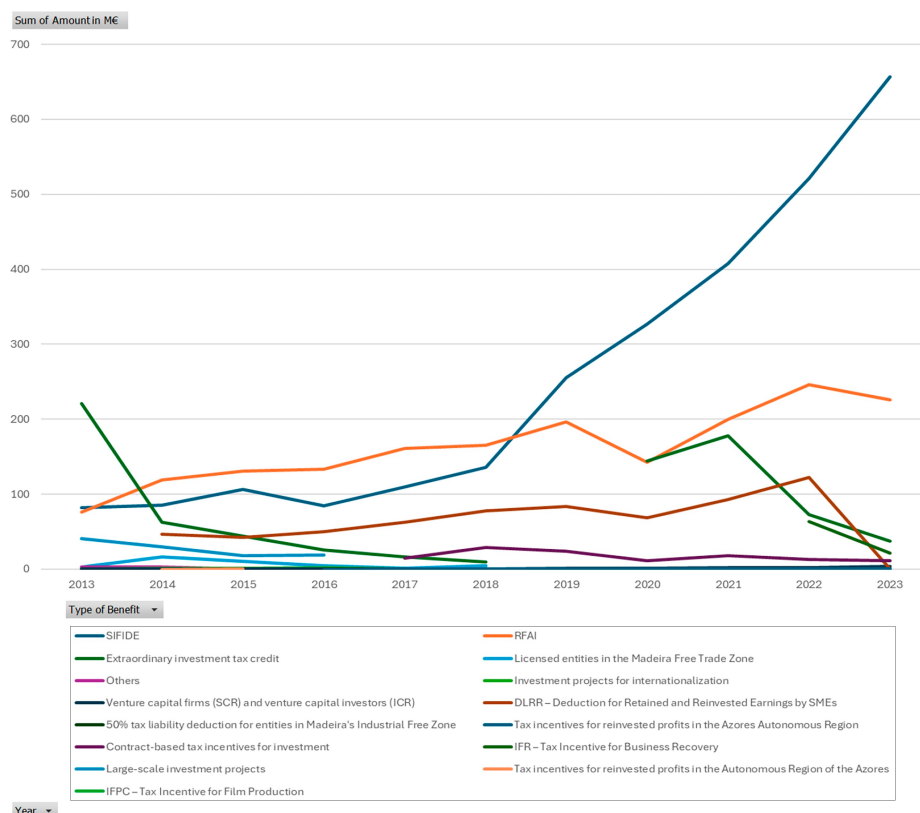


Figure 2. Evolution of individual instruments within the category of deductions from tax liability (2013–2023)

Source: Authors' own work

growth, rising from under €82m in 2013 to over €656m in 2023. Its trajectory is steep and uninterrupted from 2016 onward, indicating increasing reliance on R&D tax incentives and firm adaptation to innovation-linked policy tools.

RFAI also exhibits a generally positive trend, albeit with more variability. Its volume peaked at around €246m in 2022, before declining slightly in 2023. This fluctuation likely reflects the cyclical nature of capital investment and the dependence of RFAI on regional and sectoral eligibility thresholds. Other instruments within the same category, such as the Deduction for Retained and Reinvested Profits by SMEs (DLRR), the Fiscal Recovery Incentive (IFR) and benefits for entities in the Madeira Free Trade Zone, remain comparatively marginal in both scale and policy visibility. Their usage appears intermittent and concentrated in specific policy cycles or administrative windows.

The growing dominance of SIFIDE and RFAI within this category supports the view that Portugal’s corporate tax strategy has become increasingly focused on structural, behaviourally oriented and economically strategic incentives: 2013–2023, SIFIDE accounted for 43.3% and RFAI for 28.0% of all deductions from tax liability (Figure 2; Table S1), a pattern consistent with independent assessments of the Portuguese regime (Cabral *et al.*, 2025; OECD, 2023). The state is not merely offering tax relief but actively using fiscal policy to steer private sector behaviour in line with national objectives, namely, technological advancement, productivity and sustainable development (North, 1990; Ravšelj and Aristovnik, 2018; Scott, 2008; United Nations, 2015). These dynamics form the foundation for the more detailed comparisons and policy discussions presented in the following subsections.

4.2 Descriptive and comparative analysis of benefit types

To provide an overview of the magnitude and dispersion of fiscal allocations, Table 1 presents descriptive statistics for each benefit category between 2013 and 2023. Among these, deductions from tax liability represent the most significant component, with an average annual value of €582.08m and a peak of over €1bn. Permanent tax exemptions and tax rate reductions follow, with averages of €320.20m and €143.56m, respectively.

Conversely, categories such as exclusions from autonomous taxation (€0.09m) and deductions from the taxable base (€0.03m) show minimal fiscal expression, reinforcing their limited role in the overall tax benefit structure. Temporary tax exemptions, though slightly higher in average (€16.84m), also exhibit high variability, suggesting episodic application.

Having identified marked differences in fiscal magnitude across benefit categories, a one-way ANOVA was conducted to test whether these differences are statistically significant. The results, presented in Table 2, confirm that several categories differ significantly in their mean allocations over the period 2013–2023.

Table 1. Descriptive statistics of tax benefit categories (2013–2023) values in million euros

Category	Mean	SD	Min	Max
Deductions from the taxable base	0.03	0.04	0.00	0.14
Deductions from income	129.95	77.86	72.92	340.36
Deductions from tax liability	582.08	270.02	319.14	1040.51
Exclusion from autonomous taxation	0.09	0.05	0.04	0.16
Permanent tax exemptions	320.20	177.66	127.32	745.40
Temporary tax exemptions	16.84	25.96	6.37	94.89
Tax rate reduction	143.56	68.83	68.74	281.21

Source(s): Authors’ own work

Table 2. One-way ANOVA test results for annual tax benefit values by category (2013–2023)

Benefit category	Coefficient (<i>b</i>)	Std. error	<i>p</i> -value	Significance
Deductions from income	129.90	59.27	0.035	*
Deductions from tax liability	582.10	59.27	<0.001	***
Exclusion from autonomous taxation	0.06	74.31	0.994	
Permanent tax exemptions	320.20	59.27	<0.001	***
Temporary tax exemptions	16.81	59.27	0.778	
Tax rate reduction	143.50	59.27	0.019	**

Note(s): Model summary: $R^2 = 0.708$, observations = 70; Standard errors in parentheses. $p < 0.05$ (*), $p < 0.01$ (**), $p < 0.001$ (***); Deductions from the taxable base is the reference category in the ANOVA and is therefore omitted from the table. It is included in the model's *F*-test and in the descriptive statistics (Table 1)

Source(s): Authors' own work

The analysis shows that deductions from tax liability exhibit the highest average impact, with a coefficient of 582.10 and a highly significant *p*-value ($p < 0.001$). This suggests that this category plays a dominant role in shaping the overall tax benefit landscape over the analysed period. Similarly, permanent tax exemptions contribute significantly, with a coefficient of 320.20 and a *p*-value below 0.001, highlighting their consistent and substantial fiscal relevance. Tax rate reductions also present a notable impact ($b = 143.50$; $p = 0.019$), indicating a meaningful, though more moderate, contribution to annual benefit variation. Likewise, deductions from income are statistically significant ($b = 129.90$; $p = 0.035$), but their relative magnitude is smaller compared to deductions from tax liability or permanent exemptions. In contrast, temporary tax exemptions ($b = 16.81$; $p = 0.778$) and exclusions from autonomous taxation ($b = 0.06$; $p = 0.994$) show no statistically significant effects. These findings suggest that such categories do not materially influence the total annual benefit values during the study period.

Overall, the model explains approximately 70.8% of the variance in annual tax benefit values ($R^2 = 0.708$), indicating a strong explanatory capacity. These results underscore the heterogeneous impact of different benefit types, with direct tax reductions and permanent incentives emerging as the most influential components of fiscal policy within the observed timeframe. Because categories differ greatly in average amounts and variability, the ANOVA results should be read as showing general order and significance rather than directly comparable magnitudes. We keep euro values for clarity in policy interpretation and leave standardised or log-transformed analyses for future work.

This statistical insight is further illustrated by the boxplot shown in Figure 3, which visualises the dispersion and distribution of benefit values by category. Deductions from tax liability not only hold the highest median but also demonstrate the greatest interquartile range and presence of outliers, as reflected in aggregated breakdowns from official statistics, indicating a concentrated uptake among beneficiaries with greater fiscal planning capacity. In contrast, benefits such as temporary exemptions and tax rate reductions exhibit low medians and narrow distributions, reflecting limited scope and application.

The combination of descriptive and inferential statistics strengthens the conclusion that, while Portugal's IRC framework formally accommodates a wide array of tax benefits, only a subset of categories consistently aligns with the largest monetary share of tax relief. The recurring prominence of deductions from tax liability suggests a deliberate policy consolidation around instruments capable of aligning firm behaviour with national development goals.

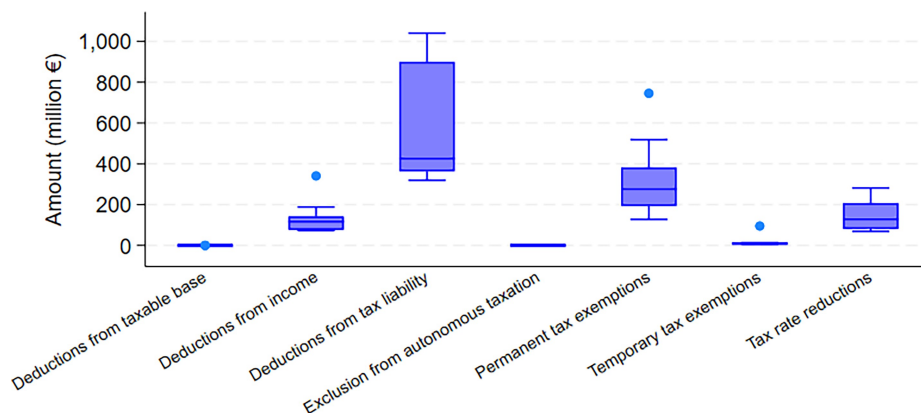


Figure 3. Boxplot of annual tax benefit values by category – Distribution of Tax Benefit Amounts by Deduction Type (2013–2023)
Source: Authors' own work

4.3 Specific analysis of deductions from tax liability

As shown in Supplementary Table S1, deductions from tax liability accounted for more than 52% of all IRC tax benefits in 2023, with SIFIDE alone representing 69% of that category. Over the 2013–2023 period, SIFIDE and RFAI together comprised more than 71% of all deductions from tax liability (43.3% and 28.0%, respectively). SIFIDE has demonstrated the most consistent and sustained growth, rising sharply from under €82m in 2013 to over €656m by 2023, highlighting its growing institutional relevance and increased uptake by firms investing in R&D. In contrast, RFAI exhibits a more cyclical pattern, with peaks in 2019 and 2022 followed by a moderate decline, reflecting broader macroeconomic investment cycles and shifts in capital expenditure by eligible firms. Other instruments, such as the Deduction for Retained and Reinvested Profits by SMEs (DLRR), the Fiscal Recovery Incentive (IFR), incentives tied to the Madeira Free Trade Zone, contractual investment schemes, extraordinary investment credits and venture capital incentives (SCR/ICR), appear significantly less used, with low and often erratic fiscal volumes, likely due to restrictive eligibility criteria or temporary policy objectives.

To assess the individual growth trajectories of each benefit type, separate simple linear regression models were estimated using year (2013–2023) as the independent variable (X) and the annual fiscal allocation in million euros as the dependent variable (Y). The aim was to test for statistically significant trends in the use of each tax instrument over time. Coefficients (b), standard errors, p -values and significance levels are reported below.

As shown in Table 3, the results indicate that deductions from tax liability exhibit the most robust and statistically significant growth trend, with a coefficient $b = 72.21$, $p < 0.001$, and an adjusted R^2 of 0.66, reflecting a strong positive linear association. This trend is consistent with the increasing structural relevance of behaviourally oriented instruments, particularly SIFIDE, which dominates this category.

Deductions from income also demonstrate a statistically significant upward trend ($b = 18.12$; $p = 0.005$), although with a more modest slope and variance explained (adjusted $R^2 = 0.29$), suggesting a secondary but growing role in fiscal support.

In contrast, the remaining categories, including deductions from the taxable base, exclusion from autonomous taxation, permanent and temporary exemptions and tax rate

Table 3. Linear regression results by benefit type (2013–2023)

Benefit type	Coefficient (<i>b</i>)	<i>p</i> -value	Adjusted <i>R</i> ²	Trend significance
Deductions from the taxable base	0.002	0.699	0.00	Not significant
Deductions from income	18.116	0.005	0.29	Significant increase
Deductions from tax liability	72.212	<0.001	0.66	Highly significant
Exclusion from auto. taxation	−0.012	0.499	0.00	Not significant
Permanent tax exemptions	−14.574	0.418	0.00	Not significant
Temporary tax exemptions	−3.795	0.131	0.02	Not significant
Tax rate reduction	5.150	0.462	0.00	Not significant

Source(s): Authors' own work

reductions, do not present statistically significant growth trends over the period. The estimated coefficients are close to zero or negative, with high *p*-values (all *p* > 0.1), indicating either stagnation or a residual role within the IRC framework. These results support the hypothesis of structural asymmetry in fiscal allocation and the consolidation of fiscal policy around a limited number of high-impact instruments.

Because benefit types differ greatly in average monetary magnitude, coefficients are not directly comparable in scale. They should be interpreted as unstandardised annual changes in millions of euros, specific to each benefit type. We retain euro units for policy readability and note that log-transformed or standardised regressions could be used in future research to test robustness and address potential heteroscedasticity.

The internal concentration revealed by this breakdown supports the interpretation that Portugal's fiscal policy has deliberately evolved towards a streamlined, structurally embedded framework, prioritising instruments with behavioural influence and strategic alignment.

The regression results underscore the absence of significant growth trends among other benefit types, such as exemptions or temporary incentives, which exhibit low fiscal relevance and discontinuous use. These instruments appear to function as transitional or residual tools, often linked to context-specific objectives, and may warrant reassessment or consolidation in future fiscal design. Together, SIFIDE and RFAI illustrate the State's deliberate use of tax policy not merely to alleviate tax burdens, but to steer firm behaviour in accordance with broader innovation, territorial cohesion and sustainable development goals.

4.4 Critical discussion

The preceding sections have demonstrated that, despite the formal diversity of fiscal instruments within Portugal's corporate tax framework, the actual distribution of tax benefits is highly concentrated, both categorically and instrumentally. This observation invites a deeper critical reflection on the structural, behavioural and policy dimensions of tax incentive design and implementation.

These concentration patterns are consistent with prior evidence on the behavioural effects of targeted R&D and investment tax (Ferreira *et al.*, 2019; Walter *et al.*, 2022, 2023) and align with OECD (2023) findings that structurally embedded instruments tend to dominate fiscal portfolios. The Portuguese case reinforces the role of institutional stability, as emphasised by North (1990) and Scott (2008), in sustaining firm engagement with fiscal innovation policies.

The first point of concern relates to structural asymmetry. While the legal framework accommodates seven categories of tax benefits and over a dozen individual instruments, the data show that SIFIDE and RFAI alone account for over 71% of all deductions from tax

liability. This level of concentration may reflect sound policy prioritisation, particularly if resources are being directed towards innovation and investment, two pillars of long-term economic development. However, it also raises questions regarding the accessibility, equity and functional redundancy of the remaining instruments, many of which demonstrate negligible fiscal impact over time.

Secondly, the distinction between structural and temporary instruments is crucial. SIFIDE and RFAI are structurally embedded, long-standing and supported by clear regulatory frameworks. This enhances their visibility and predictability, allowing firms to incorporate them into long-term planning. In contrast, instruments such as the Fiscal Recovery Incentive (IFR), extraordinary investment credits or Madeira Free Trade Zone benefits appear as short-term or context-specific tools, often introduced in response to transient economic pressures. Their limited uptake and inconsistent use across the period suggest that temporary benefits may lack the behavioural traction needed to induce sustained strategic change.

A third issue concerns the administrative and informational barriers that may restrict access to these incentives. The marked dispersion in the use of SIFIDE, as revealed by the boxplot analysis, indicates a concentrated uptake among beneficiaries, rather than broad diffusion. This interpretation is supported by aggregate breakdowns reported in official statistics, which show uneven distribution of fiscal volume across firm-size classes, without relying on anonymised firm-level records. These findings echo broader tax-policy concerns that well-intentioned incentives may be unevenly captured by actors with greater compliance capacity and advisory support (Carbonnier *et al.*, 2022; OECD, 2023). The effectiveness of fiscal incentives thus depends not only on their statutory design but also on the clarity of communication, procedural simplicity and institutional support mechanisms available to firms.

An alternative explanation for the upward trajectory of SIFIDE is fiscal engineering: the intensification of consultancy services may increase both the number and the value of claims without a proportional rise in underlying R&D activity. Recent empirical research on tax credits has documented risks of misallocation and the need to strengthen eligibility validation and audit processes, while OECD monitoring highlights the importance of assessing additionality and the integrity of scheme design (Carbonnier *et al.*, 2022; OECD, 2023).

From a strategic policy perspective, the increasing dominance of SIFIDE, and, to a lesser extent, RFAI, can be interpreted as evidence of fiscal policy convergence with broader development goals. Both instruments are closely aligned with the United Nations Sustainable Development Goals (SDGs), particularly SDG 9 (Industry, Innovation and Infrastructure) and SDG 8 (Decent Work and Economic Growth). SIFIDE promotes investment in science and technology by reimbursing qualified R&D expenditures, thereby strengthening national innovation systems. RFAI, by contrast, fosters territorial cohesion and capital expansion in less developed regions, contributing to inclusive growth and regional development.

An alternative explanation for SIFIDE's sustained growth is the influence of fiscal engineering and consultancy-driven optimisation. The intensification of tax advisory services may increase the number and value of claims without a proportional rise in underlying R&D activity, a pattern observed in other jurisdictions' R&D tax credit schemes. Recognising this possibility underscores the importance of eligibility validation, targeted audits and transparency to safeguard additionality and the integrity of the incentive.

While only two benefit types, deductions from tax liability and deductions from income, show statistically significant growth trends in the regression analysis, this result highlights the prominence of specific instruments within these categories. SIFIDE and RFAI stand out for their sustained fiscal expansion and strategic relevance. The concentration of significance

reflects the structurally embedded nature of these tools and their alignment with national innovation and investment objectives. Conversely, the lack of significant growth among other instruments, such as exemptions or temporary deductions, points to their limited scope, context-specific usage or diminishing policy importance. These findings reinforce the interpretation that Portugal's fiscal architecture has deliberately consolidated around a focused set of high-impact behavioural instruments.

However, to maximise the developmental potential of these instruments, further refinement is required. This may include broadening eligibility criteria, especially for micro and small enterprises, simplifying application procedures, and enhancing monitoring and impact assessment frameworks. Moreover, there is scope to rethink the role of underutilised instruments, either by redesigning them to address specific market failures or by phasing them out to reduce system complexity and administrative burden.

In sum, the current fiscal architecture reflects a pragmatic and increasingly strategic use of tax incentives in Portugal. Yet, its impact is contingent upon more than financial volume. The effectiveness, equity and sustainability of fiscal policy depend on the system's capacity to be inclusive, adaptive and aligned with long-term development objectives. The final section offers a synthesis of findings and recommendations for future research and policy evolution.

These findings align with broader fiscal data from 2023, which indicate that although only 2% of large enterprises accessed IRC tax incentives, they captured 27% of the total amount granted (Cabral *et al.*, 2025). Given that large firms constitute approximately 1% of Portugal's business landscape (INE, 2024), this disproportionate uptake reveals a structural asymmetry in access and utilisation. The concentration of benefits among a small group of fiscally sophisticated companies highlights persistent barriers to accessibility, particularly for SMEs, and raises important questions about horizontal equity and the democratisation of fiscal innovation policy. In a system designed to foster inclusive development, such imbalances undermine the broader alignment between public support mechanisms and the goals of economic cohesion and innovation diffusion.

By situating these empirical patterns within the theoretical frameworks outlined in Section 2, the analysis underscores how institutional quality, policy credibility and sustainability-oriented design jointly shape the effectiveness and equity of corporate tax incentives.

4.5 *Answers to the research questions*

Over the period 2013–2023, corporate tax benefits under the IRC framework exhibited significant growth, with the most pronounced expansion occurring in the category of deductions from tax liability. Within this category, instruments such as SIFIDE and RFAI showed consistent increases in fiscal volume, whereas other benefits, such as exemptions and rate reductions, either declined or remained marginal. The overall structure evolved towards greater concentration, reflecting a clear prioritisation of innovation- and investment-driven incentives and aligning with international patterns observed in mature incentive systems (OECD, 2023; Walter *et al.*, 2022, 2023).

SIFIDE and RFAI emerged as the most fiscally significant instruments, together accounting for over 71% of all allocations within the deductions from tax liability category. SIFIDE represented 43.3% and RFAI 28.0% of the total value in this group. Results from the ANOVA confirmed statistically significant differences between benefit types, with SIFIDE and RFAI displaying both higher average amounts and greater variability than other instruments, reinforcing their dominant role in the fiscal system and the concentration of policy impact.

Analysis of long-term trends through linear regressions revealed that SIFIDE demonstrates a positive and statistically significant growth trajectory over the ten-year period, signalling institutional stability and increasing firm reliance on R&D incentives. RFAI also exhibits a positive, although more volatile, growth pattern. In contrast, other instruments such as ZFM (Madeira Free Trade Zone incentives) and DLRR (Deduction for Retained and Reinvested Profits) either declined or stagnated, consolidating the strategic pivot towards structurally embedded and innovation-aligned benefits.

Both SIFIDE and RFAI align strongly with sustainability-oriented innovation goals. SIFIDE fosters technological development and private R&D investment, contributing directly to SDG 9 (Industry, Innovation and Infrastructure), while RFAI supports capital investment and employment, reinforcing SDG 8 (Decent Work and Economic Growth). Their persistent fiscal weight and design position them as behavioural policy instruments capable of influencing firm strategy, though the concentration of usage among a limited number of beneficiaries raises challenges for accessibility and structural inclusion, echoing concerns in the literature about horizontal equity and distributional asymmetries (Carbonnier *et al.*, 2022).

To consolidate the empirical results and theoretical insights obtained throughout the study, Table 4 summarises the key findings, scholarly contributions and practical implications, structured according to the four guiding research questions (RQ1–RQ4). This synthesis supports a holistic interpretation of how fiscal incentives such as SIFIDE and RFAI

Table 4. Synthesis of research findings, scholarly contributions and policy implications by research question

Research question	Key findings	Scholarly contribution	Practical and policy implications
RQ1 – How did corporate tax benefits evolve in Portugal between 2013 and 2023?	Deductions grew strongly, especially after 2018 SIFIDE grew continuously, RFAI had a more cyclical pattern.	Longitudinal evidence of fiscal concentration oriented towards innovation and investment	Reinforce public strategic planning mechanisms Continue focus on structural incentives
RQ2 – Which benefit types have the highest fiscal impact and structural relevance?	SIFIDE accounted for 43.3% and RFAI for 28% of the deductions category	Revealing structural asymmetry, reinforce role of behavioural incentives as fiscal policy tools	Prioritise instruments with higher public returns Align impact assessment with sustainability goals
RQ3 – Which benefit types show sustained growth trends?	Only SIFIDE showed statistically robust and continuous growth ($b = 72.21; p < 0.001$), RFAI had variable results	Validating institutional consolidation of SIFIDE as a pillar of national innovation system	Regulatory stability and predictability as key factors for business adoption
RQ4 – To what extent do SIFIDE and RFAI serve as fiscal innovation instruments aligned with sustainable business strategy and the SDGs?	Access remained concentrated among large firms, despite SDG alignment	Introduces concept of behavioural fiscal innovation, proposes a theoretical contribution	Expand access to SMEs Monitor real impact on innovation, territorial cohesion

Source(s): Authors' own work

have shaped corporate innovation behaviour and strategic alignment with public policy goals.

5. Contributions to innovation science

5.1 Theoretical implications

This study contributes to the field of innovation science by demonstrating how fiscal instruments, traditionally viewed as accounting mechanisms, can function as strategic levers for sustainable corporate transformation. By examining the Portuguese IRC regime between 2013 and 2023, the research highlights the capacity of tax policy to influence firm behaviour, align private investment with public priorities and promote structural economic change.

While fiscal incentives such as SIFIDE and RFAI may be efficient in stimulating R&D and investment among large firms, their limited reach across the broader SME segment raises concerns about distributive justice and policy coherence. In a country where micro and small enterprises constitute most of the business landscape, the disproportionate uptake by a small elite of firms may undermine the objectives of inclusive innovation and regional development.

Firstly, the empirical evidence confirms that fiscal innovation is not merely reactive or corrective. When designed with behavioural intent and long-term vision, instruments such as SIFIDE and RFAI can actively shape investment pipelines, R&D trajectories and spatial development choices. Their sustained growth and institutional consolidation illustrate how tax incentives can evolve into central pillars of national innovation strategies (North, 1990; OECD, 2023; Scott, 2008).

Secondly, the findings reinforce the idea that the State can operate as both innovator and facilitator. Rather than serving solely as a regulatory actor or subsidy provider, the government, through tax design, can set the conditions under which innovation thrives. Fiscal architecture thus becomes an instrument of public entrepreneurship, capable of inducing innovation while respecting market autonomy.

Thirdly, the results support a conceptual shift towards sustainable fiscal design, grounded in three principles: impact, simplicity and applicability. This aligns with literature emphasising the need for measurable outcomes, reduced administrative burden and equitable access to innovation incentives (Ravšelj and Aristovnik, 2018). A sustainable fiscal support model should prioritise instruments that demonstrate measurable innovation outcomes (impact), minimise administrative burden (simplicity) and allow for widespread and equitable access (applicability). The Portuguese experience with SIFIDE offers a test case of how such a model may operate in practice, while also revealing the challenges of concentration and unequal uptake that merit further scrutiny.

5.2 Practical implications

From a practical standpoint, the findings suggest several actionable recommendations for policymakers and corporate actors. Firstly, eligibility criteria for structurally embedded incentives such as SIFIDE and RFAI should be broadened to include a larger share of micro and small enterprises, complemented by simplified application processes and targeted outreach campaigns (OECD, 2023). Secondly, monitoring and evaluation frameworks should be enhanced to include distributional indicators, enabling assessment of equity and inclusiveness in benefit uptake (Carbonnier *et al.*, 2022). Thirdly, underutilised instruments with persistently low uptake should be redesigned or phased out, thereby reducing administrative complexity and reallocating resources to high-impact tools. Finally, firms should be encouraged to align their R&D and investment strategies with long-term sustainability goals, leveraging predictable incentives like SIFIDE and RFAI to strengthen

alignment with SDG 8 and SDG 9. These measures directly address the disproportionate uptake of benefits by a small elite of large, fiscally sophisticated firms and aim to align fiscal policy with the principles of inclusiveness and sustainable development.

To mitigate the risks of over-optimisation through intermediation, we propose:

- advance eligibility validation or rulings for higher-risk projects;
- risk-based audit and selection procedures supported by specialist technical capacity;
- enhanced transparency, including the publication of statistics by firm size class and sector; and
- clawback clauses where material discrepancies arise between claimed expenditure and verified R&D activity.

These measures are consistent with recent international guidelines and empirical evidence on the design and enforcement of R&D incentive schemes (Carbonnier *et al.*, 2022; OECD, 2023).

5.3 Conceptual framework

The conceptual framework below (Figure 4) synthesises the core empirical and theoretical insights emerging from this study. It illustrates how fiscal policy instruments, particularly SIFIDE and RFAI, function as behavioural levers operating across institutional and organisational layers. The model traces the pathway from fiscal architecture to firm-level responses and sustainability-oriented outcomes, including innovation output, territorial development and alignment with the Sustainable Development Goals (SDGs). Anchored in the guiding principles of impact, simplicity and applicability, the framework also incorporates a feedback loop that enables continuous policy refinement through systematic monitoring and evaluation.

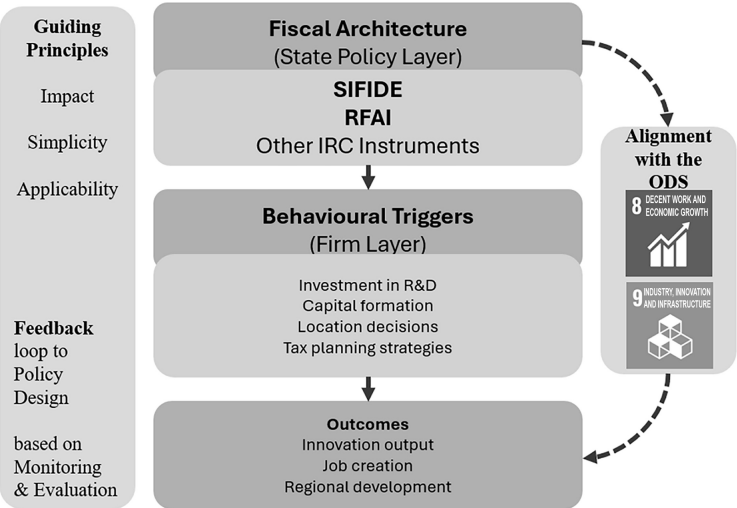


Figure 4. Conceptual framework: Fiscal innovation as a catalyst for sustainable corporate transformation
Source: Authors' own work

6. Conclusions

The evolution of Portugal's corporate tax benefits over the past decade reveals a strategic reorientation towards targeted, innovation-aligned instruments. SIFIDE now represents the largest share of fiscal support under the IRC regime, confirming its centrality as a structurally embedded and behaviourally effective incentive. RFAI, though secondary in volume, remains a relevant mechanism for promoting capital investment and territorial development. This transition reflects a broader policy trend towards the use of fiscal tools to shape firm behaviour and enhance public-private alignment.

Empirical findings highlight three core dynamics: the growing concentration of tax benefit allocations in a limited number of instruments, statistically significant differences between benefit types, and the sustained growth of innovation-oriented mechanisms. These patterns suggest that fiscal policy is increasingly being deployed as a tool for economic steering, particularly in the domains of R&D investment and regional cohesion.

From a public policy perspective, these results imply that future fiscal innovation strategies should prioritise scalability, transparency and evidence-based impact assessment. Structurally embedded instruments such as SIFIDE must be accompanied by streamlined administrative processes, inclusive eligibility criteria and systematic evaluation mechanisms capable of measuring innovation outcomes and ESG performance. For the private sector, the findings underscore the importance of strategic tax planning, improved fiscal literacy and the integration of sustainability goals into core corporate strategy.

6.1 Limitations

Despite its analytical value, this study has several limitations. Firstly, the analysis is based on aggregated administrative data, limiting the capacity to examine firm-level behavioural dynamics or establish causal relationships. Secondly, the absence of performance indicators, such as R&D output, ESG metrics or regional employment, constrains the assessment of real-world effectiveness. Finally, the study does not differentiate across sectors, regions or firm size, which limits the detection of structural asymmetries and patterns of exclusion or overconcentration.

Despite offering a consistent and comprehensive overview of the evolution of IRC tax benefits, the study is subject to several methodological limitations. The use of annual data limits the number of observations per regression model to 11, which restricts the robustness of parameter estimates and increases susceptibility to outliers or short-term fluctuations. These limitations are acknowledged and discussed further in the final section of the article, where directions for future research are outlined (Manski, 1995).

6.2 Suggestions for future research

To address these gaps, future research should adopt multi-method approaches, combining quantitative firm-level data sets with qualitative case studies. Access to anonymised microdata from tax authorities or innovation agencies (e.g. ANI) would enable panel analyses of firm behaviour, including time-lagged effects of incentive uptake. Surveys or interviews with financial and innovation managers could provide insights into decision-making rationales, perceived barriers and organisational learning processes. Moreover, the integration of ESG indicators, sectoral classifications and regional data would support a more granular evaluation of alignment between fiscal incentives and sustainable development outcomes. Advanced techniques such as cluster analysis or multilevel modelling could help identify usage patterns, behavioural segmentation and equity gaps across firm profiles.

By bridging fiscal architecture with behavioural evidence, future studies can assess whether corporate tax incentives are genuinely fostering inclusive, innovation-driven transformation, or instead reproducing existing asymmetries in access to public support. In doing so, they will contribute to the refinement of fiscal policy as a powerful, yet equitable, instrument of innovation governance.

Supplementary material

The supplementary material for this article can be found online.

Note

- [1.] ANI – Agência Nacional de Inovação, Portugal's public innovation agency responsible for the technical validation of SIFIDE applications. Official portal: <https://ani.pt/sifide-sistema-de-incentivos-fiscais-a-ied-empresarial/>

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