

Developing a Substantiation Strategy for the Irish R&D Tax Credit

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Abstract

Ireland’s Research and Development (R&D) Tax Credit serves as Ireland’s first innovative policy as it has a 30% refundable credit which computes effective tax relief of 42.5% in conjunction with the corporation tax deduction. According to the Revenue Commissioners, the credit’s financial value hinges on the claimant’s maintenance of defensible contemporaneous documentation as credit value depends on claimants’ documentation. The Revenue Commissioners’ guidelines on the regime through administrative interpretation posits demands on claimants to prove the ‘Accounting Test’ and ‘Science Test.’ This paper analyses the R&D tax credit regime’s development and operational intricacies in Ireland, with a focus on the substantiation approach as the key driver behind successful claims. with a deep dive of a case study on Advanced Materials IRL Ltd. This study shows compliance and audit defensibility achieved through systematic experimentation, traceable expense, and disciplined record. A comparative international perspective on the R&D tax credit regime in Ireland, and in Singapore,

Australia, and the Netherlands shows the competitive yet complicated R&D credit regime. This is R&D generally characterized credit the Irish Tax Credit as with the most generous tax's as globally while active documentation and compliance to be integrated as innovation. Distributed as to compliance being a administrative exercise posts the innovative process.

Keywords: R&D Tax Credit, Substantiation, Compliance, Documentation, Irish Revenue, Innovation Policy.

Introduction

As part of a response to the growing risks of recession, Irish authorities adopted the R&D Tax Credit to make the country more competitive, and to foster innovation, productivity, and economic growth. The R&D Tax Credit was first introduced in Irish legislation in the Finance Act of 2004 (Irish Statute Book, 1997), and it still remains one of Ireland's strongest policies to encourage the local and foreign market to engage in more research. Irish authorities currently allow a 30% refundable tax credit which combined with the 12.5% corporation tax offers a tax relief of 42.5% of qualifying expenses (KPMG, 2024; PwC, 2023). Ireland's generous R&D tax policies, coupled with Ireland's ambition of sustaining an innovation-driven economy, make Ireland's R&D tax policies the most generous in the OECD (OECD, 2022; IDA Ireland, 2024). Apart from the financial importance, the R&D tax credit is a vital component of Ireland's industrial strategy. IDA Ireland and Enterprise Ireland contextualize the credit as one of the prominent incentives to capture high-value foreign direct investment and sustain the growth of the small and medium-sized enterprises (Enterprise Ireland, 2024). Survey results from advisory and policy institutions show that over half of the multinational companies would greatly decrease R&D operations based in Ireland if the credit did not exist (Deloitte, 2023). The tax regime facilitated over €2.6 billion in qualifying R&D spend in 2020 alone, over 1,600 claimant companies (Revenue, 2024). These numbers highlight the contribution of the tax credit to the maintenance of high-skilled jobs and the improvement of Ireland's position in the global market (Grant Thornton, 2023).

Yet, the ease with which one can access this substantial incentive relies less on the practice of innovation than on the firm's capacity to articulate its R&D activities in compliance with the requirements set, both legally and administratively. The Irish system is unusually documentation-centric, calling for contemporaneous technical and financial documentation evidencing that the claim for qualifying expenditure is linked to systematic investigation or experimental activities (Revenue, 2023). In contrast to jurisdictions with rich case law, Ireland's regime is mainly interpretative, which is primarily driven by administrative texts. For example, the Tax and Duty Manual Part 29-02-03 (Revenue, 2024) deals with the relevant issues in administrative practice. Hence, claimants work to prepare entire evidential packages that are ready for audit, and prove that each activity fulfils the requirements of the "Science Test" and "Accounting Test" (Chartered Accountants Ireland, 2024).

The purpose of this paper is to construct a substantiation framework that addresses both the statutory requirements and Revenue's interpretative approach. It explores the legislative and administrative underpinnings of the Irish R&D Tax Credit, evaluates its documentation demands via an applied case study, and positions Ireland within a global comparative perspective. By means of policy evaluation coupled with pragmatic compliance, the paper seeks to address both policy issues on Ireland's innovative taxation competitiveness, and corporate strategy.

Legislative and Administrative Framework

The regulatory framework for the Irish R&D Tax Credit incorporates both statutory provisions and elucidation by the relevant governmental authority describing the scope for eligibility and adherence to the provisions. The primary legal basis for the tax credit is incorporated in the Taxes Consolidation Act 1997 under Part 29 (Irish Statute Book, 1997) within Sections 766 to 766D. These sections encompass the legal definitions relating to qualifying R&D activities and associated permissible expenditure, and the processes for claiming a credit and claiming a tax refund. The legislation delineates R&D as defined in the legislation: "systematic, investigative, or experimental activities in a field of science or technology undertaken for the purpose of achieving scientific or technological advancement and resolving scientific or technological uncertainty" (Revenue, 2024). This description is consistent with the internationally accepted definition of R&D as per the OECD Frascati Manual (OECD, 2022).

While the Taxes Consolidation Act lays down the broad legislative principles, it is the Irish Revenue Commissioners which continue to interpret these principles in an administrative capacity. Their Revenue's Tax and Duty Manual Part 29–02–03 serves as the principal reference document for claimants and outlines the expected procedures with respect to the claim. This includes the levels of documentation, estimation of the costs, and the proof that must be provided (Revenue, 2023). Given the lack of Irish case law on the interpretation of the R&D exclusion, this type of administrative guidance takes on a de facto quasi-legislative role and influences the compliance approach of taxpayers and their advisers (Chartered Accountants Ireland, 2024). The manual comprehensively explains the two principal tests which must be satisfied for qualification, i.e. the Science Test and the Accounting Test which together establish whether the activity, and the relevant expenditure, meets the statutory definition (Grant Thornton, 2023).

The company must prove under the Science Test that the activities undertaken are genuinely experimental and aimed at making some progress in the broader field of science or technology and not just in the company's own capabilities (Revenue, 2024). Conversely, The Accounting Test governs the financial side of compliance and states that only costs incurred wholly and exclusively in the performance of qualifying R&D may be claimed. This encompasses direct staff costs, materials, and apportioned overheads, while costs attributable to routine quality control, marketing, and management studies are defiantly excluded (KPMG, 2024).

The response regarding the introduction of new refundable credit systems and the increase of the credit rate from 25% to 30% in the 2022 and 2023 Finance Acts (PwC, 2023) reflected the need to make the Irish tax system consistent with the OECD's Pillar Two Global Anti-Base Erosion

(GloBE) framework while safeguarding Ireland's competitiveness with internationally agreed minimums (OECD, 2022). The new system is based on the revised Secs 766C and 766D, which enable the credit to be refunded on claimants' predictable, transparent, and administratively efficient claims in three annual instalments (Matheson, 2023).

Here, the interaction of statutory law with administrative practice becomes the defining characteristic of Ireland's R&D tax credit regime. Legislation specifies the basic entitlement, whereas Revenue's interpretive guidance specifies how that entitlement can be practically accessed. For businesses, therefore, the credit's claimant success not only depends on the innovation's substance, but also on the procedural discipline of tailoring the documentation to Revenue's evidentiary standards. The combination of both perspectives demands the adoption of a dedicated substantiation strategy, where compliance is integrated into innovation management rather than treated as a post-financial-reporting consideration (Deloitte, 2024).

Table 1 below provides a summary of key legislative and administrative milestones shaping the R&D Tax Credit regime in Ireland.

Table 1. Summary of Key Legislative and Administrative Provisions

Legislation / Guidance	Year	Key Change / Provision	Impact on R&D Credit
Finance Act	2004	Implemented R&D Tax Credit	Implemented a credit framework of 25%.
Finance Act	2022	Shifted to fully refundable	Refined accessibility for SMEs and alignment with OECD Pillar Two.
Finance (No. 2) Act	2023	Raised the credit rate from 25% to 30%	Competitiveness and liquidity have received improvements.
Revenue Manual Part 29-02-03	2024	Revised the guidance on documentation and audit standards	Updated corroboration and evidentiary standards have been enhanced.

Defining Qualifying R&D — The “Science Test”

Central to the Irish R&D Tax Credit approach is the Science Test, which determines whether a company's activities qualify as research and development under the Taxes Consolidation Act 1997 (Irish Statute Book, 1997). In Section 766, the law defines R&D as “systematic, investigative, or experimental activities in a field of science or technology, being activities which seek to achieve scientific or technological advancement through the resolution of scientific or technological uncertainty” (Revenue, 2024). This definition is a direct reference to the OECD Frascati Manual (OECD, 2022), thus aligning the Irish legislation to international best practices. The Science Test seeks to identify true innovation — the generation of new knowledge — rather than activities that simply take knowledge that exists and apply it in new ways.

Revenue Commissioners understand the Science Test by requiring an R&D project to show advancement and uncertainty (Revenue, 2023). For advancement, the contribution needs to be to

science and technology as a whole, and not just improvements to a company's products, processes or capabilities (Grant Thornton, 2023). For instance, improvements to software efficiency, techniques of manufacturing or processes of a chemical will qualify only where systematic experimentation or the development of new principles and methodologies is involved (KPMG, 2024). On the other hand, activities of adapting existing technology to a particular client's needs or other activities of routine data analysis, product customization, or quality control testing do not qualify (Deloitte, 2024).

One of the main difficulties in implementing the Science Test is the interpretive ambiguity in the application of the term "scientific or technological advance." In the absence of Irish case law, Revenue's administrative guidance assumes a quasi-judicial role, which places a disproportionate burden on companies in the amount of documentation they keep for their Science Test. Revenue's manuals and audit correspondence highlight the centrality of the 'scientific method' consisting of hypothesis, experimentation, observation, and evaluation (Revenue, 2023). The method must be deliberate rather than incidental; unrecorded or casual exploration will not meet the requirement (Chartered Accountants Ireland, 2024). Accordingly, contemporaneous documentation, for example, laboratory notebooks, design and technical documentation, project review reports, and specifications becomes the primary evidentiary basis for any qualifying claim.

Because of the Science Test, there is a focus on understanding organizational behavior and the culture of documentation, as well as the competence of the technical staff in quantifying uncertainty. From a compliance perspective, companies need to ensure that the scientist, engineer, and accountant triad collaborate to contemporaneously document the evidence of the research in progress (PwC, 2023). This documentation must not only record what was done but also provide an explanation as to why it was done, paying particular attention to how the action attempted to solve a specific scientific or technological problem whose solution was not obvious to a reasonably competent professional (OECD, 2022). Companies that do not adopt this practice will face the risk of disallowance in Revenue audits, even if the work in question was truly innovative (Revenue, 2024).

In practice, therefore, the Science Test operates as a legal and managerial filter: legally, it ascertains eligibility under Section 766, and, from a managerial perspective, it forces companies to adopt scientific rigor and the necessary documentation as part their innovative processes. The lack of judicial precedent increases the necessity of proactive documentation as the only legally defensible method of substantiation (Matheson, 2023). The need to develop a coherent substantiation framework that integrates the explanation of the experimentation and the statutory definitions is, therefore, critical to ensuring compliance and audit resilience in the Irish R&D tax credit regime.

Financial Compliance and the "Accounting Test"

In addition to the scientific qualifications for the claims the Irish Revenue assesses, the R&D tax credit regime imposes equally arduous financial compliance requirements, all documented under

the Accounting Test. This test checks that all claimed qualifying R&D expenditure is precisely calculated, proportioned, substantiated, and documented per the claims to the Taxes Consolidation Act 1997 and the Revenue's administrative guidelines (Revenue, 2024). The eligible expenditure claims legislative basis is Section 766 of the TCA 1997, while the interpretive guidance on admissible accounting treatments and methodologies for cost attribution is provided by Tax and Duty Manual Part 29-02-03 (Revenue, 2023). The Accounting Test, thus, pragmatically links the scientific appraisal of qualifying activities to the financial estimation of those activities for taxation purposes.

Under the Irish Statute Book (1997), the only costs that can be claimed under the Accounting Test are those wholly and exclusively incurred in carrying out qualifying R&D activities. This also means that any costs linked to commercial, administrative, or production activities that do not relate to the experimental work are excluded (Grant Thornton, 2023). For example, the R&D staff costs would only be allowable for the amount of time spent on qualifying experimentation, which has to be evidenced. As such, there are expectations for the companies to have contemporaneous documentation such as time sheets, project codes, and payroll records, which integrate financial and technical narratives described in the projects (KPMG, 2024). The indirect costs of light, heat, rent, and other payable utilities can be claimed if the costs are apportioned “just and reasonable,” which usually is some percentage of the qualifying staff costs, and the rationale is consistent, transparent, and defensible in case of audit (Deloitte, 2024).

Revenue guidance further classifies R&D costs as direct and indirect. Direct costs pertain to the salary of the relevant R&D personnel, consumables and materials used, and materials and goods that are transformed and destroyed in the course of experiments. Costs that are indirect may cover the maintenance of the lab and depreciation of the R&D tools and equipment, which are justifiable as being part of the R&D costs and reasonably allocated. However, in the case of general operational costs, expenses such as the provision of marketing, legal and management consulting services are clearly stated as not qualifying (Revenue, 2023). This provision is meant to mitigate the risk of general business proliferation misuse.

Compared to other compliance issues, capital expenditure compliance issues are different in nature. Under Section 766A of the TCA 1997, capital expenditure on buildings or other structures used for R&D may receive an additional credit, provided at least 35% of the use of the facility is for qualifying activities (Chartered Accountants Ireland, 2024). This credit applies only to brand new or refurbished buildings, and capital expenditure must be accounted for separately from revenue expenditure which is less complex in nature. The incorporation of capital elements into the R&D paradigm certainly demonstrates the regime's commitment to encouraging long-term deep-rooted investments in innovative infrastructure (Matheson, 2023). Revenue's scrutiny in these situations is certainly justified, and it is up to the taxpayer to keep all the architectural plans, use logs, and depreciation schedules as evidence for which a portion of the asset is used for R&D.

Outsourcing and subcontracting for R&D also warrant careful consideration. In Ireland, there is a legal ceiling on how much cost subcontracting can accrue: it is limited to the greater of €100,000

and 15% of the in-house qualifying expenditure (Revenue, 2024). This aims to curb tax credits for companies contracting out their core business functions and to ensure that the tax credits pay for actual R&D performed in Ireland (KPMG, 2024). If subcontractors are related parties, more extensive documentation to prove compliance with arm's length pricing, in line with OECD transfer pricing documentation, will be expected (OECD, 2022). This documentation is critical because, without it, the claim can be partly or fully disallowed in a subsequent Revenue audit.

The Accounting Test, in reality, involves more than just an accounting exercise; it is an entire compliance framework that needs alignment among the various teams: technical, financial, and tax. The Tax Appeals Commission has stressed that poor record keeping will defeat even the best possible claims (Tax Appeals Commission, 2022). Companies, therefore, need to develop strong internal controls, combining real time financial monitoring with R&D project tracking. A real culture of documentation—from a record of costs to a supported entry for an R&D purpose—is the best protection against challenges from Revenue (Grant Thornton, 2023). The relationship between the Science Test and the Accounting Test, therefore, defines the operational integrity of the R&D tax credit regime in Ireland: innovation has to be both scientifically valid and financially sound.

Documentation, Evidence, and Revenue Audit Practice

The Ireland R&D Tax Credit's effectiveness will depend on the quality and contemporaneity of the claim's supporting documentation. The value of evidence firms provide and pay for "the technical and financial side of the details for each qualifying project" is evidence they provide, pay for, and track, detailing "all of the tax and duty documentation" (Revenue, 2024). The Tax and Duty Manual Part 29-02-03 plainly states "the work has to demonstrate the systematic, investigative, and experimental nature" and the evidence has to be real-time documentation like "lab notebooks, experimental logs, and data reports" (Revenue, 2023). Lack of evidence is one of the most significant reasons claim scientific project merit is rejected during audits (KPMG, 2024).

Irish Revenue conducts audits under a two-stage framework named the Science and the Accounts Tests, which must both be fulfilled concurrently (Grant Thornton, 2023). The Science Test probes if the specific activity involves organized and planned research aimed at resolving a specific scientific or technological uncertainty and the Accounting Test determines if the associated costs have been appropriately captured and accounted for (Deloitte, 2024). Therefore, businesses must link the two disparate documentation systems they are likely to have if they wish to defend successfully any R&D activity under claim, which, for the purposes of the audit, should be technically justified and costed (PwC, 2023).

A well-structured documentation framework must include certain fundamental elements. A scientific report must include a project's technical narrative which encompasses the hypotheses, methodologies, and outcomes of the R&D work (Revenue, 2024). In this narrative, the uncertainties the work intends to resolve must be identified and the experimental steps to address the uncertainties must be outlined in the order prescribed in Tax and Duty Manual Part 29-02-03.

Second, the company should keep dated and signed laboratory notebooks, digital logs of the experiments, or project management materials which provide a chronological account of the research (Matheson, 2023). Third, reconciled financial documentation including timesheets, payroll, invoices, and cost allocation schedules must be aligned with the project codes outlined in the technical narrative. This ensures that a linkage exists which Revenue auditors will use to ascertain the validity of the claim and other evidence.

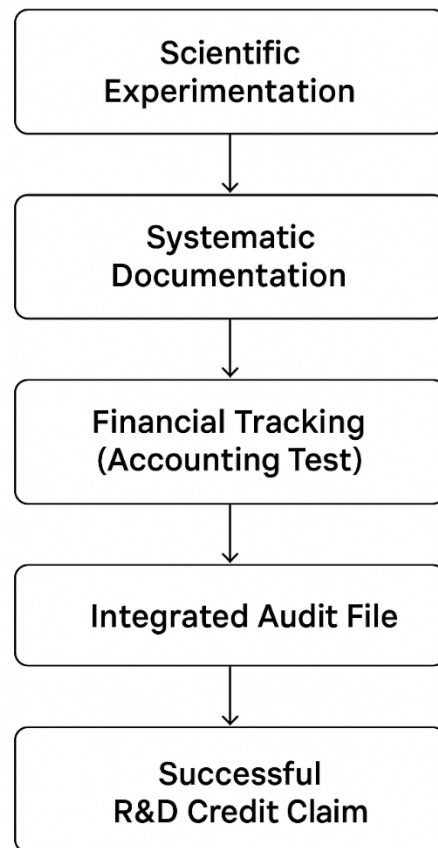
Since 2023, the Irish system has placed great importance on contemporaneous or real time documentation, as opposed to documentation prepared at a later date, as described by Revenue. Most recently, as described by the Tax Appeals Commission (TAC) in 2022, the importance of contemporaneous documentation has been emphasized in 113TAC 2022 where a precedent was set that in instances of even slight delays in contemporaneous documentation or filing incomplete documentation, the entire claim could be denied. The Appeals Commissioner noted there would be no ability to exempt the party from providing the documentation, even in extraordinary or tragic circumstances. The Appeals Commissioner also noted the importance of documentation flow, stating there would be no extension of time to grant the documentation. The description of this case reinforces the rigid nature of the Irish R&D framework which necessitates the need to plan well in advance.

In order to avoid negative findings during an audit, many Irish SMEs utilize real-time documentation and automated activity and cost data capture systems in project accounting (Grant Thornton, 2023). In practice, such systems are vital in maintaining data integrity and simplifying the R&D technical file preparation process. A well-maintained file should consist of (1) a summary project list detailing all R&D activities, (2) a comprehensive technical description for each qualifying project, (3) laboratory records, (4) financial calculations, cost apportionments, and (5) relevant correspondence or internal approvals that show the internal company control process. Providing this file to an auditor in an orderly and timely manner greatly enhances the credibility of the claim (KPMG, 2024).

The audit procedure followed by Revenue is systematic and driven by evidence. After case selection, the taxpayer gets a Revenue notification letter, and afterward, a detailed document request specifying the required documents (Revenue, 2024). Revenue audits are attended by both financial and technical officers. In complex cases, Revenue may appoint an independent scientific consultant under Section 766(7) of the Taxes Consolidation Act 1997 to evaluate whether the work claimed is real R&D (Chartered Accountants Ireland, 2024). The consultant's opinion is highly persuasive and may determine the outcome in difficult borderline cases. As a result, companies must ensure that their technical description is scientifically precise, and that their language and approaches are comparable to those utilized in the appropriate discipline.

Ultimately, the approach taken by the Irish Revenue exemplifies the logic underpinning the R&D tax credit regime: proof is entirely the claimant's responsibility (Revenue, 2023). Compliance is not something that can be achieved retrospectively; it must be embedded into the company's operational processes from the outset of the R&D project. As the Irish Tax Institute (2024) notes, the most successful claimants consistently treat the documentation preparation as an integral part

of the research effort, rather than an obligation to be completed after the fact. The establishment of a documentation culture that is robust and evidence-based helps to ensure statutory compliance and improves the company's innovation process in the dimensions of transparency, efficiency, reproducibility, and compliance.



Case Study: Advanced Materials IRL Ltd. (Applied Compliance Framework)

The case study of Advanced Materials IRL Ltd. (AMIRL) illustrates how a medium-sized Irish enterprise could articulate its R&D tax credit claim within the framework of the Science Test and the Accounting Test as set out in Section 766 of the Taxes Consolidation Act 1997 (Irish Statute Book, 1997). This example combines methodical experimentation, contemporaneous records, and qualifying financial apportionment to support an R&D claim, all in line with Revenue expectations (Revenue, 2024; Grant Thornton, 2023).

Project Overview and Objectives

AMIRL, a small to medium-sized enterprise located in Dublin, has specialized in polymer composites for medical applications, and has recently undertaken a research project with the goal of developing a highly durable, biodegradable polymer composite for use in single-use surgical

instruments. The aim was to resolve a key issue concerning the biodegradable surgical instruments currently available, which is the trade-off between tensile strength and biodegradability. Addressing this issue from both ends simultaneously was a significant technological uncertainty as per the definition in the Tax and Duty Manual Part 29-02-03 (Revenue, 2023). Conducted between January and November 2025, the R&D work was spearheaded by Dr. Aoife Murphy, Lead Scientist in Polymer Chemistry.

The project documentation speaks for itself in this regard: to obtain a material tensile strength of greater than 150 MPa and at least 90% biodegradation within a 180-day period in a composting environment. There was no literature published, nor any patents filed, showing that this was possible (Matheson, 2023). Therefore, the project satisfied Pillar 4 of the Science Test.

Scientific and Technological Uncertainties

Initially, AMIRL pinpointed three interconnected uncertainties:

- (1) **Formulation uncertainty** — the specific molecular makeup and the ratios of the PLA and PHA polymers necessary to achieve a critical equilibrium among the mechanical strength and the degradation rate of these polymers were yet to be established;
- (2) **Process uncertainty** — as to whether conventional melt-extrusion methods could be modified and these polymers be subjected to melt-extrusion without the risk of early degradation of the polymers; and
- (3) **Sterilization uncertainty** — the question of whether the resultant polymer would endure gamma and ethylene oxide sterilization and retain the polymer's integrity (Revenue, 2023).

These uncertainties could not fairly be characterized as trivial or readily resolvable by a qualified practitioner in the field with existing literature (OECD, 2022). AMIRL's work was thus properly categorized as experimental development in materials science, thereby meeting the Pillar 3 criterion of the Science Test (KPMG, 2024).

Systematic Experimental Methodology

In line with the Revenue Commissioners' requirements for systematic inquiry, AMIRL carried out the systematic experimental program which included more than 50 controlled formulation trials (Deloitte, 2024). Research for the program was based on a formal Design of Experiments (DoE) considering the various combinations of ratios of polymers, concentrations of additives, and temperature-pressure regimes. Each trial was accompanied by the systematic maintenance of a detailed laboratory and a digital notebook which was signed and dated by the technical personnel for the respective trial. Each experimental batch was subjected to mechanical testing under the ISO 527 standard, biodegradability assessment under ISO 14855 probed, and thermal stability was evaluated through differential scanning calorimetry.

The iterative design process allowed failures to direct the refinement of subsequent formulations which created a rational trajectory of evidence for subsequent problem solving (PwC, 2023). Such disciplined hypothesis-driven inquiry is indicative of the "systematic, investigative and experimental" activity required under Pillar 1 of the Science Test (Revenue, 2024).

Financial Documentation and Qualifying Expenditure

For AMIRL's R&D projects, the cost-center accounting structure was kept dedicated, as the accounts were kept in tandem with the technical activities (Grant Thornton, 2023). Qualifying expenditure for the polymer composite project included the following:

- **Staff costs** (€186,500) - salary costs were converted as per the recorded time the employee spent on the experiment;
- **Materials and consumables** (€50,000) - trial consumed polymers, catalysts, and chemical agents; and
- **Overheads** (€27,975) - laboratory expenses at 15% of staff cost and 'on a just and reasonable' basis apportioning utility costs included as overheads.

Contemporaneous cost recording and project identifiers ensured all costs were attributable to a specific project. Total qualifying expenditure was €264,475, and €79,342.50 was the 30% R&D tax credit provisioned under Section 766C of the TCA 1997, alongside a 12.5% standard corporation tax deduction. Total effective relief amounted to €112,401.88 (Revenue, 2024). This indicates unswerving adherence to the Accounting Test and the legal framework regarding cost substantiation (Chartered Accountants Ireland, 2024).

Procedural Compliance and Risk Management

Aside from financial and scientific considerations, adherence to procedures constitutes yet another pillar upon which the success of a claim firmly rests. AMIRL lodged its claim within the 12-month statutory period and pre-filing notifications were also made through the Revenue Online Service (ROS) in line with the Finance (No. 2) Act 2023 (Irish Statute Book, 2023). The firm also kept a digital audit-ready file which included the technical narrative, experimental documentation, cost estimates and approvals from management which Revenue would require for potential audits (KPMG, 2024).

As far as documentation frameworks go, the company's approaches and practices demonstrate a best-practice substantiation framework. This is consistent with the guidance from Irish Revenue which expects that the documentation for R&D should also be comprehensive, contemporaneous, and scientifically reasonable (Revenue, 2024). By integrating documentation and compliance at every point of the project lifecycle, AMIRL has sought to eliminate the procedural and evidentiary issues which were identified in the most recent Tax Appeals Commission determinations (TAC, 2022).

Evaluation and Outcomes

This case study exemplifies the importance of structured filing and documented claim procedures as much as the actual scientific accomplishment of the R&D tax credit claim. The project succeeded the Science Test and met the Accounting Test requirements through meticulous cost management. The combination of both models offers an Irish SME the greatest level of innovation while audit risk is kept to a minimum.

The AMIRL framework demonstrates the importance of embedded recordkeeping and the commitment to rational compliance that the OECD (2022) and Matheson (2023) claim will

define Irish business competitiveness in the future. As AMIRL continues to improve its competitiveness by embedding innovation within its compliance process and rational recordkeeping, other Irish SMEs, working the OECD Guidelines designed for the SMEs business sector, will be able to claim the complete innovation and audit risk balance.

International Benchmarking: Ireland's R&D Tax Credit in a Global Context

Ireland's research and development tax credit policies exist in a more and more competitive global ecological framework, wherein nation-states utilize tax policies to optimize and capture mobile research capital. Assessing Ireland's relative position to other developed economies that prioritize innovation reflects its competitive merits and informs potential policy adjustments (KPMG, 2024; OECD, 2022). This part compares Ireland's tax credit policies to its three main competitors, which are Singapore, Australia, and the Netherlands, focusing on the stated primary policy parameters: headline incentive rate, refundability, the scope of qualifying expenditures, and the complexity of the administration.

Comparative Overview

Section 766 and 766C of the Taxes Consolidation Act 1997 describes the Irish R&D tax credit as providing the 30% refundable credit on qualifying expenditure on R&D work done within the EEA (Revenue, 2024). With the standard 12.5% corporation tax deduction, the tax relief effectively becomes 42.5% (Grant Thornton, 2023). An exemplary feature of this tax regime is the cash-flow benefit this universal refundability provides for early-stage companies, whether SMEs or large corporations. Despite this benefit, the refund being paid in three annual instalments poses limitations on short-term liquidity (Matheson, 2023).

In the comparison of global tax incentives for R&D spending, Singapore R&D tax incentives are one of the most generous in the world, offering 400 percent tax deduction on the first S\$400,000 of qualifying R&D spending under the Enterprise Singapore innovation scheme (EY, 2023). The deduction is considered generous most companies in Singapore are profitable and have large taxable incomes, for them deduction is worth more than credit. For the sake of comparison, Australia R&D tax incentives (RDTI) offer 43.5% refundable tax offset for small and medium enterprises (AUD 20 million turnover) and 38.5% non-refundable tax offset for large enterprises (Deloitte, 2024). In the Netherlands, WBSO scheme operates as payroll tax relief offering 32% relief on the first €350,000 of qualifying R&D wage costs (PwC, 2023). The relief is immediate as it decreases the employee's social security contribution and provides cash flow benefits but RVO approval is required prior (RVO).

Key Comparative Dimensions

Feature	Ireland	Singapore	Australia (SME)	Netherlands
Headline Incentive	30% Tax Credit	Deduction set at 400% S\$400k	43.5% Refundable Offset	Reduction of payroll taxes by 32%
Refundability	Fully Refundable for All Corporations	Loss makers are limited	Fully Refundable for SMEs	Reductions on payrolls are immediate.
Qualifying Costs	Employees, materials, overheads, P&M, limited subcontracting	Employee, auxiliary, outsourced R&D in Singapore	Wages, Contractors, Software, Overheads	Primarily on wages for R&D along with prototypes.
Application Process	Assessment performed via tax return; pre-notice required	Tax return uncomplicated	Annual Registration with Aus Industry	Approval through RVO.
Administrative Complexity	Moderate	Low	High	Medium.
Notable Limitation	Outsourced R&D capped a 15% of in-house costs	As a deduction (non-refundable)	Complex Dual Agency Review	Wage-cost ceiling is set at €350k.

Ireland remains competitive due to the competitive nature of the headline rate and the refundability. However, there are still some limits on the maintenance of subcontractor policies and refund periods which close to moderate (Grant Thornton, 2023; Revenue, 2024). Australia and Singapore offer attractive policies to cash-sensitive firms and profit-heavy firms respectively; Australia offers immediate refunds, while Singapore offers high rate of deduction. The Netherlands balances administrative simplicity and control over employer costs (especially the R&D intensive ones) by adopting a payroll-based model which offers less flexibility on the other cost types.

Impact of OECD Pillar Two and Global Reform Dynamics

The OECD/G20 Base Erosion and Profit Shifting (BEPS) Pillar Two framework has greatly impacted the redesign of Ireland's R&D tax credit (OECD, 2022). Since these rules dictate that large multinationals be attributed a 15% global minimum effective tax rate, the non-qualifying tax credits that lower taxable income and undermine effective taxation are considerably mitigated. In an effort to maintain competitive advantage, the Finance Act 2022 Ireland reclassifies the R&D tax credits as Qualified Refundable Tax Credits (QRTC) - credits that, for the purposes of income tax accounting, are treated as income and not as a tax deduction (Irish Statute Book, 2022). This credit reclassification enhanced credit usefulness even under the

restrictions of Pillar Two, as it prevents the credit from lowering the effective tax rate under the Pillar Two global minimum tax threshold (PwC, 2023).

Moreover, the Finance (No. 2) Act 2023, which came into effect recently, increased the tax credit rate from 25% to 30% which mitigates the taxability of the credit. This increase translates to a real net uplift in the Revised Credit Tax for multinationals and SMEs (Matheson, 2023). This - as well as global tax Ireland's policy - innovations responsiveness to international reform KPMG competitions as a sustained policy innovator (KPMG, 2024).

Comparative Competitiveness and Policy Insights

In summary, Ireland's R&D tax credit has the most attractive combination of generosity, refundability, and ease of administration globally, which places it in the upper echelon of regimes worldwide (EY, 2023). Still, benchmarking shows potential reforms. First, the three-year refund cycle is an unnecessary liquidity bottleneck for smaller firms; offering annual refunds would greatly improve access for SMEs (Grant Thornton, 2023). The second concern is the 15% outsourcing limit, which is increasingly discordant with new models of collaborative innovation with universities and specialized innovation labs (Revenue, 2024). Relaxing this constraint would foster more industry-academia collaboration. Finally, the limited definition of technological uncertainty related to core engineering and science may close the door on many innovative software, FinTech, and digital service activities that contribute significantly to the country's international competitiveness (Irish Tax Institute, 2024).

In consideration of the above, the R&D tax credit would set the most strategic balance on national industrial policy. It shows Ireland's increasing industrial policy generosity, which innovation policy has fostered, while demonstrating a balanced industrial policy with regard to Ireland's fiscal position. The policy also shows how open economies can stay competitive in a targeted and predictable fashion through innovation-driven incentives and well-managed fiscal policy (KPMG, 2024; OECD, 2022).

Conclusion and Strategic Recommendations

The Research and Development (R&D) tax credit system in Ireland is recognized as one of the most generous and strategically constructed incentives in the OECD, particularly because of the 30% refundable credit and solid legal grounding in Part 29 of the Taxes Consolidation Act 1997 (Irish Statute Book, 1997). This has enhanced Ireland's reputation as a top location for investment driven by innovations, offering policy certainty alongside a tax relief (KPMG, 2024). Nonetheless, the success of the regime is not a function of the headline rate alone, but rather the claimants' ability to adhere to the document-heavy and procedural workflows established by the Revenue Commissioners (Revenue, 2024). The need to satisfy the Science Test and the Accounting Test simultaneously ensures claim integrity but also places additional burdens on smaller companies without the robust compliance systems in place (Grant Thornton, 2023).

This study reaches a conclusion with emphasis on substantiation rather than expenditure being the most critical determining factor in claim eligibility. As (Tax Appeals Commission, 2022) has

shown demonstrating several times, even cases of scientifically valid R&D work may unfortunately still fail to qualify if contemporaneous evidence is inadequate or poorly organized. Thus, in Ireland, the operational culture of businesses must embrace compliance as their most proactive approach to documentation. Claim defensibility relies on the proactive approach of real-time data capturing, arrangements for cross-functional collaboration between technical and finance teams, and scheduled internal audits (Deloitte, 2024).

From a policy perspective, Ireland's R&D credit continues to be shaped by international tax reform, particularly the OECD's Pillar Two framework. Ireland's credit becoming a Qualified Refundable Tax Credit (QRTC) showcases its ability to adapt legislation, and its intent to maintain the defense of its competitiveness (OECD, 2022; Matheson, 2023). However, comparative benchmarking suggests some improvements can be made. To begin, the three-year cycle, especially for SMEs, is tedious and can be made less cumbersome to allow for more liquidity and reinvestment in innovation (Grant Thornton, 2023). Moreover, the 15% limit on subcontracted R&D spend is becoming increasingly out of step, especially in collaborative R&D with universities and research consortia (Revenue, 2024). A modest relaxation of this limit will likely enhance Ireland's research landscape and will not be detrimental to maintaining responsible public finances.

Furthermore, broadening the scope of qualifying innovation to include software, fintech, and improvements to digital processes would modernize the regime to fit the realities of a knowledge-based economy (Irish Tax Institute, 2024). This adjustment would preserve the framework of technological uncertainty while also recognizing that innovation often takes place outside conventional laboratories. With regards to the R&D tax credits, the government might also consider enhanced credits for R&D that delivers national strategic goals, particularly regarding green technologies and sustainability, given Ireland's net-zero commitments (PwC, 2023).

The R&D tax credit in Ireland continues to be a pillar of innovation policy— generous, compliance-intensive, and frequently undergoing changes. This paper affirms that Ireland's future competitiveness lies in the careful balance between innovation stimulus and fiscal integrity. Ireland can remain a global leader in incentivizing R&D, in compliance with evidence-based practices and modernizing legislation around R&D tax credits (KPMG, 2024; OECD, 2022).

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