

Article

The Impact of The Tax Mechanism on Sectoral Development: Theoretical Approaches

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Abstract: This article systematizes the principal theoretical approaches to understanding the impact of the tax mechanism on the development of economic sectors. Classical, Keynesian, supply-side, endogenous growth, and institutional theories are examined comparatively, together with contemporary international empirical studies on tax incentives, tax competition, and R&D-related tax relief. The analysis identifies three principal channels through which the tax mechanism affects sectoral development: the cost-of-capital channel, the financing-constraints channel, and the resource-reallocation channel. The findings demonstrate that the effects of tax incentives are nonlinear and depend on sector-specific characteristics, incentive design, and the quality of the institutional environment. Based on the results, the study proposes a three-level framework for evaluating the effectiveness of tax incentives, encompassing resource inputs, innovation outcomes, and economic performance indicators. The proposed framework makes it possible to distinguish between nominal increases in innovative activity and genuine technological and economic development at the sectoral level.

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1. Introduction

In a market economy, public policy instruments play a crucial role in ensuring the sustainable development of economic sectors and in strengthening their investment activity, productive capacity, and competitiveness. Among these instruments, the tax mechanism is particularly important because it serves not only as a means of generating government revenue but also as an economic policy instrument capable of exerting both direct and indirect effects on sectoral development.

Through tax rates, exemptions and preferences, rules governing the tax base, depreciation policies, and other fiscal instruments, governments can support priority sectors, stimulate investment, and influence the economic behavior of firms. At the same time, an excessive tax burden may undermine firms' financial stability, restrict their investment capacity, and limit their ability to expand production. Consequently, examining the impact of the tax mechanism on sectoral development from both theoretical and practical perspectives remains an important issue in contemporary economic policy.

The relevance of this issue has increased further as modern tax policy has gradually evolved beyond its traditional revenue-raising function. In many countries, taxation is increasingly used to influence investment decisions, innovation activity, technological modernization, and the structural transformation of industries. However, the effects of tax

policy are not uniform. The same tax measure may generate different outcomes depending on the technological characteristics of a sector, firms' access to finance, the institutional environment, and the design of the incentive itself.

Accordingly, the purpose of this article is to systematize theoretical approaches and international empirical evidence concerning the impact of the tax mechanism on sectoral development and to identify the principal transmission channels and conditions that determine the effectiveness of tax incentives.[1]

The impact of taxation on the development of economic sectors has been interpreted differently across schools of economic thought. Tan and Tong, systematizing the main theoretical perspectives on taxation and economic growth, demonstrate that the conceptual understanding of taxation has gradually shifted from a purely fiscal perspective toward an approach that recognizes taxation as an instrument for influencing economic activity.

Within classical economic theory, taxation was primarily regarded as a burden that reduces private savings and capital accumulation. Keynesian economists, by contrast, viewed taxation as an instrument for managing aggregate demand and stabilizing economic cycles. Proponents of supply-side economics argued that reducing the tax burden could stimulate production, investment, and entrepreneurial activity. Endogenous growth theory further expanded this perspective by linking tax policy to long-term economic growth through technological progress, human capital formation, and innovation.

These theoretical perspectives indicate that the sectoral effects of taxation cannot be adequately explained solely by the level of the tax burden. In the contemporary economic environment, the effectiveness of the tax mechanism should be assessed not merely in terms of fiscal magnitude but, more importantly, through its influence on firms' investment, innovation, and production decisions. The statutory tax rate represents only one component of the tax mechanism. Tax exemptions, the definition of the tax base, administrative procedures, incentive instruments, and the stability of tax rules must also be considered as elements of an integrated policy framework.

A similar conclusion emerges from the institutional approach. Guliyeva et al. argue that tax policy should not be regarded solely as an instrument for generating government revenue. Instead, it should be understood as an institutional signal that influences the business environment, investment decisions, and the long-term behavior of firms. By synthesizing classical, neoclassical, Keynesian, and institutional perspectives, the authors conclude that tax rates and incentives alone are insufficient to ensure an effective tax system. Tax rules must also be stable, transparent, predictable, and administratively straightforward.

From this perspective, the tax mechanism can be regarded as an integral component of the institutional environment within which sectors develop. This explains why incentives of similar magnitude may produce markedly different outcomes across institutional contexts. In our view, improvements in the tax mechanism should therefore take into account not only the level of taxation but also the clarity and long-term stability of tax conditions. For investors, predictability and institutional reliability may be as important as the nominal level of the tax burden. Fiscal incentives and institutional quality should therefore be analyzed as interdependent components of tax policy.

Nepochatenko et al. examine specific tax instruments used to stimulate industrial development and distinguish between horizontal and vertical forms of tax support. According to the authors, horizontal incentives, which apply broadly to a wide range of firms, may be preferable under rapidly changing market conditions. Such instruments include tax holidays, preferential tax rates, investment tax credits, and free trade zones. Vertical incentives, in contrast, are targeted at priority sectors or particular activities, such as export-oriented investment, and may include tax and tariff preferences.

The authors argue that these instruments can generate synergistic effects in industry when they are directed toward upgrading fixed assets, adopting advanced technologies, and financing research and development. Their approach complements the institutional perspective by identifying specific policy instruments through which governments can influence sectoral development.

However, it would be inappropriate to regard horizontal incentives as universally superior across all industries. In sectors characterized by market failures, high initial capital requirements, elevated innovation risks, or substantial positive externalities, targeted vertical incentives may be economically justified. Horizontal and vertical incentives should therefore not be considered mutually exclusive alternatives. Rather, they should be combined in accordance with the sector's stage of development, technological characteristics, and strategic importance.

The firm-level mechanisms through which tax incentives influence innovation are examined in greater detail by Yue et al.. Using data on manufacturing firms listed on China's A-share market over the period 2008–2019, the authors find that tax incentives encourage firms to increase their research and development activities. They identify three main transmission channels: the alleviation of financing constraints, the deepening of specialized divisions of labor, and the expansion of value creation.

The study further demonstrates that additional deductions for R&D expenditure exerted a stronger effect on innovation than the application of a preferential corporate tax rate of 15%. When both instruments were implemented simultaneously, however, innovation activity increased significantly.

These findings suggest that the effectiveness of a tax incentive depends not only on its magnitude but also on the specific economic constraint or cost that it is designed to address. This distinction is particularly relevant for sectoral tax policy. Rather than relying exclusively on general reductions in tax rates, policymakers may achieve stronger results by directly incentivizing expenditures related to investment, R&D, technological modernization, or resource-efficient equipment. Tax incentives should therefore not merely increase the amount of financial resources retained by firms; they should also influence the allocation of those resources toward productive and innovative activities.

Nevertheless, expanding tax relief does not necessarily produce uniformly positive outcomes. Shi and Shen examine the issue from the perspective of interregional tax competition and capital mobility. Based on panel data for 31 Chinese regions over the period 2011–2018, the authors find that excessive tax competition may reduce the innovation efficiency of industrial enterprises. Capital flows are shown to play a partial mediating role in the relationship between tax competition and innovation efficiency.

Their results suggest that tax competition has a dual effect. Moderate competition may attract investment and support industrial activity, whereas excessive competition may distort the efficient allocation of resources. This finding provides an important qualification to the argument that reductions in the tax burden automatically improve sectoral performance.

The intensity of tax incentives and their effects on capital allocation must therefore be taken into account. When regions or sectors engage in excessive competition through tax preferences, investment may be redirected according to short-term tax advantages rather than underlying economic productivity or technological potential. We therefore argue that tax incentives should be accompanied by clearly defined limits and performance criteria.

Meng et al. extend this line of analysis by examining the relationship between local government tax competition and industrial transformation and upgrading. Their findings reveal an inverted U-shaped relationship. At relatively low levels of competition, tax incentives attract high-technology and high-value-added activities and thereby contribute to industrial upgrading. However, once tax competition exceeds a certain threshold, fiscal

capacity declines, resources become increasingly misallocated, the financing of public services becomes more difficult, and industrial transformation slows.

The authors identify tax structure, income distribution, and industrial agglomeration as important mediating channels. Technological innovation is also found to strengthen the inverted U-shaped relationship.

These findings reinforce the argument that the relationship between taxation and sectoral development is nonlinear. They challenge the simplified assumption that lower taxation necessarily produces faster sectoral growth. In our view, there is an optimal range within which tax incentives can generate the greatest economic benefit. Below this range, government incentives may be insufficient to alter firms' behavior; above it, fiscal losses and resource misallocation may reduce or even offset the expected gains.

Sectoral tax policy should therefore not be treated as a fixed set of preferences. Rather, it should function as an adaptive policy framework that is periodically revised in response to observed outcomes.

A similar principle can be found in the dynamic carbon tax model proposed by Zheng et al. for the new energy vehicle industry. Using an evolutionary game model based on prospect theory, the authors compare the behavior of manufacturers and local governments under static and dynamic carbon tax regimes. Their results indicate that a dynamic taxation mechanism is more effective than a static one in encouraging the transition toward low-carbon development.

The model identifies 0.15 as a preferable initial carbon tax rate under the specified assumptions. A relatively low initial rate encourages firms to adopt low-carbon strategies at an early stage.

However, this numerical value should not be interpreted as a universally optimal tax rate applicable across countries and industries. It is derived from a particular model specification and reflects the specific characteristics of the new energy vehicle sector. The theoretical contribution of the study lies primarily in the idea that tax parameters should be adjusted according to the stage of sectoral development and the behavioral responses of firms. This principle appears particularly relevant for designing adaptive sectoral tax mechanisms.

Overall, the literature demonstrates a clear evolution in the understanding of the relationship between taxation and sectoral development. Taxation is increasingly viewed not merely as a fiscal burden but as a regulatory instrument capable of influencing investment, innovation, resource allocation, and structural transformation. The main stages of this evolution are summarized in Figure 1.

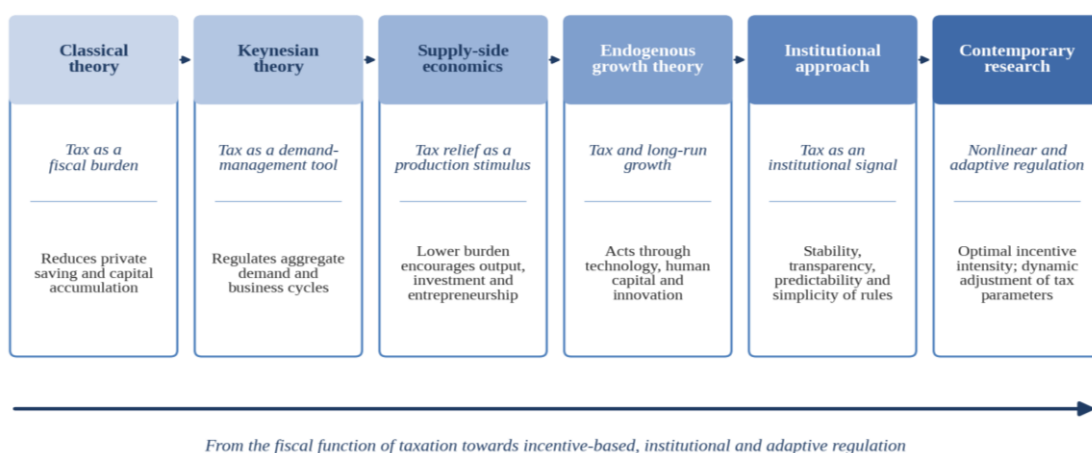


Figure 1. Evolution of theoretical approaches to the impact of taxation on sectoral development

Source: compiled by the author based on Tan & Tong, Guliyeva et al., Meng et al. and Zheng et al..

At the same time, contemporary empirical studies show that the effectiveness of the tax mechanism depends on institutional quality, incentive design, capital mobility, the intensity of tax competition, technological development, and sector-specific characteristics.

Based on the literature reviewed, three principles can be proposed as a theoretical foundation for regulating sectoral development through the tax mechanism.

First, the tax mechanism should maintain an appropriate balance between its fiscal and incentive functions.[2]

Second, tax incentives should not be provided solely in the form of general tax relief. They should instead be linked to specific economic objectives, including investment, innovation, technological modernization, and the creation of higher value added.

Third, incentive mechanisms should be regularly reviewed in light of the sector's stage of development, investment activity, and achieved outcomes.

When these principles are applied consistently, the tax mechanism can evolve from a passive fiscal instrument into an active policy tool for facilitating qualitative changes in the structure and performance of economic sectors.

2. Materials and Method

This study employs comparative, systemic, and structural methods of analysis to examine the impact of the tax mechanism on sectoral development. The information base of the research consists of theoretical and empirical studies on tax policy and sectoral development published in international academic journals.

A comparative analysis was conducted of the perspectives advanced by different schools of economic thought and contemporary research approaches concerning the relationship between taxation, investment activity, innovation, and structural transformation.

The systems approach was used to identify and synthesize the principal channels through which tax rates, exemptions, preferences, and tax administration influence sectoral development. This approach made it possible to consider the tax mechanism not as a collection of isolated fiscal instruments but as an interconnected regulatory system.

Methods of induction and deduction were applied to formulate theoretical conclusions and to provide a conceptual explanation of the effects of taxation on production, investment activity, innovation, and sectoral transformation.

The study was designed as a structured narrative review of theoretical and empirical research on the relationship between taxation and sectoral development. The analytical material was grouped into four thematic areas: theoretical interpretations of taxation and economic growth; institutional and sector-specific tax instruments; transmission channels linking taxation to investment, financing conditions, innovation, and resource allocation; and empirical evidence concerning R&D-related tax incentives.

The analysis was conducted in three stages. First, the principal theoretical approaches were compared to identify similarities and differences in explaining the influence of taxation on sectoral development. Second, empirical findings were synthesized to determine the main transmission mechanisms and the conditions under which tax incentives generate heterogeneous or nonlinear effects. Third, the evidence was interpreted through a three-level evaluation framework comprising resource inputs, innovation outcomes, and economic performance. As the study is conceptual and literature-based, no new econometric model is estimated; the contribution lies in the systematic synthesis and integration of the reviewed evidence.

3. Results and Discussion

The review produces three central findings. First, taxation affects sectoral development through several interconnected mechanisms rather than through the statutory tax rate alone. Second, the effectiveness of tax incentives is heterogeneous and nonlinear because it depends on sectoral technology, firm characteristics, financing

constraints, institutional quality, and incentive design. Third, increases in investment or R&D expenditure cannot by themselves be treated as sufficient evidence of improved sectoral performance; evaluation should also consider innovation quality, productivity, value added, commercialization, and possible resource misallocation.

As demonstrated in the literature review, the tax mechanism extends beyond the setting of tax rates. It represents an interconnected system consisting of rules governing the tax base, the structure of tax rates, exemptions and preferences, tax administration procedures, and control mechanisms.

The effects of these elements may reinforce one another or, conversely, partially offset one another. For instance, a lower tax rate may create a financial incentive for firms, while complex administrative procedures, high transaction costs, and excessive compliance burdens may considerably weaken the expected positive effect.

Accordingly, assessments of the influence of taxation on sectoral development should focus on the combined effects of the tax mechanism rather than on isolated tax instruments.

Ivanchenkov systematizes tax instruments according to their functional characteristics and identifies the main categories of mechanisms intended to stimulate structural transformation. These include additional tax relief and deductions, investment incentives, measures supporting R&D, export-oriented incentives, preferential regional tax regimes, and instruments intended to support employment and employee training.

The author regards tax incentives as one of the most effective instruments for supporting priority sectors. Although this classification is useful from a policy perspective, the instruments are grouped primarily according to their intended objectives rather than according to the channels through which they affect firms and sectors.

In our view, identifying the relevant transmission channel is particularly important for the analysis of sectoral tax policy because the same policy objective can be pursued through different economic mechanisms, and the effectiveness of these mechanisms may vary substantially.

A synthesis of the theoretical and empirical literature makes it possible to distinguish at least three principal channels through which the tax mechanism influences sectoral development. These channels, together with the factors that moderate their effects, are illustrated in Figure 2.

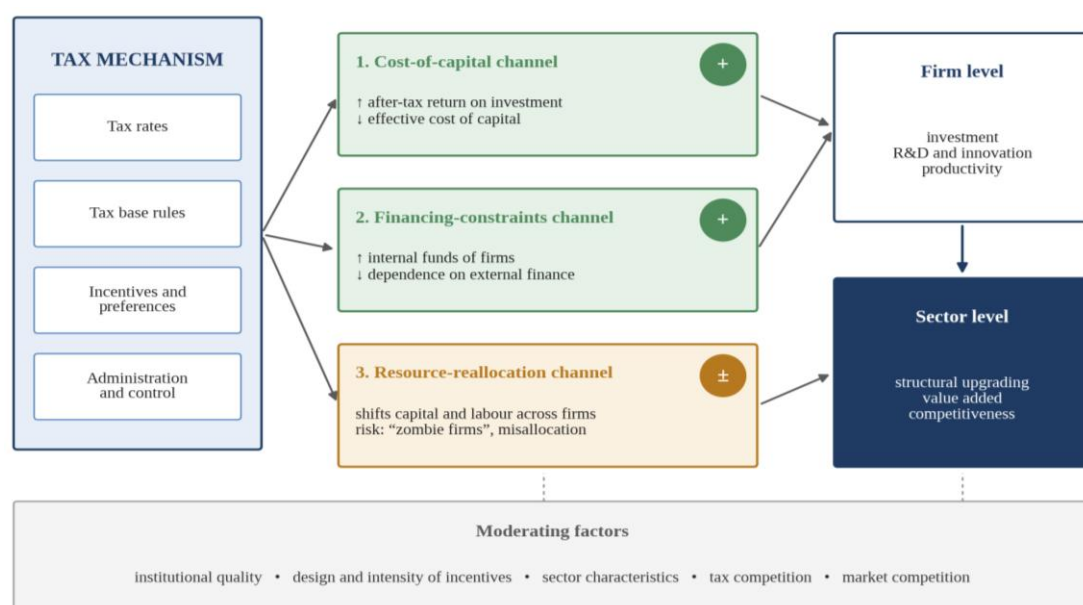


Figure 2. Transmission channels of the tax mechanism to sectoral development
Source: author's elaboration based on Ivanchenkov, Zhao et al. and Dechezleprêtre et al..

The Cost-of-Capital Channel

The first is the cost-of-capital channel. Tax incentives increase the after-tax profitability of investment projects and reduce the effective cost of capital. As a result, firms may become willing to undertake investment projects that would otherwise have been considered economically unviable.

This channel is likely to be particularly important in capital-intensive sectors, where investment decisions are highly sensitive to financing costs, depreciation rules, and tax treatment.

The Financing-Constraints Channel

The second is the financing-constraints channel. Lower tax liabilities increase the amount of internally generated financial resources available to firms. This effect may be especially important for firms that face limited access to external sources of finance.

Zhao et al., examining value-added tax reform in China, find that regional tax incentives helped alleviate financial constraints faced by firms in older industrial regions. The increase in total factor productivity was particularly pronounced among firms experiencing relatively severe financing constraints.

These findings confirm that the effectiveness of tax incentives may depend substantially on firms' financial conditions.

The Resource-Reallocation Channel

The third is the resource-reallocation channel. Tax incentives may alter the allocation of capital and labor across sectors and firms. Among the three channels identified, this is the most controversial.

Zhao et al. also report that the same tax incentives that alleviated financing constraints could prevent inefficient firms from exiting the market and discourage the entry of more efficient firms. This may increase the prevalence of so-called "zombie firms" and contribute to the misallocation of capital and technology in capital- and technology-intensive industries.

In other words, the positive effects generated through the financing-constraints channel may be partially offset by adverse effects arising through resource reallocation.

This finding has an important theoretical implication: the effects of tax incentives at the firm level and the sectoral level may not necessarily coincide. A tax preference that improves the financial position or productivity of an individual firm may simultaneously weaken structural renewal within the sector as a whole.

For a considerable period, tax theory tended to assume that tax incentives affected industries relatively uniformly. However, recent empirical research demonstrates substantial heterogeneity in the effects of tax incentives depending on technological intensity, capital requirements, profitability, investment activity, and market conditions.[3]

Castellacci and Lie conduct a meta-regression analysis of firm-level studies evaluating R&D tax credits and identify sectoral characteristics as an important determinant of their effectiveness. Their findings indicate that the additionality effect—that is, the amount of R&D expenditure that occurs specifically because of the incentive—is, on average, stronger among small and medium-sized enterprises, service-sector firms, and firms operating in low-technology industries.[4]

This result differs from the conventional assumption that R&D incentives are primarily beneficial to high-technology industries.

At first glance, other studies appear to present a different pattern. Using Chinese panel data for the period 2015–2023, Ding finds that value-added tax and income tax incentives significantly increased both sales revenue and asset growth among small and medium-sized enterprises. However, the magnitude of the effect differed considerably across industries.[5]

The strongest effects were observed in high-technology industries and information technology services, while effectiveness was associated with sectoral R&D intensity and capital requirements.[6]

Similarly, Chen et al., examining firms listed on the Chinese stock market, find that R&D tax credits increased both innovation expenditure and innovation outcomes. However, the effects were particularly pronounced among manufacturing firms and large enterprises.

These findings should not necessarily be interpreted as contradictory because the studies focus on different outcome variables. Castellacci and Lie examine the additional effect of tax incentives—that is, whether the incentive induces activities that would otherwise not have occurred. Ding and Chen, by contrast, focus on overall firm growth and innovation outcomes.[7]

In low-technology industries, where the initial level of R&D activity is relatively low, tax incentives may generate proportionally large increases in additional R&D expenditure. In high-technology industries, by contrast, incentives may reinforce existing innovation capacity and thereby produce larger absolute outcomes.[8]

An important implication for sectoral tax policy therefore concerns the objective of the incentive itself. Policymakers must distinguish between incentives intended to initiate new forms of activity and those designed to expand or strengthen existing capabilities. These objectives require different tax instruments as well as different evaluation criteria.[9]

One of the most extensively studied areas of sectoral differentiation concerns tax incentives for R&D. Although the empirical literature in this field is relatively extensive, the findings remain heterogeneous.[10]

A substantial body of research documents positive effects of R&D tax incentives on innovative activity. Using data on Canadian manufacturing firms, Czarnitzki et al. find that firms benefiting from R&D tax credits outperformed non-beneficiary firms across several indicators of innovation, including the number of new products and the sales revenues generated by those products.

These results suggest that tax incentives may not only increase R&D expenditure but also facilitate the commercialization of research outcomes.[11]

The findings are reinforced by Dechezleprêtre et al., who examine UK firms and exploit changes in the eligibility criteria for R&D tax relief. Using a regression discontinuity design, the authors demonstrate that tax incentives increased both R&D expenditure and patenting activity.

Importantly, the effects persisted for up to seven years and generated positive spillovers to technologically related firms. The stronger effects observed among financially constrained firms also provide empirical support for the financing-constraints channel discussed above.

Comparable evidence is reported by Tian et al. in the Chinese context. Following the relaxation of eligibility criteria for additional deductions of R&D expenditure, newly eligible firms increased both R&D spending and sales revenues from new products.[12]

This finding suggests that tax incentives may not merely support firms with established innovation capabilities but may also encourage previously constrained firms to participate in innovation activities.[13]

However, higher R&D expenditure does not automatically translate into proportionally stronger innovation outcomes.

Melnik et al., using data from U.S. states, find that R&D tax credits increased research expenditure but had no statistically significant effect on the total number of patents. At the same time, the novelty and market value of patents increased.

This result demonstrates that the evaluation of R&D incentives should consider not only the quantity of innovation outputs but also their quality and economic value.

Cappelen et al., analyzing Norway's SkatteFUNN program, reach a related conclusion. They find that the program encouraged firms to introduce production processes that were new to the firm, but it had no significant effect on the creation of products that were new to the market or on patenting activity.

Thus, tax incentives may accelerate incremental technological upgrading without necessarily stimulating radical innovation.[14]

Some studies also identify unintended behavioral responses to R&D tax incentives. Balsmeier et al. show that tax credits may encourage firms to intensify research within their existing areas of specialization rather than explore new and riskier technological trajectories.

One possible explanation is that access to tax credits in many systems is associated with firm profitability, while high-risk research projects may reduce profitability in the short term. As a result, tax incentives may influence not only the level of innovative activity but also its direction, encouraging relatively safe projects that are technologically close to firms' existing capabilities.[15]

Feng highlights an additional international dimension. Examining multinational firms, the author finds that tax incentives increased reported R&D expenditure but did not significantly improve innovation efficiency.

This result is attributed to the relocation of R&D activity from jurisdictions with less favorable tax conditions to jurisdictions offering stronger incentives, rather than to the creation of genuinely additional research activity.

In such cases, an individual country may record higher R&D expenditure without a corresponding increase in global innovation. This distinction underlines the importance of separating the nominal effects of tax incentives from their real economic effects.[16]

The main empirical findings discussed above are summarized in Table 1.

Table 1. Empirical evidence on the effects of R&D tax incentives

Study	Context and data	Key finding	Type of effect
Czarnitzki et al.	Canadian manufacturing firms, 1997–1999; matching approach	Credit recipients outperform non-recipients on most innovation indicators, including the number of new products and sales from new products	Positive
Dechezleprêtre et al.	UK firms; regression discontinuity design	R&D and patenting increase; effects persist for up to seven years and spill over to technologically related firms; strongest for financially constrained firms	Positive
Tian et al.	Chinese firms; relaxation of super-deduction eligibility (2006)	Newly eligible firms catch up in R&D expenditure and new-product sales	Positive
Chen et al.	Chinese listed firms, 2010–2012	R&D input and output increase, but only in manufacturing and large firms	Positive, heterogeneous
Castellacci & Lie (2015)	Meta-regression of firm-level studies	Additionality is stronger for SMEs and for firms in service and low-technology sectors	Sector-dependent
Melnik et al.	U.S. states; staggered adoption of R&D credits	R&D spending rises; patent counts do not, but patent novelty and market value increase	Mixed
Cappelen et al.	Norway; SkatteFUNN scheme	Supports new processes and products new to the firm; no effect on new-to-market products or patenting	Mixed

Study	Context and data	Key finding	Type of effect
Balsmeier et al.	Firm-level invention data	Firms deepen invention in existing areas of expertise rather than experimenting with new technologies	Unintended
Feng	Multinational firms, 2012–2022	R&D spending rises without significant gains in innovation performance; R&D is relocated across countries	Unintended

Source: compiled by the author based on the studies cited.

Taken together, the reviewed studies demonstrate that classifying the effects of R&D tax incentives simply as either “positive” or “negative” is methodologically insufficient.

The effectiveness of incentives depends on the characteristics of recipient firms, the types of expenditures covered, the degree of financing constraints, the nature of innovation, and the technological characteristics of the sector.[17]

A further methodological implication follows from this observation: the effectiveness of R&D tax incentives cannot be evaluated solely through changes in innovation expenditure.

Reported R&D expenditure may increase because of accounting reclassification, the relocation of activities from other jurisdictions, or the concentration of investment in relatively low-risk projects with limited economic value.

The evaluation framework should therefore incorporate not only input indicators but also output and performance indicators that reflect real economic outcomes.

In our view, such an evaluation system should include three levels of indicators.

The first level consists of resource indicators, including R&D expenditure, research personnel, and investment.[18]

The second level consists of innovation outcome indicators, including patents, new products, new technological processes, and the degree of novelty of these outcomes.

The third level consists of economic performance indicators, including revenue from new products, labor productivity, value added, and competitiveness.

This multilevel framework makes it possible to determine whether a tax incentive has merely increased nominal innovative activity or has contributed to genuine technological and economic development within the sector.[19]

4. Conclusion

The findings of this study demonstrate that theoretical perspectives on the impact of the tax mechanism on sectoral development have evolved considerably. Taxation is no longer viewed solely as a fiscal burden; it is increasingly regarded as an active instrument for influencing investment, innovation, and structural transformation.

The effects of the tax mechanism are determined not only by the overall level of the tax burden but also by the interaction among its individual components, the stability and predictability of tax rules, and the quality of the broader institutional environment.

The analysis identifies at least three principal channels through which taxation affects sectoral development: the cost-of-capital channel, the financing-constraints channel, and the resource-reallocation channel.

The first two channels generally generate positive effects by improving the attractiveness of investment and increasing the availability of internal financial resources. The third channel, however, may generate adverse effects by supporting inefficient firms and distorting the allocation of capital and labor.

The evidence also confirms that the effects of tax incentives and tax competition are nonlinear. Beyond a certain threshold, additional tax preferences may produce

diminishing or even adverse effects because fiscal losses and resource misallocation begin to outweigh the benefits.

Similarly, although R&D tax incentives generally increase research and innovation expenditure, higher expenditure does not automatically result in proportional improvements in innovation outcomes or economic efficiency.

These findings support a more targeted and adaptive approach to sectoral tax policy.

First, tax incentives should not be designed as broad and undifferentiated tax relief. They should be directed toward identifiable economic constraints that limit investment, innovation, technological modernization, or productivity growth.

Second, their effectiveness should be evaluated at three interconnected levels: resource inputs, innovation outcomes, and economic performance.

Third, incentives that do not generate the intended outcomes should be periodically reviewed, redesigned, or discontinued.

Such an approach would make it possible to transform the tax mechanism from a predominantly fiscal instrument into an adaptive system capable of supporting the qualitative transformation and long-term competitiveness of economic sectors.

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