# Navigating Investment Efficiency: The Interplay of Tax Avoidance and Corporate Social Responsibility Disclosure:

## Evidence from Non-Financial Firms Listed on the Egyptian Stock Exchange

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## Abstract

This research investigates the moderator role of Corporate Social Responsibility Disclosure (CSRD) in shaping the influence of Tax Avoidance on Investment Efficiency. This applied study was conducted on 16 non-financial Egyptian firms that were listed on the Egyptian Stock Exchange, EGX 100**,** from 2010 to 2020, with 160 annual observations. The study relied on secondary data published in the financial statements and reports of these companies, as well as the CSRD index. Furthermore, the Data Panel data method was implemented in the study, which combines cross-sectional and time series data. The study results showed a significant positive impact of tax avoidance on Investment Efficiency. Moreover, CSRD also has a significant positive impact on Investment Efficiency. This study suggests that firms with higher levels of CSRD can play a mitigating role in the positive effect of tax avoidance. In other words, the interaction between CSRD and tax avoidance can moderate the independent positive effect of each on investment efficiency to a negative combined effect.

Upon conducting a literature review, it is evident that there is a lack of studies that have investigated the interactive relationship between the three variables—tax avoidance, investment efficiency, and corporate social responsibility disclosure—in a single analytical model. Therefore, this study provides a unique contribution by attempting to address this research gap, which may be beneficial to regulatory authorities and policymakers in the context of emerging markets.

**Keywords**: Tax Avoidance, Corporate Social Responsibility Disclosure, Investment Efficiency, non-financial firms, EGX100.

**Paper Type:** Research Paper.

**المستخلص**

تتناول هذه الدراسة الدور التعديلي للإفصاح عن المسؤولية الاجتماعية للشركات (CSRD) في تشكيل تأثير التجنب الضريبي على كفاءة الاستثمار. أُجريت هذه الدراسة التطبيقية على 16 شركة مصرية غير مالية مدرجة في مؤشر EGX 100 بالبورصة المصرية، خلال الفترة من 2010 إلى 2020، بملاحظات سنوية بلغ عددها 160 ملاحظة. اعتمدت الدراسة على البيانات الثانوية المنشورة في القوائم المالية والتقارير السنوية لتلك الشركات، بالإضافة إلى مؤشر الإفصاح عن المسؤولية الاجتماعية. وقد تم استخدام منهج البيانات الطولية (Panel Data) الذي يجمع بين بيانات السلاسل الزمنية والبيانات العرضية. أظهرت نتائج الدراسة وجود تأثير موجب معنوي للتجنب الضريبي على كفاءة الاستثمار، وأيضا يوجد تأثير موجب معنوي للإفصاح عن المسؤولية الاجتماعية على كفاءة الاستثمار. بينما تشير الدراسة إلى أن الشركات ذات مستويات الإفصاح العالية للمسؤولية الاجتماعية يمكن أن تقلل من التأثير الايجابي للتجنب الضريبي. بعبارة أخرى، يمكن لتفاعل الإفصاح عن المسؤولية الاجتماعية للشركات (CSRD) مع تجنب الضرائب أن يُعدّل التأثير الإيجابي المستقل لكل منهما على كفاءة الاستثمار، ليؤدي إلى تأثير مشترك سلبي.

تكشف مراجعة الأدبيات عن ندرة واضحة في الدراسات التي تناولت العلاقة التفاعلية بين المتغيرات الثلاثة: تجنب الضرائب، وكفاءة الاستثمار، والإفصاح عن المسؤولية الاجتماعية للشركات، ضمن نموذج تحليلي موحد. وبالتالي، تقدم هذه الدراسة إسهامًا جديدًا من خلال محاولتها لسد لهذه الفجوة البحثية، مما قد يساعد صُنّاع السياسات والجهات التنظيمية في سياقات الأسواق الناشئة.

**الكلمات المفتاحية :**التجنب الضريبي، الإفصاح عن المسؤولية الاجتماعية للشركات، كفاءة الاستثمار، الشركات غير المالية، مؤشر.EGX100

**نوع الورقة :**ورقة بحثية.

## 1. Introduction

Taxes are one of the primary sources of revenue for governments, which enable them to meet expenses and achieve economic growth. Consequently, the operation of any economy is significantly influenced by Tax Avoidance (TA). It reflects the degree to which taxpayers are responsive to their tax obligations. Thus, it is an essential component of tax administration, as it is contingent upon taxpayers' compliance with tax laws and the payment of appropriate taxes. The government and taxpayers are perpetually at odds, as the former is perpetually striving to optimize its revenues, while the latter is perpetually striving to minimize the tax burden. Consequently, the level of taxpayer compliance is diminished. Taxpayers desire to alleviate their tax burden by engaging in tax avoidance practices. Consequently, the government's tax revenue decreased, and each firm's compliance level decreased as a result of the high level of tax avoidance. It is for this reason that governments and tax authorities worldwide consistently endeavor to identify solutions to the issue of tax noncompliance (or tax avoidance) (Dewi et al., 2021; Joel et al., 2023; Okpeyo et al., 2019; Oladele et al., 2020; Tarmidi, 2019; Widuri et al., 2020).

Significant measures have been implemented by Egypt to mitigate tax avoidance. In July 2017, Egypt joined ten other countries in the OECD's Action Plan, where it adopted measures to combat base erosion and profit shifting (BEPS). To address issues such as the digital economy, prevent the proliferation of harmful tax practices, and reduce base erosion caused by interest payments and other financial strategies, this initiative involved the implementation of 15 measures. The Global Forum on Transparency and Exchange of Information for Tax Purposes also recognized Egypt's efforts by including it as a member (Ibrahim, 2021).

Policymakers in emerging economies can benefit from the insights provided by Yeboah et al. (2025) regarding the optimization of tax strategies to promote investment and stimulate economic growth. According to the findings, reforms of tax will quantifiably influence on the patterns of investment, emphasizing the significance of adapted tax laws in the promotion of economic sustainability and the enhancement of investment efficiency.

Additionally, in June 2007, the Environmental, Social, and Governance (ESG) index was officially launched in Egypt to collect data on corporate social

responsibility. The integrity of information that firms provide regarding their corporate social responsibility is assessed. The purpose of this Index is to monitor the performance of the top one hundred listed firms on the Egyptian Stock Exchange (EGX) that exhibit leadership in the environmental, social, and governance matters.

The EGX100-listed firms undergo an annual evaluation to determine the top 30 that are eligible for inclusion in the ESG index. Since two screening procedures are implemented to rank the listed firms, one of which concentrates on corporate governance indicators and the other on the environmental and social indicators, index constituents are weighted by their ESG scores (Indices and Methodology, 2021). The actual Corporate Social Responsibility performance of the firm is evaluated on a scale of 1 to 5 by assigning a quantitative and qualitative score to each firm in order to ascertain the weight that will be ascribed to them in the index (Indices and Methodology, 2021). Both qualitative and quantitative scores are combined to determine a composite score for each firm.

The concept of CSRD is employed to fortify the relationship between shareholders and administrators. Agents (managers) are delegated the management of the business by principals (shareholders), who anticipate that the agents will operate the business in a manner that maximizes shareholder value (Wu and Hu, 2019). Agency theory assumes that corporate managers will employ managerial opportunism when there is a conflict of interest between shareholders and managers. By deviating the investment from an optimal level, these conflicts decrease investment efficiency (Anagnostopoulou et al., 2023).

A literature review evident that there is a lack of studies that have investigated the interactive relationship between the three variables—tax avoidance, investment efficiency, and corporate social responsibility disclosure—in a single analytical model. Therefore, this study provides a unique contribution by attempting to address this research gap, which may be beneficial to regulatory authorities and policymakers in the context of emerging markets.

This study examined the influence of tax avoidance on investment efficiency in an emerging market like Egypt by focusing on non-financial firms. Furthermore, it seeks to determine whether CSRD plays a moderating role in the tax avoidance-investment efficiency relationship in Egypt.

## 2. Research Problem

Investment efficiency remains a significant concern for businesses, particularly in developing nations such as Egypt, where regulatory voids and lax governance frequently exacerbate agency disputes between shareholders and administrators. In this context, the avoidance of taxes is a prevalent financial strategy employed to minimize tax liabilities and allocate internal funds for investment purposes. Nevertheless, the impact of tax evasion on the efficacy of investments remains uncertain. According to several studies, tax avoidance can enhance short-term investment efficiency by increasing the amount of money available for investments. However, it can also decrease long-term investment efficiency by promoting managerial opportunism and regulatory risks, according to other studies (Dewi et al., 2021; Joel et al., 2023; Oladele et al., 2020; Widuri et al., 2020).

Corporate social responsibility disclosure (CSRD) has also garnered more attention as a technique to make sure that management's interests are in line with those of other stakeholders and to make corporations more open. People want businesses to be more moral as Egypt's economy and environment get worse. This makes CSRD even more vital. Studies have indicated that revealing corporate social responsibility (CSR) may make tax evasion strategies less effective by reducing information asymmetry, improving the company's reputation, and decreasing managers' capacity to take advantage of situations (Anwar & Malik, 2020; Huang et al., 2023; Zamir et al., 2022).

On the other hand, the second opinion verified that investment efficiency is not enhanced by CSRD. Given that the investment decisions of firms are not influenced by the surplus of these disclosures, particularly if they were mandatory (Firmansyah & Triastie, 2020; Liu & Tian, 2021).

While extensive research has examined the independent effects of tax avoidance and CSR disclosure on investment efficiency, empirical evidence on the moderating impact of CSR disclosure on the relationship between tax avoidance and investment efficiency remains limited, especially in developing countries like Egypt. This study investigates the principal research issue as follows:

Does Corporate Social Responsibility Disclosure (CSRD) moderate the relationship between tax avoidance and investment efficiency among non-

financial Egyptian firms, and how does this interaction affect investment efficiency?

## 3. Research Objectives

The main goal of this study is to grasp how internal company factors, such as CSRD, interact with tax avoidance and affect investment efficiency. This research endeavors to offer new empirical evidence on the joint impact of tax avoidance and CSRD on investment efficiency by concentrating on Egyptian non-financial firms. This study provides a unique contribution by attempting to address this research gap, which provides valuable insights for policymakers, investors, and corporate managers who are interested in improving investment performance in emerging markets. So, the main goal of this study can be divided into three subobjectives,

1) Examine the impact of tax avoidance on investment efficiency in non-financial Egyptian firms.
2) Examine the impact of CSRD on investment efficiency in non-financial Egyptian firms.
3) Examine the impact of the interaction between tax avoidance and CSRD on investment efficiency in non-financial Egyptian firms.

## 4. Literature Review and Hypotheses Development

This section was broken down into six distinct sections. The initial three sections constitute the conceptual framework of the investigation, which encompasses the Tax Avoidance, Corporate Social Responsibility Disclosure (CSRD), and Investment Efficiency. The fourth part is the Impact of Tax Avoidance on Investment Efficiency. The fifth part is the Impact of CSRD on Investment Efficiency. The sixth part is the Impact of CSRD as a Moderator in the Tax Avoidance-Investment Efficiency Relationship.

### 4.1 Tax Avoidance

A financial levy that is imposed on individuals or legal entities is defined as a tax by governments. According to Michael (2002), taxes are a primary source of government revenue and are essential for the maintenance of economic stability by redistributing income among individuals. The payment of taxes is either direct

to the tax authorities or indirect through intermediaries. On the other hand, certain entities exploit tax systems for their own financial benefit.

Because of its detrimental consequences for the economy as a whole, tax avoidance concerns have become increasingly paramount for governments. As a result, it is crucial to identify the factors that may contribute to tax avoidance, including the absence of taxpayer awareness regarding their obligations to the government, a lack of respect for the law, high tax rates, and government instability and corruption.

One of the primary reasons for this tax avoidance is that it is regarded as an internal source of funding to enhance cash tax savings. Tax cash savings enable firms to make additional investment decisions, as internal financing is more advantageous than external financing sources (Alsmady, 2022; Asiri et al.,2020; Dewi et al., 2021; Hajawiyah et al.,2021; Nguyen et al., 2020; Tarmidi, 2019; Zin et al.,2021).

Tax avoidance is a legal strategy that businesses frequently implement to mitigate their tax liabilities within the confines of the applicable laws. Tax avoidance is legally permissible; however, it generates a convoluted dynamic: corporations employ it as a cost-saving mechanism, while the government perceives it as a threat to its revenue generation capabilities (Alomair & Metwally, 2025).

As a result, tax avoidance is the term used to describe any benefit that the taxpayer obtains that results in a reduction or exemption from tax liability without constituting tax evasion. Nevertheless, such approaches may be deemed harmful tax avoidance and may be in direct opposition to the intent of the law. It is limited to specific transactions and is associated with tax legislation. Legislators frequently exploit gaps in the law that they intended to address but were unable to thoroughly address. More importantly, it necessitates the disclosure of all taxpayer data to the Tax Authority without the intentional concealment of any transactions.

Using legal strategies, procedures, or actions to reduce taxes is known as tax avoidance. The act of tax avoidance involves the utilization of legal strategies, procedures, or actions to reduce tax obligations (Elgayar, 2025). While legal, it may occasionally be perceived as ethically questionable. According to Wang et al. (2020), tax avoidance is classified into two categories. Non-Aggressive Tax

Avoidance: Businesses implement legal strategies to reduce taxes, including investing in tax-favored bonds and employing advantageous depreciation methods. These initiatives correspond with the economic and social objectives of legislators. The second one is Aggressive Tax Avoidance. Businesses enter into intricate transactions that are specifically designed to reduce tax liabilities when tax avoidance becomes the primary focus (Velte, 2024).

As per Hajawiyah et al. (2021), tax avoidance serves as an indicator of the efficacy of the tax compliance policies of organizations. Since tax avoidance is regarded as a form of tax noncompliance. Therefore, a higher level of tax avoidance is indicative of a lower level of tax compliance, and the reverse is also true. Therefore, the effective tax rate (ETR) can be employed as a proxy to quantify tax avoidance, which is the sum of total tax expenses divided by net income before taxes (Hajawiyah et al., 2021; Tarmidi, 2019). As per the ETR computation, it represents the opposite value of tax avoidance, as an increase in ETR results in a decrease in tax avoidance.

Tax avoidance has emerged as a significant matter of debate in recent years, as it entails the implementation of strategies, activities, and procedures to minimize tax liabilities (Gunn, 2020; Ha & Feng, 2020; Wang et al., 2021), which ultimately leads to a decrease in tax payments to the state (Zaytoun, 2019).

Companies, as taxpayers, are required to pay taxes to the state. Contributions such as these contribute to the generation of state revenue through taxation. Nevertheless, businesses' primary goal is to maximize profits, which is frequently achieved by reducing expenses, including tax obligations. This aim frequently conflicts with the government's objective of maximizing tax revenue (Anggriantari & Purwantini, 2020).

On the other hand, tax avoidance strategies may also have adverse consequences. The submission of false claims can be facilitated by tax avoidance, which can have long-term negative impacts on the community. Chen et al. (2016) discovered that this can harm society. Companies may not contribute their reasonable share of taxes. Additionally, the company's reputation and ultimate value may be vulnerable to compromise.

Complex transactions that conceal assets from both shareholders and regulators may be implemented by companies in order to circumvent tax authorities'

detection. In addition to potentially reducing tax payments and providing additional resources for company growth, tax avoidance may also result in the concentration of wealth in the hands of shareholders, often at the expense of broader societal interests.

The Income Tax Law, No. 91, of Egypt contains provisions that address related party transactions that differ from those between unrelated parties. This could lead to a shift in tax liabilities or a reduction in the tax base. The tax authority is authorized to adjust taxable profits in these instances by implementing an objective-neutral price. In addition, Egypt implements strategies to reduce tax avoidance that arise from income division, including the identification of partnerships' corporate identities and the imposition of restrictions on profits for reinvestment. Personal wages and gifts are also subject to tax deduction limitations under the law (Elgayar, 2025; Ibrahim, 2021).

## 4.2 Corporate Social Responsibility Disclosure (CSRD)

A conflict of interest exists between management and stakeholders who are interested in the firm, as per Agency theory. In order to fortify the relationship between these parties, academic research implemented some novel concepts, including corporate citizenship, sustainability development, and Corporate Social Responsibility (CSR) (Wu & Hu, 2019).

According to Marrewilk (2017), Corporate Social Responsibility (CSR) has the potential to resolve numerous global conflicts, including environmental degradation, discrimination, and poverty. Some academic studies have defined corporate social responsibility as "A concept in which firms voluntarily incorporate social and environmental concerns into their business operations and interactions with their stakeholders" (ElBassiouny & El-Bassiouny, 2019). Therefore, it has become a term that is widely recognized and anticipates that firms will enhance their social standing in the market in addition to adhering to the legal requirements and regulations.

Nevertheless, variation in disclosure across countries is a result of variations in the underlying environments, including the form of the economy, the scale and operation of stock markets, and the degree of economic growth (El-Bassiouny & El-Bassiouny, 2019). CSR is a collection of fundamental principles that embody some of the most substantial benefits for society and stakeholders. These

principles include the protection of human rights, employee rights, transparency of information, environmental protection, consumer protection, and community growth (Huang et al., 2023).

In light of the significance of this corporate social responsibility, certain definitions have been proposed, including corporate social responsibility disclosure (CERD). "It is defined as the information that a company discloses to the public, typically in a standalone report, regarding its performance, standards, or activities under the CSR umbrella." This disclosure of corporate social responsibility may vary by country (Brooks & Oikonomou, 2018; Soliman & Abdel Razek, 2024).

According to signaling theory, CSRD sends positive signals to the market about the long-term sustainability of the firm. Investors interpret that as lower risk and higher investment potential. There are certain benefits to corporate social responsibility disclosure, including the establishment of a culture of ethical behavior that can mitigate the risks that the company may encounter in the market and give the firm a positive reputation. However, it may have certain drawbacks, such as the potential for increased legislation and standards imposed by governments and accounting bodies. In addition, this disclosure may be implemented to report favorable information and conceal any detrimental environmental and social performance data in order to preserve its market position (Joel et al., 2023).

As a collaborative initiative between the Egyptian Directors' Center, the Egyptian Center for Corporate Social Responsibility, Standard & Poor's, and CRISIL, the Egyptian Corporate Social Responsibility Index (EGX ESG) was introduced on March 22, 2010, in partnership with the Egypt Stock Exchange. As the first ESG-focused index in the Arab region and the second globally, it followed India's ESG index, which was introduced in 2008. In addition to market size and liquidity, the index is designed to assess the most successful companies listed on the Egyptian Stock Exchange in terms of environmental, social, and governance (ESG) criteria. Annually, the top 30 companies from the EGX 100 are selected for inclusion after conducting an assessment of their ESG practices, which are voluntarily disclosed by companies (Elgayar, 2025; Egyptian Directors' Center et al., 2010).

The methodology employed by the EGX ESG index is robust, incorporating both quantitative and qualitative evaluations. According to Ramadan (2013), companies are evaluated on the basis of governance, environmental, and social criteria, employing publicly available disclosures. Supplementary information is also factored in. Quantitative scores and qualitative evaluations, including independent evaluations of transparency practices and actual performance, are both included in the final rankings (Elgayar, 2025). A dynamic and reflective measure of ESG performance is guaranteed by the index, which is computed by aggregating the scores of selected companies and adjusting them for market value and trading volume (Egyptian Directors' Center et al., 2010). The index not only assists investors in identifying financially stable and socially responsible companies, but it also promotes corporate compliance with international standards such as the UN Global Compact, thereby supporting broader sustainable development efforts.

## 4.3 Investment Efficiency

An investment is the allocation of assets or money to specific activities in order to generate earnings or capitalize on future asset appreciation. Investors are perpetually uncertain about the appropriate quantity of investment. "Investment efficiency" is a term that was coined by academic research to signify this appropriate level of investment.

The optimal investment level is represented by investment efficiency. An over-investment problem will arise for the firm if it exceeds this appropriate level of investment, as the Net Present Value (NPV) is negative. It arises as a consequence of managerial misconduct when projects that are either unprofitable or excessively hazardous are invested in. Separation of ownership and control is the primary cause of this issue. There are conflicts of interest between the shareholders who own the firm and the administrators who control it as a result of this separation.

Conversely, if the firm disregards the appropriate level of investment, it will encounter an under-investment issue, which may result in a positive net present value (NPV) due to the neglected investment opportunities. An under-investment issue is primarily caused by risk avoidance and debt overhang. As a consequence, the market value of this debt decreases in comparison to its face value, but the shareholders do not experience any advantages. As a result, shareholders opt to

decline investments, as the proceeds will be distributed to creditors in order to resolve the debt (Ezzat & Abdel Sabour, 2025).

Either overinvestment or underinvestment issues can be prevented. Consequently, effective investment is a critical method for firms to identify new profitable opportunities that are essential for enhancing the value of the firm in the market and improving its sustainability, in addition to enhancing the ability to contribute value for its shareholders (Firmansyah and Triastie, 2020; He et al., 2019; Hu et al., 2022; Soliman & Abdel Razek, 2024).

Biddle et al. (2009) define investment efficiency as the capacity of a company to conduct initiatives with a positive net present value, provided that there are no market frictions. Imperfections in the capital market, particularly information asymmetry, can result in both over- and under-investment, which can significantly reduce efficiency. Under the framework of Modigliani and Miller (1958), investment opportunities are a critical factor in determining corporate investment. From the shareholders' perspective, managers should avoid projects with negative net present values (NPVs) and prioritize those with positive NPVs. Agency issues may arise in corporations due to the division of ownership and control, which are a consequence of the misalignment of managerial and shareholder incentives (Ezzat & Abdel Sabour, 2025).

These observations are crucial, as the previous investment literature has identified the most significant frictions that can cause corporate investment to deviate from an optimal level are agency conflict and asymmetric information (Anagnostopoulou et al., 2023; Biddle & Hilary, 2006; Biddle et al., 2009). Both Myers and Majluf (1984) and Myers (1984) have demonstrated that the cost of capital is not the only factor influenced by asymmetric information between shareholders and corporate managers; it also influences the investment decision. Under- or overinvestment can be the consequence of asymmetric information and incentive misalignment between managers and stakeholders (Gao & Yu, 2018).

The efficiency of investment may be impacted by the existence of high informational asymmetries between managers and firm outsiders, which can also lead to moral hazard and issues (Biddle et al., 2009). When informational asymmetries and agency costs are elevated, managers are significantly more likely to prioritize their own interests over those of shareholders. This is a critical

explanation. For example, managers may overinvest in specific initiatives, such as pursing empire building through acquisitions, if there is an abundance of resources to invest (Anagnostopoulou et al., 2023; Gao & Yu, 2018).

Similarly, corporate managers have a propensity to issue new equities and raise additional funds when they are aware that the company's equities are overvalued. Nevertheless, corporate shareholders who anticipate this behavior are more inclined to disfavor new equities when there are significant information asymmetries (Wu et al., 2022). In agreement with these arguments, many studies foresee and discover that the stock exchange reacts more favorably to share repurchase declarations in companies with high intangible assets, which they associate with more substantial informational asymmetries. The rationale for this is that such repurchases offer crucial insights into the firm's value as perceived by managers, which aids in the mitigation of information asymmetries that are prevalent in high-intangible-asset firms.

On the other hand, managers may underestimate their investments for a variety of reasons, including career concerns (Kim et al., 2021). It is generally recognized that these concerns are more prevalent in firms with substantial intangible investments, where information asymmetries between insiders and outsiders are more pronounced (Firmansyah & Triastie, 2020).

Also, capital providers may only give money to companies with a lot of information asymmetries since they know that management might not always act in the best interests of shareholders. This might make it more likely that managers who are only looking out for themselves will make bad investments. As managers face financial problems and, as a result, greater capital expenditures for the company, the chance of underinvestment may go up.

The complexity of capital allocation decisions can also vary greatly depending on the components they may include. Practitioners may be required to determine whether or not to invest at a specific time (identifying the investment opportunity), determine the optimal investment level, and allocate investment over time in accordance with market demands (Gao & Yu, 2018). Consequently, the measurement of investment efficiency at the aggregated firm level is both challenging and imprecise.

According to Gao and Yu (2018), there are numerous investment efficiency metrics that are categorized into three categories based on their theoretical foundations: neoclassical theories, agency theory, and real options theory. Each category contains both the advantages and disadvantages of each type of measure, enabling researchers to determine the measure that is most appropriate for their particular research purpose and context.

This research will adhere to the neoclassical model. According to them, firms that manipulate earnings upward tend to overinvest during the misreporting period, and underinvestment and overinvestment are the two types of suboptimal investment decisions. The amount of suboptimal investment that deviates from the optimal amount of investment as predicted by a firm's investment opportunities is identified by them. As the excess investment increases, the investment efficacy decreases (Ezzat & Abdel Sabour, 2025; Firmansyah & Triastie, 2020).

## 4.4 The Impact of Tax Avoidance on Investment Efficiency

In terms of the impact of tax avoidance on investment efficacy, there are two primary factors to consider: the short-term and the long-term. In the long term, prior research has shown that there is a negative correlation between investment efficiency and tax avoidance. This means that managers of firms strive to comply with tax regulations in order to prevent tax penalties or foster a negative image of the firm and its management. This creates an appropriate environment for management to make informed investment decisions. In other words, the more sustainable firm reputation and value in the market, the lower tax avoidance, and the higher investment efficiency in the long term (Alsmady, 2022; Asiri et al., 2020; Ding, 2019; Firmansyah and Triastie, 2020; Shahada & Al-Masri, 2024).

Conversely, prior research indicates that there is a positive correlation between investment efficiency and tax avoidance within the short-term perspective. In the short term, the positive impact of these strategies is due to the fact that managers may intend to reduce tax burdens by implementing tax planning strategies that increase cash tax savings, which in turn facilitate the availability of funds to increase investment. Many studies found that a high level of tax avoidance suggests an excess of cash savings that may create a conducive environment for making informed investment decisions (Asiri et al., 2020; Elberry & Hussainey,

2020; Illahia et al., 2022), thereby increasing investment efficiency (Lu et al., 2023a; Ngelo et al., 2022; Osegbue et al.; 2022).

The studies are divided into two opinions regarding the relationship between tax avoidance and investment efficiency. The first opinion confirmed that there is a positive impact of tax avoidance on investment efficiency, as evidenced by Ngelo et al. (2022), who employed a sample of Indonesian listed firms from 2010 to 2019. The results indicated that enterprises carry out tax avoidance activities in order to alleviate the tax burden. Therefore, it is highly probable that additional financial tax savings will be generated, which can be allocated to additional investments. The results indicated that a high level of tax avoidance results in a reduction in tax burdens, which in turn leads to a low level of tax compliance. However, there will be an adequate amount of capital to make more efficient investment decisions.

In 2022, Osegbue et al. confirmed these findings by revealing that a lower Effective Tax Rate (ETR) indicated a reduced tax burden and low tax compliance. Therefore, these tax savings would generate surplus cash that was invested effectively. The results of this investigation were obtained by conducting a study to ascertain the impact of ETR on the level of investments among non-financial firms listed on the Nigerian stock exchange from 2010 to 2017. In addition, Lu et al. (2023) verified that the internal funds generated by the reduction of tax burden as a result of implementing tax avoidance strategies can be used to finance new projects, which in turn enhances the efficacy of the firms' investments. A sample of listed firms in the Shanghai and Shenzhen stock exchanges was employed to generate these results from 2015 to 2021.

In contrast, findings from other studies have indicated a negative correlation between investment efficacy and tax avoidance. Like Ding (2019), who employed a sample of Chinese listed firms from 2010 to 2016. The results of the research indicate that tax avoidance and efficiency investments are negatively correlated. Specifically, a higher level of tax avoidance and a lower level of tax compliance resulted in a lower level of investment efficiency. Therefore, these findings suggested that investment efficacy is positively correlated with tax compliance. Additionally, Asiri et al. (2020) verified that the inefficiencies in the investment of the firms' savings from tax avoidance activities. Thus, tax avoidance results in an increase in the number of inefficient investments. The

following conclusions were obtained by analyzing the effects of tax avoidance and investment efficacy on U.S. firms from 1993 to 2016.

Firmansyah and Triastie (2020) also substantiated the adverse impact of tax avoidance on investment efficiency. Using a sample from 2014 to 2017, which contains firms listed on the Indonesian Securities Exchange. The findings of the study confirmed that tax avoidance can alleviate the tax burden. On the other hand, cash tax savings may be invested in an inefficient manner due to the possibility of over- or underinvestment. As a result, the efficacy of investments is diminished by tax avoidance. In addition, Alsmady (2022) substantiated the assertion that a high level of tax avoidance results in an increase in market imperfection issues, which in turn leads to an increase in investment inefficiency. Then, it can be concluded that an increased level of tax compliance can result in increased investment efficacy. These conclusions were obtained through a study that investigated the correlation between tax avoidance and investment opportunities in six Arabian GCC countries—Bahrain, Oman, Qatar, Saudi Arabia, Kuwait, and the United Arab Emirates—from 2011 to 2017.

In addition, Shahada and Al-Masri's (2024) study investigated the impact of tax avoidance practices on investment efficiency in 32 non-financial companies listed on the Palestine Exchange by employing the descriptive-analytical approach. The study collected and analyzed data from the published financial statements of these companies from 2010 to 2021, using the Effective Tax Rate (ETR) as a proxy for tax avoidance practices. Investment efficiency was measured using two indicators: Return on Assets (ROA) and Return on Equity (ROE). The study concluded that tax avoidance practices have a negative impact on investment efficiency in non-financial companies listed on the Palestine Exchange.

In conclusion, the prior studies have revealed a lack of agreement regarding the relationship between investment efficacy and tax avoidance upon review. Several prior studies have demonstrated a positive correlation between tax compliance and investment efficiency. This is due to the fact that managers of firms strive to comply with tax regulations in order to prevent long-term tax penalties. Consequently, investments that are less tax avoidant are more optimal. On the other hand, managers may plan to reduce tax burdens by implementing tax planning strategies and engaging in tax avoidance activities to increase cash tax

savings. This is a source of generating internal funds that facilitate investment decisions. As a result, the likelihood of a rise in investment inefficiency is higher when tax avoidance is high. Therefore, the investigation hypothesis is as follows:

- $H_1$: There is a significant impact of tax avoidance on investment efficiency.

## 4.5 The Impact of Corporate Social Responsibility Disclosure CSRD on Investment Efficiency

The impact of CSRD on investment efficacy is also the subject of two schools of thought. They were verified to have a beneficial relationship by the initial opinion. They believed that increasing the level of disclosures regarding corporate social responsibility activities, as part of a broader increase in disclosure, would reduce the information asymmetry between shareholders, who operate as principals, and managers, who operate as agents. The financial markets place a high value on these reductions because they contribute to the reduction of risk premiums and capital costs. This allows management to have more funds and the ability to make more appropriate decisions, which can increase investment efficiency (Anwar and Malik, 2020; Huang et al., 2023; Zamir et al., 2022).

Additionally, the potential for investment efficiency is increased by the disclosure of CSR strategies, which constrains the availability of free cash flow that can be allocated to own advantage of managers through the pursuit of unprofitable projects (Huang et al., 2023). In contrast, the second opinion verified that investment efficacy is not enhanced by corporate social responsibility disclosure. Excessive disclosures do not influence the investment decisions of firms, particularly if they are mandatory (Firmansyah and Triastie, 2020; Liu and Tian, 2021).

The studies are divided into two opinions regarding the association between CSRD and investment efficiency. The first opinion confirmed a positive association between the terms. Given that they have accumulated sufficient evidence to demonstrate that the efficacy of investments is improved by increasing corporate social responsibility disclosure. Rokhayati and Nahartyo (2019) conducted an experimental study that involved 45 graduate students to examine the impact of corporate social responsibility disclosure on investment

decisions. There was evidence in the study that corporate social responsibility disclosure influenced investment decisions.

The same trajectory was concurred by Anwar and Malik (2020), who employed data from 112 listed firms from 2009 to 2017 in the Pakistani Securities Exchange. This research has demonstrated that the likelihood of a firm being classified as investment-efficient (inefficient) is increased by the quality of their disclosure regarding their involvement in corporate social responsibility activities. Moreover, Zamir et al. (2022) verified this beneficial effect by analyzing data from the largest enterprises in each of the nine Asian emerging markets from 2015 to 2017. They stated that the disclosure of corporate social responsibility reduced underinvestment among large firms. Since they have verified corporate social responsibility disclosures, the firm's access to external finance is enhanced, which is necessary for the investment of profitable projects.

In conclusion, Huang et al. (2023) verified the same association by utilizing a sample of Chinese-listed firms from 2010 to 2019. The findings indicate that investment efficacy is enhanced by corporate social responsibility disclosure, which reduces information asymmetry and agency cost. Additionally, there is a substantial impact on investment efficacy when this disclosure is mandatory rather than voluntary.

To the contrary, other research has demonstrated that investing efficiency is not enhanced by corporate social responsibility disclosure. Firmansyah and Triastie (2020) have verified that by analyzing a sample of 43 manufacturing firms that were listed on the Indonesian Securities Exchange from 2014 to 2017. In addition, the adverse impact was mitigated by the expansion of corporate governance instruments. Maghazi's (2020) research aimed to determine the influence of CSR on investment efficacy. In the period from 2013 to 2017, the study employed a sample of 22 companies listed on the Egyptian Stock Exchange in the s/p index of social responsibility. The study achieved results that indicate that the investment efficacy of companies listed on the Egyptian Stock Exchange is not influenced by CSR, as measured by the sales growth rate.

Liu and Tian (2021) also verified a negative association effect of mandatory corporate social responsibility disclosure on investment efficiency. They conducted a natural experiment from 2004 to 2013 using the corporate social

responsibility regulation, which requires a group of Chinese listed non-financial firms to disclose stand-alone corporate social responsibility reports after 2008. Investment efficacy has been reduced by firms that are subject to the mandatory corporate social responsibility regulation, according to the research.

Moreover, Ramdhony et al. (2023) verified a negative correlation between government ownership and corporate social responsibility disclosure, suggesting that the state favors investing in companies with opaque disclosure. Block ownership has been discovered to have a detrimental impact on corporate social responsibility disclosure.

In conclusion, there is a disagreement among researchers regarding the impact of corporate social responsibility disclosure on investment efficacy. The majority of these studies asserted a positive effect; however, a few studies yielded the opposite outcome. Consequently, the initial hypotheses were formulated as follows by the study:

- $H_2$ : There is a significant impact of corporate social responsibility disclosure on investment efficiency.

## 4.6 The Impact of Corporate Social Responsibility Disclosure as a Moderator in the Tax Avoidance -Investment Efficiency Relationship

Based on the researcher's knowledge, there are few prior studies that have examined and discussed the combined impact of tax avoidance and CSRD on investment efficiency. The sole research that has addressed this relationship is Soliman and Abdel Razek 's (2024). 140 annual observations were employed in this study, which examined 28 non-financial firms. From 2017 to 2021, these firms were listed on the Egyptian Stock Exchange (EGX100). Research conducted in this study demonstrated that organizations that disclose their social responsibility initiatives have the potential to enhance their investment efficacy. Likewise, organizations implement tax avoidance strategies to cultivate an advantageous environment that optimizes investment efficiency. Integration of tax avoidance and social responsibility disclosure has a more significant impact on investment efficiency than either variable alone.

In this study, different sample, period of time, and methodology was used. With the consistency of Soliman and Abdel Razek's (2024) study, the researcher developed the following hypothesis, which can be formulated as follows,

- $H_3$: There is a significant effect of interaction between tax avoidance and corporate social responsibility disclosure on investment efficiency.

## 5. Research Methodology

The study relied on a quantitative analytical approach to measure the impact of tax avoidance on the investment efficiency of non-financial firms listed on the Egyptian Stock Exchange. This section consists of 6 parts that include Research Sample, Variables and their Measurements, Research Hypotheses, Hypotheses Testing, Descriptive Analysis, and Research Results.

### 5.1 Research Population and Sample

The companies in the Egyptian non-financial listed firms in EGX 100 index make up the study population. Sixteen companies, representing the non-financial Egyptian firms, made up the study sample; comprehensive financial data for the period from 2010 to 2020 were accessible for them. To guarantee data consistency, the researcher took great effort in choosing organizations with consistent trading over this era. Apart from that, companies met the following criteria. First, it must be listed on the stock exchange (EGX 100 index) during the study period (from 2010 to 2020). Secondly, it must have disclosed its corporate social responsibility during all eleven years that represent the study period without missing anyone.

Because of their unique regulatory and financial structures, which may have an impact on investment efficiency and tax-related indicators that are not comparable to those of non-financial firms, financial institutions (banks, insurance companies, and financial service providers) were not included in the sample. Data reliability and consistency in measurement and analysis were ensured by selecting these companies based on the regular availability of their annual financial statements and the inclusion of Corporate Social Responsibility (CSR) disclosures in their reports.

As a result, the study's panel data structure, which integrates cross-sectional and time-series dimensions, had a total of 160 annual observations (16 companies × 10 years). This structure improved the precision and robustness of the statistical

findings. Data were gathered from the Egyptian Stock Exchange database, corporate annual financial reports, and annual reports. The analysis drew on yearly statistics. Following the required preliminary tests, panel data models were applied using EViews 13 for statistical analysis.

## 5.2 Variables and Their Measurements

The study variables can be displayed, aiming to measure the impact of tax avoidance on investment efficiency in the non-financial Egyptian firms and how CSRD plays as a moderator variable in this relationship. Table No. (1) shows the independent (Tax Avoidance), dependent (Investment Efficiency), the moderate (CSRD), and control variables of the study.

### 5.2.1 Independent Variable: Tax Avoidance

Tax avoidance, the independent variable in this study, denotes a company's legal endeavors to reduce its tax obligations while complying with tax regulations. As per Hajawiyah et al. (2021), tax avoidance serves as an indicator of the efficacy of the tax compliance policies of these organizations. As a form of tax noncompliance, tax avoidance is taken into account. Accordingly, a higher level of tax avoidance is indicative of a lower level of tax compliance, and the reverse is also true. Therefore, the effective tax rate (ETR) can be employed as a proxy to quantify tax avoidance, which is calculated by the ratio of cash tax paid to pre-tax income (Elgayar, 2025; Hajawiyah et al., 2021; Tarmidi, 2019; Wang et al., 2020). The ETR computation indicates that it represents the opposite value of tax avoidance, as an increase in ETR would result in a decrease in tax avoidance (Abo Alkhair & El-Bannan, 2024; Soliman & Abdel Razek, 2024). Tax avoidance is the delta of ETR ($\Delta\ ETR$) which is calculated by subtracting ETR from the statutory rate (Taylor & Richardson, 2012).

### 5.2.2 Dependent Variable: Investment Efficiency

In their 2008 study, McNichols and Stubben examine the correlation between suboptimal investment decisions and earnings management. At the enterprise level, they quantify suboptimal investment. In addition to the model regressing of McNichols and Stubben (2008), the error term quantifies the excess investment that implies the investment efficiency by multiplying it by -1. Investment efficiency (INVEST-IEFF) quantifies the extent to which a company's actual investment deviates from the anticipated level in reference to

its sales growth prospects. Biddle et al. (2009) proposed a method that is represented by Model 1, which is the approach that is followed. The absolute value of the residuals from Equation (1) is multiplied by −1 to determine investment efficiency. A higher value indicates a higher level of investment efficiency (Firmansyah & Triastie, 2020; Ezzat & Abdel Sabour, 2025).

$$Investment_{i,t+1} = \alpha_0 + \beta_1 Sales\ Growth_{i,t-1} + \varepsilon_{i,t} \quad \ldots\ldots (1)$$

Where,

$Investment_{i,t+1}$: The total investment for firm j in year t. It is calculated as the net increase in fixed and intangible assets divided by total assets.

$Sales\ Growth_{i,t-1}$: The change in sales revenue from year t−2 to t−1.

### 5.2.3 Moderator Variable: Corporate Social Responsibility Disclosure CSRD

The two screens of the index (corporate governance screen and environmental and social screen) are employed separately in the current research (Indices and Methodology, 2021; Soliman & Abdel Razek, 2024). In June 2007, the Environmental, Social, and Governance (SEG) index was introduced in Egypt to collect data on corporate social responsibility. The integrity of information that firms provide regarding their corporate social responsibility is assessed.

### 5.2.4 Control Variables:

Following the previous studies (Firmansyah & Triastie, 2020; Lu et al.,2023; Soliman & Abdel Razek, 2024), this study has three control variables:

- Financial Leverage: Total debt divided by total assets.
- Firm Size: log of total assets.
- Profitability (ROA): Net income divided by total assets.

Table 1: Variable Measuring

| Variables | Measure | Reference |
|---|---|---|
| **Independent variable**<br>Tax Avoidance (TA) | The opposite value of ETR, which can be calculated by $\Delta\ ETR$ (= Statutory Rate – ETR). | Abo Alkhair & El-Bannan, 2024; Taylor & Richardson, 2012 |
| **Dependent variable**<br>Investment Efficiency (INV.EFF) | The absolute value of the residuals from Equation (1) | Ezzat & Abdel Sabour, 2025 |
| **Moderator variable**<br>Corporate Social Responsibility Disclosure (CSRD) | Natural logarithm for the SEG index | Indices and Methodology, 2021; Soliman & Abdel Razek, 2024 |
| **Control variables**<br>Financial Leverage (LEV) | Total debt divided by total assets | Soliman & Abdel Razek, 2024 |
| Firm Size | log of total assets. | Soliman & Abdel Razek, 2024 |
| Profitability (ROA) | Net income divided by total assets. | Soliman & Abdel Razek, 2024 |

Source: Prepared by the researcher

## 5.3 Research Hypotheses

The hypotheses and research regression models can be developed as follows in view of the aforesaid material and past investigations.

- $H_1$: There is a significant effect of tax avoidance on investment efficiency.
- $H_2$: There is a significant effect of corporate social responsibility disclosure on investment efficiency.
- $H_3$: There is a significant effect of the interaction between tax avoidance and corporate social responsibility disclosure on investment efficiency.

## 5.4 Hypothesis Testing

The hypothesis can be converted into the following mathematical formula. To study the impact of tax avoidance on investment efficiency, the impact of tax avoidance on investment efficiency, and effect of the interaction term between tax avoidance and CSRD on investment efficiency. The baseline regression analysis used in the study of Biddle et al. (2009), Ezzat & Abdel Sabour (2025), and Soliman & Abdel Razek (2024), was used in this study. The following is the measurement model used to test the first, second, and third hypotheses:

$$INV.EFF_{it} = a_i + \beta_1\ TA_{it-1} + \beta_2\, CSRD_{it-1} + \beta_3\ CSRD\_TA_{t-1} + \beta_4\ SIZE_{t-1} + \beta_5\ LEV_{t-1} + \beta_6\ ROA_{t-1} + \varepsilon_{it+1} \quad \ldots\ldots\ldots\ldots (2)$$

Where,

| | |
|---|---|
| $\text{INV. EFF}_{it}$: | Investment Efficiency for the current year. |
| $\text{TA}_{it-1}$: | *T*ax Avoidance for last year. |
| $CSRD_{it-1}$: | Corporate Social Responsibility Disclosure for last year. |
| $CSRD\_TA_{t-1}$ | The interaction term between tax avoidance and CSRD |
| $SIZE_{t-1}$: | Firm Size for last year. |
| $LEV_{t-1}$: | Financial Leverage for last year. |
| $ROA_{t-1}$: | Return on Assets for last year. |
| $\varepsilon$: | Error |

After identifying the measurement models, we explain below the results of the descriptive analysis of the study variables during the period from 2010 to 2020.

## 5.5 Descriptive Analysis

The results of the descriptive analysis presented in Table 2 for the study variables showed clear variation in their statistical properties. The dependent variable, investment efficiency (INV.EFF), had a mean of 0.011441with a standard deviation of 0.3045, indicating moderate variation in investment levels across firms. The values of this variable ranged from -0.93248 (some firms made no investments) to 0.886959 (large investments). This variation may reflect different investment strategies among firms.

Table 2: Describing Research Variables

Panel A: Descriptive Analysis

| Variables | Median | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| **INV.EFF** | -0.00565 | 0.011441 | 0.304516 | -0.93248 | 0.886959 |
| **TA** | 0.442688 | -0.32095 | 10.4555 | -137.409 | 137.6591 |
| **CSRD** | 124.1739 | 124.4383 | 10.11859 | 108.2098 | 181 |
| **CSRD_TA** | 54.59791 | -35.4024 | 1239.54 | -16278.4 | 1767.219 |
| **LEV** | 0.829208 | 1.075951 | 1.989856 | -.4316617 | .4403811 |
| **SIZE** | 6.469075 | 6.552262 | 0.733127 | 5.336608 | 8.071497 |
| **ROA** | 0.04601 | 0.07059 | 0.086509 | -0.17901 | 0.341408 |

Source: Excel 2019 output.

Likewise, the main independent variable, Tax Avoidance (TA) Index, recorded a mean of -0.32095 with a standard deviation of 10.4555, indicating significant fluctuations in risk levels across the study period. The values of this index ranged from -137.409 (periods of relative stability) to 14.32194 (periods of extreme turmoil), which may be reflected in firms' Investment Efficiency.

The CSRD variable recorded an average of 124.4383 with a standard deviation of 10.11859, indicating significant variation across companies. Values for this variable ranged from 108.2098 (low degree of disclosure) to 181 (high degree of disclosure). This significant variation may affect its ability to play a clear moderator role in the relationship between tax avoidance and investment efficiency.

Also, the average of the interaction term *CSRD X Tax Avoidance* (CSRD_TA) was -35.4024, with a large standard deviation (1239.54), indicating a wide variation in the companies included in the study. The deviations for all the other variables are normal. For financial leverage (LEV), the average was 1.075951, with some companies not using any debt. Firm size (SIZE) recorded an average of 6.552262, and there isn't a huge gap between the size of all companies (minimum value is 5.3 and maximum value is 8).

The profitability (ROA) variable showed significant variation, with an average of 0.07059 and a standard deviation of 0.086509, indicating that there are companies not effectively using their assets to generate profit (minimum value of - 0.17901) and others using their assets effectively (maximum value of 0.341408).

After the descriptive analysis of the study variables, we present below the results of the analysis of the bivariate correlations between the study variables using the Correlations Matrix. In Panel B of Table 2, the concurrent bivariate correlations among the analyzed variables are presented. Initially, all correlations between each variable and the others are below 0.70, suggesting no significant multicollinearity (Gujarati, 2003). These correlations display varied signs, possibly aligning or deviating from anticipated directions based on existing theories and literature. However, it's essential to remember that correlation indicates a linear relationship and does not imply causation (Ratner, 2009). Thus, the researcher focuses on the regression coefficients within the Panel Data Structural Equation Model (PDSEM) to accurately determine directional effects.

Panel B: Correlations Matrix

| | INV.EFF | TA | CSRD | CSRD_TA | LEV | SIZE | ROA |
|---|---|---|---|---|---|---|---|
| **INV.EFF** | 1 | | | | | | |
| **TA** | 0.067132 | 1 | | | | | |
| **CSRD** | 0.11787 | 0.043124 | 1 | | | | |
| **CSRD_TA** | 0.067499 | 0.999979 | 0.046097 | 1 | | | |
| **LEV** | 0.216422 | -0.01403 | 0.163729 | -0.01358 | 1 | | |
| **SIZE** | -0.04795 | 0.076852 | 0.318875 | 0.077767 | 0.200515 | 1 | |
| **ROA** | 0.061094 | 0.006059 | -0.02158 | 0.005929 | -0.07359 | -0.26448 | 1 |

Source: Excel 2019

Table 3: Unit Root Tests

| Variables/ Tests | | Levin, Lin & Chu t | Im, Pesaran and Shin W-stat | ADF – Fisher Chi-square | PP – Fisher Chi-square |
|---|---|---|---|---|---|
| **Significance/ Probability Level (Before Differencing)** | | | | | |
| **Investment Efficiency** | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **CSRD** | | 1.0000 | 0.9998 | 1.0000 | 0.9711 |
| **Tax Avoidance** | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **CSRD X Tax Avoidance** | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| | **leverage** | 0.8600 | 0.9485 | 0.9997 | 1.0000 |
| | **Firm size** | 0.7343 | 0.9992 | 1.0000 | 1.0000 |

| | | | | | |
|---|---|---|---|---|---|
| **Control Variables** | **Profitability** | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Significance/ Probability Level (After Differencing (1st. Difference))** | | | | | |
| **CSRD** | | 0.0000 | 0.0585 | 0.0871 | 0.0000 |
| **Control Variables** | leverage | 0.0000 | 0.0061 | 0.0066 | 0.0303 |
| | Firm size | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

Source: EViews 13

Table 3 tells that several variables, including Corporate Social Responsibility Disclosure (CSRD), Financial Leverage, and Firm Size, display significance levels exceeding 5% across multiple tests or in all of them. Conversely, other variables exhibit significance levels below 5% in only one test or across the four tests conducted. Nevertheless, the significance levels of the variables with significance levels above 5% in all tests are transformed from insignificant to significant in at least three tests when the initial differences are analyzed. According to the majority of the tests, this confirms the robustness of the final panel data utilized for both independent and dependent variables.

## 5.6 Research Results

The data were examined with the statistical analysis application EViews 13 using the multiple regression analysis technique. Table 6 shows the outputs of these regressions. we use the Hausman test to determine the appropriateness of using random effects models versus fixed effects models in analyzing panel data. The results of the Hausman test show that the test statistic (chi2) was small. The p-values were greater than the usual significance level of 0.05. Based on these values, there was insufficient statistical evidence to reject the null hypothesis that there are no systematic differences between the fixed-effects model and the random-effects model.

This means that the random-effects model is the most appropriate model for use in analyzing the study's time-series data, as the test indicates that the time-invariant characteristics of the studied entities (such as firms or institutions) are not related to the independent variables in the model and therefore do not cause bias in the estimates. Using the random-effects model in this case provides greater estimation efficiency while maintaining statistical validity, making it the ideal choice for analyzing the effect of variables across time within the studied sample.

Table 4: Results of estimating regression

| Variables/ Tests | | Random Effects | | |
|---|---|---|---|---|
| | | Coefficient | T | Sig. T |
| C | | -12.36954 | -9.624576 | 0.0000 |
| Tax Avoidance (TA) | | 24.528609 | 12.56868 | 0.0000 |
| CSRD | | 0.110338 | 14.32071 | 0.0000 |
| CSRD X Tax Avoidance | | -0.189059 | -12.88649 | 0.0000 |
| Control Variables | Leverage (LEV) | -0.584641 | -6.177268 | 0.0000 |
| | Firm size | -0.288760 | -3.261831 | 0.0014 |
| | Profitability (ROA) | 0.736701 | 4.595436 | 0.0000 |
| $R^2$ | | 0.953694 | | |
| Adjusted $R^2$ | | 0.951878 | | |
| F | | 525.1877 | | |
| Sig. F | | 0.000000 | | |
| Sig. Hausman test | | 1.0000 | | |
| Appr. Model | | Random Effects Model | | |

Source: EViews 13 output

The following regression equation can be derived:

$$INV.EFF_{it} = -12.36954 + 24.528609\, TA_{it-1} + 0.110338\, CSRD_{it-1} + -0.189059\, CSRD_{TA_{t-1}} - 0.288760\, SIZE_{t-1} - 0.584641\, LEV_{t-1} + 0.736701\, ROA_{t-1} + \varepsilon_{it+1} \ldots\ldots\ldots\ldots (1)$$

**The Relationship between Tax Avoidance and Investment Efficiency:**

The regression analysis revealed a statistically significant positive relationship between Tax Avoidance and Investment Efficiency, with an impact coefficient of 24.528609 at the significance level ($p < 0.05$). This result supports the hypothesis that $H_1$: There is a significant impact of tax avoidance on investment efficiency. The reason for their strong and significant positive effect, in the non-financial Egyptian firms, is that tax savings lead to minimizing tax liabilities, which increases funds to invest more in valuable projects (Lu et al., 2023a; Ngelo et al., 2022; Osegbue et al.; 2022).

Therefore, the efficacy of a company's investment can be affected by the practice of tax avoidance, as it reduces the tax expenses that must be paid, resulting in surplus funds that can be used to encourage investment expenditure and increase internal resources.

**The Relationship between CSRD and Investment Efficiency:**

The results of the statistical analysis discovered a significant positive effect of CSRD on investment efficiency (INV.EFF), with the impact coefficient reaching 0.110338 with high statistical significance (p=0.000). Therefore, accept the second hypothesis: $H_2$: There is a significant effect of CSRD and Investment Efficiency.

It is evident that this outcome concurs with investment efficiency can be positively impacted by disclosures of corporate social responsibility, as they can mitigate asymmetric information between principals and managers and reduce the managers' opportunistic behavior. Furthermore, the approval and execution of CSR strategies restrict the amount of free cash flow that is accessible, which can be exploited by managers to undertake unprofitable projects for personal gain (Soliman & Abdel Razek, 2024). Alternatively, the potential for investment efficiency is increased. As part of the overall disclosure initiative, the asymmetry of information between shareholders, who are proprietors, and managers, who are agents, is reduced by increasing the level of disclosures related to corporate social responsibility activities.

Furthermore, signaling theory suggested that CSRD send positive signals to the market about the long-term sustainability of the firm. Investors interpret that as lower risk and higher investment potential. So, the financial markets place a high value on these reductions because they contribute to the reduction of risk premiums and capital costs. This allows management to have more funds and more space to make appropriate decisions, which can increase investment efficiency (Anwar and Malik, 2020; Zamir et al., 2022; and Huang et al., 2023).

**The Moderating Role of CSRD in the Tax Avoidance-Investment Efficiency Relationship:**

By introducing the corporate social responsibility disclosure (CSRD) and the interaction variable between CSRD and tax avoidance (CSRD_TA) into the

regression model, the researcher observed that the regression provides strong support for the moderating effect of CSRD in the tax avoidance-investment efficiency relationship. The results showed that CSRD had an independent positive effect on investment efficiency ($\beta = 0.110338$, $p < 0.01$), and the interaction between CSRD and tax avoidance was negative and statistically significant ($\beta = -0.189059$, $p < 0.01$). These results suggest that the firms with higher levels of CSRD can play a mitigating role in the positive effect of tax avoidance and moderate it to a negative effect. Based on that, this study can accept the third hypothesis $H_3$*: There is a significant effect of the interaction between tax avoidance and corporate social responsibility disclosure on investment efficiency.*

The reason for their significant negative coefficient is that the interaction between CSRD and tax avoidance gives a signal conflict. Tax avoidance signals financial prudence, which can be translated to opportunism despite being legal. While CSRD signals transparency and ethics, which can be translated to fairness (Alomair & Metwally, 2025). Managerial conservatism or second-guessing may result from these mixed objectives, which can stifle decisive reinvestment. Therefore, while tax avoidance alone releases funds and CSR disclosure alone enhances legitimacy, their combination can result in a reduction in strategic clarity and a sluggish investment execution. In addition, CSRD reduces the flexibility of firms, which lead to constrained tax saving, thereby reducing the reinvestment ability and the investment efficiency (Du & Li, 2024).

As the result of that conflict, the trust of investors will reduce; therefore, the reputational risk will increase. This consistency reduces the efficiency gains of each of them.

## 6. Conclusion

This current research investigated the effect of tax avoidance on investment efficiency in the non-financial Egyptian firms listed in EGX 100 and the moderating role of CSRD on the Tax avoidance-investment efficiency relationship. Using a sample of 16 non-financial firms that listed on the EGX100 from 2010 to 2020, with 160 annual observations.

The independent variable in this study, Tax Avoidance, denotes a firm's legal endeavors to lessen its tax obligations while complying with tax regulations. It is

measured by the opposite value of Cash Effective Tax Rate (CETR) (Abo Alkhair & El-Bannan, 2024). CETR is determined by the ratio of cash tax paid to pre-tax income (Elgayar, 2025; Wang et al., 2020).

According to the regression analysis, there is a statistically significant positive relationship between Investment Efficiency and Tax Avoidance, with an impact coefficient of 24.528609. This result suggests that tax savings lead to minimizing tax liabilities, which increases funds to invest more in valuable projects, therefore increase the investment efficiency (Lu et al., 2023a; Ngelo et al., 2022; Osegbue et al.; 2022).

In this study, dependent variable is investment efficiency (INVEST-IEFF), which quantifies the extent to which a company's actual investment deviates from the anticipated level in relation to its sales growth opportunities. The absolute value of the residuals from Equation (1) is multiplied by −1 to determine investment efficiency, as per Biddle et al. (2009). Greater investment efficacy is indicated by higher values (Firmansyah & Triastie, 2020; Ezzat & Abdel Sabour, 2025).

In the current research. the effect of CSRD was examined as an independent variable and as a moderating variable. The Environmental, Social and Governance (SEG) index was used to obtain data for corporate social responsibility. CSRD as an independent variable has a significant positive effect of CSRD on investment efficiency (INV.EFF), with the impact coefficient reaching 0.110338. This means disclosures have the potential to mitigate asymmetric information between principals and managers, as well as reduce the managers' opportunistic behavior. Therefore, making suitable decisions that can increase investment efficiency (Anwar and Malik, 2020; Zamir et al., 2022; Huang et al., 2023).

Conversely, CSRD as a moderating variable has a significant negative effect of CSRD on the tax avoidance-investment efficiency relation, with the coefficient -0.189059. therefore, this study suggests that the firms with higher levels of CSRD can play a mitigating role in the positive effect of tax avoidance. The interaction between CSRD and tax avoidance leads to a negative combined effect on investment efficiency.

In conclusion, Tax avoidance can have a beneficial and positive impact on investment efficiency by increasing the availability of internal funds for capital

allocation. Concurrently, CSRD independently improves efficiency by reducing the cost of capital, lowering information asymmetry, and improving stakeholder trust, so it also has a positive impact on investment efficiency. These individual effects are supported by numerous studies. For instance, Alsmady (2022) discovered that tax avoidance enhanced investment opportunities in GCC countries by releasing capital flow. Similarly, Elsayed and Elbannan (2021) demonstrated that CSRD improves access to financing and establishes legitimacy, thereby enhancing firm performance. Nevertheless, the combined effect of both practices may be counterproductive when they are used simultaneously. The primary reason for this is stakeholder expectations: tax avoidance, despite being legal, is frequently perceived as inconsistent with these values, whereas high levels of CSRD establish a sense of ethical commitment. The potential consequences of this strategic inconsistency include diminished investor confidence, regulatory scrutiny, and reputational harm.

Recent studies have corroborated this paradox. As an illustration, Du and Li (2024) discovered that tax avoidance was negatively correlated with CSR performance in BRICS firms, suggesting that transparency discourages aggressive financial practices. Similarly, Chouaibi et al. (2022) found that the incentive to engage in tax avoidance was diminished in French enterprises as a result of CSR-driven ethical pressures. As a result of these dynamics, firms may encounter internal conflicts, stakeholder distrust, and signaling inconsistencies when they aggressively pursue both CSR disclosure and tax avoidance, which may result in more cautious investment behavior. Alomair and Metwally (2025) also demonstrated that ESG disclosure moderated the relationship between tax behavior and firm value, indicating that transparency can neutralize the efficiency benefits of tax strategies. Consequently, the interaction between CSRD and tax avoidance may impede investment efficiency as a result of ethical, reputational, and governance constraints, despite the latter's individual benefits.

Investment efficiency is significantly influenced by control variables, as evidenced by recent empirical research. Investment efficiency is adversely affected by high leverage, which restricts firms' strategic flexibility and increases governance constraints (Banerjee et al., 2023; Nan et al., 2023). Similarly, Bugamelli et al. (2023) and Boubaker et al. (2022) support the notion that firm size has a negative impact on the organization, as it is associated with diminished

adaptability and increased inefficiencies. In contrast, profitability (ROA) has a positive impact, as profitable firms are better equipped to reinvest internal cash flow efficiently (Abdelfattah & Elamer, 2023).

Notably, the model achieved high explanatory power, with an $R^2$ coefficient of 0.95, confirming the overall robustness and validity of the regression. This suggests that companies that avoid taxes while maintaining high levels of corporate social responsibility are giving mixed signals to investors. These signals reduce shareholders' trust, increase reputational risk, and lead to less effective capital deployment. This inconsistency reduces the efficiency gains that both of them individually support (Du & Li, 2024). In other words, the interaction between CSRD and tax avoidance can moderate the independent positive effect of each on investment efficiency to a negative combined effect.

**For future research:** many studies are needed to examine the moderating role of CSRD in tax avoidance and investment efficiency to confirm the results of this research or reject it because there are a rarely studies discussing this point. it can examine additional factors influencing the investment efficiency. Furthermore, it has the potential to be conducted across a broader spectrum of industries and organizations, as well as in varying time frames. Additionally, it has the potential to employ a variety of other investment efficiency measures in addition to those employed in this study.

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