

Transfer Pricing and Financial Performance: The Case of Algerian Companies

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Abstract: The increase of international trade represents more than 60% of the international economy, which is more profitable within the same group, thus prompting the continuous search for satisfactory financial performance by companies. This paper investigates whether transfer pricing has a positive and significant impact on corporate group's financial performance in Algeria, over a period of five years since 2016 with a quantitative approach and SPSS software. The authors tested the regression of transfer pricing variables (tax burden, firm size and leverage) with the financial performance of 60 companies of corporate groups operating in different sectors as a research sample and found that transfer pricing has a significant and positive impact on those companies at 10% error margin, despite the fact that only the company size has a significant positive impact on ROA of these companies in Algeria, with a margin error of 1%. However, the authors concluded that the bigger the company, the more it should pay attention to its transfer prices and their declarations to avoid any tax adjustment which can hinder its financial performance.

Keywords: transfer pricing, financial performance, corporate groups.

1. Introduction

Nowadays the economy has no geographical boundaries within the globalization context (Azzura & Pratama, 2019; Samhane, 2018), which offers companies the opportunity to become more competitive internationally, so their strategic alliances and market shares increase (Al-Matari, Al-Swidi, & Bt Fadzil, 2014; Kasztelnik, 2020; Sari, Hermawan, & Fitriana, 2021). Thus, companies are establishing themselves all over the world through subsidiaries or any other means to carry out their activities (Baroroh, Suryani, & Jati, 2021), with the motivation and continuous search for economies of scale and cost reduction (Samhane, 2018), thus, improving their financial performance¹ (Al-Matari et al., 2014; 2021; Bouazzama, 2021; Osho, Soynika, & Oluwafemi).

Note that according to Sari, Hermawan, & Fitriana (2021) and Nurwati, Prastio & Kalbuana (2021) the exchange of goods and services between subsidiaries of multinational companies² takes place mainly where the latter have a property link. This phenomenon is known as transfer *pricing*³ (Nazihah, Azwardi, & Fuadah, 2019; Osho & Olayemi, 2020; Sari et al., 2021), dealing with international taxation (Samhane, 2018; Ouelhadj & Bouchetara, 2021). Moreover, TP represents more than 60% of world trade (Benkendil & El Ghazali, 2018; Ouelhadj & Bouchetara, 2021). Originally, TP was used as a motivational tool to bring managers together to achieve company-wide goals, but in practice, as a means of reducing tax burden, currency risk, etc. (Tjandrakirana & Ermadiani, 2019). Therefore, this often has a negative connotation in tax administration (Sari et al., 2021), as MNEs tend to shift their profits to countries with tax privileges in order to pay less tax on profits (Azzura & Pratama, 2019; Nazihah et al., 2019; Ouelhadj & Bouchetara, 2021), resulting in potential tax revenue losses for the states concerned: in 2016, GAFAM paid less than 10 % of what they had to pay out to them (Ouelhadj & Bouchetara, 2021). On the other hand, those companies seek to be more efficient and pay less tax (Sari et al., 2021), as they find the tax burden to be a significant cost to bear (Winarto & Apollo, 2021).

Subsequently, TP has become an emblematic topic of major importance to public (Osho et al., 2021), more than 80% of MNEs consider that TP is an international issue to be taken seriously (Sari et al., 2021), because “Tax evasion is mainly through transfer pricing” (Ouelhadj & Bouchetara, 2021).

According to Osho, Soynika, & Oluwafemi (2021), many studies have been conducted in developed countries, unfortunately very few are in developing countries like Algeria (Fellag, 2017; Osho et al., 2021; Sam, 2017).

In this context, and through the results of these authors (Benkendil & El Ghazali, 2018; Kasztelnik, 2020; Osho et al. 2021), the research question is as follows: Does TP have a positive and significant impact on the FP of group companies in Algeria?

The structure of the paper is as follows: first, the authors develop the study hypotheses based on a literature review on the concepts of TP in general and in the Algerian context especially, FP and the relation between them. Then, they are tested through an empirical study using a quantitative approach and SPSS software and, finally, the authors discuss the theoretical and empirical results to reach a conclusion leading to the prospective study.

2. Literature review

To answer the research question, the authors reviewed recent scientific articles around this subject.

2.1. Transfer pricing and study context

According to OECD⁴ and several studies, a TP is any price charged for the transfer of tangible or intangible assets or services between related enterprises, they may occur within the same country (domestic

¹ Hereafter referred to as FP.

² Hereafter referred to as MNEs (multinational enterprises).

³ Hereinafter referred to as TP.

⁴ Organization for Economic Cooperation and Development.

TP) or in different countries (international TP) (Dwianika & Ahmad, 2021; OECD, 2022; Ouelhadj & Bouchetara, 2021; Winarto & Apollo, 2021; Widjaja, 2021; Tjandrakirana & Ermadiani, 2019; Sari et al., 2021; Osho et al., 2021; Osho & Olayemi, 2020; Nazihah, Azwardi, & Fuadah, 2019; Nurwati, Prastio, & Kalbuana, 2021).

MNEs use TP to manipulate prices by sharing profits in low-tax countries to maximise profits, minimise tax burdens and ensure a good level of cash-flow, all to maintain good relations with stakeholders (Winarto & Apollo, 2021) (Nazihah, Azwardi, & Fuadah, 2019; Osho & Olayemi, 2020; Nurwati, Prastio, & Kalbuana, 2021; Osho, Soynika, & Oluwafemi, 2021). According to Winarto & Apollo (2021), taxation in general and taxes represent a huge burden for companies.

Since the 2000s, shareholders have been paying particular attention to TP due to the increase in cases of fraud and information asymmetry such as Enron Corporation, Xerox, Parmalat, etc. (Osho et al., 2021). Moreover, according to Ouelhadj & Bouchetara (2021), tax evasion is essentially carried out via TP: in 2015, there was a loss of 14 billion euros, or 29% of corporate tax revenue in France. In addition, TP directly affects the income and tax payments (financial position) of MNEs even in different countries (Widjaja, 2021) and cross-border transactions account for over 60% of the global economy (Ouelhadj & Bouchetara, 2021). Therefore, TP is very important to the OECD, the G-20, governments, and the public (Ouelhadj & Bouchetara, 2021; Osho et al., 2021), as they are considered “a technique for the optimal allocation of revenues and costs among divisions, subsidiaries and joint ventures within a group of related entities” (Osho et al., 2021; Osho & Olayemi, 2020). Osho, Soynika, & Oluwafemi (2021) also assert that any decision taken in the context of TP is decisive, as it contributes to the improvement of the company’s objectives, its autonomy, and the evaluation of its performance, thus reassuring and motivating stakeholders and attracting new potential investors who contribute to the improvement of the company’s value, hence the interest of this study.

At the request of the G-20 and governments, the OECD has put in place rules and policies to strengthen TP practices and to combat tax evasion and avoidance, including the arm’s length principle, TP documentation and even the BEPS⁵ project (OECD, 2022; Osho et al., 2021; Ouelhadj & Bouchetara, 2021).

2.2. Transfer pricing in Algeria

Algeria gives a capital importance to TP (Aissat & Mokrani, 2018; Gargouri, 2014) since the introduction of the finance law⁶ of 2007 (Gargouri, 2014), where section 141bis of the CDTST⁷ was created, modified by the LF 2008, and completed by the SFL⁸ 2010 (CDTST, 2022).

The articles 141bis and 189 of CDTST (2022) give the Algerian tax authorities the right to adjust taxpayers declarations under Algerian law in the event of indirect profit transfers through TP and specifies the cases presuming an indirect transfer of profits, object of reintegration in the taxable base.

In Algeria there are no specific TP rules (GMT⁹, 2022; TPC¹⁰, 2022), thus the legislator refers essentially to the principles OECD (2022) and applies the arm’s length principle of Article 9 of the OECD Model Convention (2017) and requires companies with a link to the DGE¹¹ to provide a documentation justifying the TP policy¹².

TP documentation is regulated by the order of April 12, 2012, published in the OJ¹³ 04 of 20 January 2013 (Officiel, 2013), completed and updated by the order of 17 November 2020 published in the OJ 01 on 2 January 2021 (Officiel, 2020), intended to present the content of the documentation.

⁵ Base Erosion and Profit Shifting.

⁶ Hereinafter referred to as LF.

⁷ Code of Direct Taxes and Similar Taxes.

⁸ Supplementary Finance Law.

⁹ General Management of Taxes.

¹⁰ Tax Procedures Code.

¹¹ Directorate General of Large Enterprises.

¹² In reference to the article 169bis of TPC (2022).

¹³ Officiel Journal.

According to article 3 of the above-mentioned decree, the companies concerned by the documentary production (CDTST, 2022; GMT, 2022, 2020) are:

- "Companies that are members of groups of companies, including those operating in the hydrocarbon sector, governed by the legislation on hydrocarbons;
- Foreign companies operating in Algeria, temporarily, within the contractual framework of the real regime".

2.3. Financial performance

Performance in the broad sense is "a polysemantic concept" including several dimensions (Bouazzama, 2021). Various authors consider a company to be performant when it simultaneously combines effectiveness and efficiency (Al-Matari, Al-Swidi, & Bt Fadzil, 2014; Bouazzama, 2021). This case study focused on FP, as it is considered the "cornerstone of all performance" (Bouazzama, 2021). It essentially measures the success of managers with shareholders in their agency relationship, because "the performance of a company is considerably influenced by its governance" (Al-Matari et al., 2014), for the ultimate objective of the maximisation of value creation despite the agency costs generated by the conflicts of interest between the principal and the agent (Al-Matari et al., 2014; Bouazzama, 2021) as explained by the agency theory.

According to research conducted by Al-Matari, Al-Swidi, and Bt Fadzil (2014), Osho, Soynika, & Oluwafemi (2021), as well as Azzura and Pratama (2019), the most used measure for calculating FP is Return on Assets (ROA), which serves as a measure of companies operational and FP for the benefit of shareholders (Al-Matari et al., 2014; Azzura & Pratama, 2019; Dwianika & Ahmad, 2021; Fazriah, Alvina, & Nryaman, 2022). Those authors define ROA as the ratio allowing companies to quantify their profits from their own assets – optimising FP by reducing tax burden and keeping a level of effective management and efficiency for the company. Therefore, following (Al-Matari et al., 2014; Dwianika & Ahmad, 2021; Fazriah et al., 2022):

$$ROA = \frac{\text{Net income}}{\text{Total assets}} \quad (1)$$

Dwianika & Ahmad (2021) analysed the impact of TP, profitability measured by ROA, and institutional ownership on the tax evasion practices of 32 multinational mining companies in the Indonesian stock market. Using financial data from 2015 to 2019, they found that each of the variables studied have a significant impact on tax evasion practices. They also stated that the higher the ROA, the more likely companies are to engage in tax evasion, especially since tax evasion is mainly carried out through TP (Ouelhadj & Bouchetara, 2021).

According to Fazriah, Alvina, & Nryaman (2022) a high ROA reflects the profits generated by the company in question, which have an impact on their tax burden as it represents an incentive for these companies to reduce the burden, thus the motivation to practice TP, and hence the relation between FP measured by ROA and TP.

2.4. Theoretical relation between transfer pricing and financial performance

The study conducted by Widjaja (2021), based on an extensive literature review, focused on the international hotel industry, finding that TP has an impact on the revenues and sustainability of MNE's of the studied sector. The author believes that TP influences the actual tax returns and financial situations of the company and states "the transfer pricing rules, and policies of each hotel can be directly determined by the rules of the country in which the hotel operates" (Widjaja, 2021).

Osho & Olayemi (2020) analysed the influence of TP of intra-group transactions of MNEs in Nigeria on their taxation, by collecting data from the report of the newsletter of the tax department of KPMG International, on TP policies and their influence on tax rate, profit rate and growth of fifty MNEs in

Nigeria from 2014 to 2018. Using a regression analysis and adopting a descriptive analysis model between the variables, the authors showed that TP influences positively and significantly the growth of the sampled firms in Nigeria. Finally, the article recommends to study and define TP carefully, to avoid any risk related to these transactions towards tax authorities of the resident country.

Benkendil & El Ghazali (2018) aimed to demonstrate the impact of TP on FP of MNEs in Morocco through a theoretical study, and how the latter could be improved using the tax consolidation regime. The authors emphasised the crucial role of TP in the tax management of groups because they represent an undeniable variable for calculating the profits of subsidiaries/divisions, impacting on FP. They pointed out that FP is favoured when subsidiaries, at their individual and collective levels, perceive the recurrent opportunity of tax optimisation through the “exchange of information necessary for the establishment of successive overall results” (Benkendil & El Ghazali, 2018). The authors also concluded that TP and tax integration have a strong impact on the strategies of MNEs. Thus, they found that the application of the appropriate TP will protect the entity from any possible reassessment by the tax authorities and consequently promote its FP.

Some authors, including Kasztelnik (2020), attempted to establish an empirical relation between TP and the FP of subsidiaries of the same corporate group by examining two MNEs in the electronics, electrical and equipment industry, using statistical tools and a comparative approach between them. The author collected financial data based on official financial statements from 2007 to 2009, and measured FP through the following variables: return on investor, earnings per share and effective tax rate. The results show that variables representing FP have a significant impact on tax liabilities, and therefore on TP, which could also be an effective means of boosting and improving a company’s profitability, in result a better economy due to the reduction of cross-border transaction costs that originate from the minimisation of tax liabilities and tariffs in the resident country and abroad (Kasztelnik, 2020).

Baroroh, Suryani, & Jati (2021) analysed the influence of TP on the tax burden, bonus mechanism and shareholder expropriation through profitability. The study used data from 2016 to 2019 for mining companies listed on the Indonesia Stock Exchange, using moderated regression analysis, and found that shareholder expropriation has a positive and significant impact on TP decisions when it is high, in contrast to the tax burden and the bonus mechanism. Finally, the authors asserted that the TP decision is enhanced by foreign-controlled majority shareholders, so an increase in profitability allows TP decisions to be made with a view to reducing the company’s tax burden and maximising its profits.

Osho, Soyinka, & Oluwafemi (2021) examined whether there is a significant relation between TP (tax burdens, bonus mechanism and shareholder expropriation) and the FP (ROA) of listed Nigerian MNEs, using data from the annual reports and websites of 30 listed MNEs in Nigeria from 2011 to 2020. Using E-Views statistical software, a panel least squares regression method and a correlation study between the predefined variables, the authors found that there is a relation between TP and FP (the relation between tax expenses, bonus mechanism and ROA is negative and insignificant, but shareholder expropriation and ROA is positive but insignificant).

Winarto & Apollo (2021) examined the impact of thin capitalisation and TP on reducing the tax burden of listed manufacturing companies in Indonesia. For this purpose, they gathered panel data from 30 companies in the study area from 2014 to 2018 and identified the study variables: effective tax rate to represent the tax burden and the ROCE¹⁴ to measure TP activities. The authors concluded that the use of debt in the capital structure and TP have a significant negative impact on tax avoidance, and thus asserted that the reduction of tax liabilities by legal or illegal means chosen by the company is beneficial.

Note that TP has an impact on the revenues of companies and their financial situation (Widjaja, 2021), moreover they constitute a factor of growth (Osho & Olayemi, 2020), because they are undeniable variables in the calculation of group profits (Benkendil & El Ghazali, 2018), however, it is deduced that TP is a means to improve the profitability of the company (Kasztelnik, 2020). Bouazzama (2021) explained that profitability is one of the dimensions of FP, so the two notions are strongly linked, and

¹⁴ Return on Capital Employed.

by extension one can assume that TP is a tool for improving the FP of a company (Benkendil & El Ghazali, 2018; Osho et al., 2021).

Primary hypothesis: The presence of intra-group transfer pricing (TP) positively and significantly affects the return on assets (ROA) of companies that are part of corporate groups in Algeria.

The following studies: Azzura & Pratama (2019), Nurwati, Prastio, & Kalbuana (2021), Tjandrakirana & Ermadiani (2019), Nazihah, Azwardi, & Fuadah (2019), Osho, Soynika, & Oluwafemi (2021), Kasztelnik (2020), Baroroh, Suryani, & Jati (2021), Sari, Hermawan, & Fitriana (2021) & Fazriah, Alvina, & Nryaman (2022), Benkendil & El Ghazali (2018) and Widjaja (2021), examined the relation between TP and the various sub-variables that represent TP, thus the authors drew on them to determine the variables representing TP in the study context. Nurwati, Prastio & Kalbuana (2021), Sari, Hermawan & Fitriana (2021). and Tjandrakirana & Ermadiani (2019) did not find a relation between sub-variables and TP, so by induction and following the work of Kasztelnik (2020) and Osho, Soynika, & Oluwafemi (2021), it can be argued that TP may not improve FP, notwithstanding the fact that TP decisions could improve business objectives.

2.5. Transfer pricing determinants and development of hypotheses

According to the literature review, TP is represented and measured by several variables due to the direct or indirect relation between them. Moreover, the study conducted by Azzura & Pratama (2019) analysed the influence of exchange rate, taxes, profitability, and shareholder expropriation on the TP decisions of 17 financial statements of multinational manufacturing companies from 2013 to 2017. It was found that taxes and shareholder expropriation influence the TP decisions of manufacturing companies, unlike the other variables.

Sari, Hermawan & Fitriana (2021) examined the impact of profitability, company size, and shareholder expropriation on the TP decisions of the same sector as the article cited above, using annual financial reports from 2012 to 2019 in Indonesia, indicating that only profitability influences the TP decisions of the sample.

Nurwati, Prastio & Kalbuana (2021) studied with the use of SPSS software the effect of company size, profitability, exchange rate and tax burden on the TP of seven listed automotive manufacturing companies identified through purposive sampling from 2014 to 2018. They found that only tax burdens and profitability influence TP decisions.

Devita & Sholikhah (2021) tested the correlation between shareholder expropriation, exchange rate, institutional ownership, profitability, and leverage on the TP decisions of MNEs. The authors collected Indonesian stock market data, financial reports, and websites from 60 MNEs from 2014 to 2018, and subjected them to a panel data regression analysis. The results show that when institutional ownership and leverage are high, TP will be too, but for the exchange rate the effect is negative. The authors established that shareholder expropriation and profitability have no effect or influence on TP, and recommended to MNEs to pay attention to exchange rates, reduce shareholder expropriation and leverage to increase profitability and institutional ownership, thus generating profits and minimising TP practices.

Tjandrakirana & Ermadiani (2019) examined whether taxes, debt agreements and exchange rates motivate companies to make TP decisions, because they believe that TP nowadays has an impact on a company's profits and losses. They collected data from 2013 to 2018 from 22 listed manufacturing companies in Indonesia and conducted a descriptive and quantitative analysis of the identified variables. Their study (2019) found that when the debt ratio and the exchange rate decrease, there is an incentive for the companies in the study to apply TP; on the other hand, the existence of a significant tax burden (taxes) does not encourage companies to apply TP.

Nazihah, Azwardi & Fuadah (2019) analysed the effect of taxes, bonus mechanisms, shareholder expropriation and company size on the TP charged by manufacturing companies by selecting 28

businesses in the sector under review from a population of 153 companies listed on the Indonesian stock exchange from 2013 to 2017, using an econometric regression model. The authors concluded that all the variables studied influence positively TP decisions except shareholder expropriation.

In their article, Fazriah, Alvina, & Nryaman (2022) investigated whether the TP practices of MNEs are influenced by profitability, leverage, and company size. They conducted a quantitative study with a panel regression of 41 companies and found that leverage and profitability have a positive effect on TP practices, while company size has a negative influence on them.

To achieve the objective of this study, the data were sourced from financial statements published at the National Centre of the Trade Register¹⁵; and due to the unavailability of all the variables studied on these statements, the authors retain only three variables according to the findings by (Baroroh, Suryani & Jati, 2021; Devita & Sholikhah, 2021; Fazriah, Alvina, & Nryaman, 2022; Nazihah et al., 2019; Rizkya & Isnalita, 2020; Sari et al., 2021), which were developed as follows:

Hypothesis 1: The tax burden, referring to the amount of taxes a company is subject to, has a positive and significant impact on the return on assets (ROA) of companies that are part of corporate groups in Algeria. This suggests that higher tax burdens may lead to better ROA for these companies, possibly due to favourable tax planning strategies or access to certain tax incentives within the group structure.

Hypothesis 2: The size of a company, measured by its scale or total assets, has a positive and significant impact on the ROA of companies that belong to corporate groups in Algeria. This implies that larger companies within these groups tend to achieve better ROA, potentially due to economies of scale, increased market presence, and/or improved access to resources and financing.

Hypothesis 3: The leverage effect, which refers to the use of debt financing by a company, has a positive and significant impact on the return on assets (ROA) of companies that are members of corporate groups in Algeria. This suggests that higher leverage levels within the group may contribute to improved ROA for these companies, possibly because debt can amplify returns when investments generate higher profits than the cost of borrowing.

Overall, these hypotheses aim to explore various factors that could potentially influence the financial performance of companies within corporate groups in Algeria. By investigating the impact of tax burden, company size, and leverage effect on ROA, the study seeks to provide insights into the dynamics and drivers of profitability within the context of corporate group structures in the Algerian business environment.

2.6. Conceptual model and selected variables

Table 1. Selected variables

Variables	Measure/source
Transfer Pricing (TP)	Represented by the three variables below
Tax Burden (TB)	Data available on financial statements
Company Size (FS)	$FS = \ln(\text{Total assets}) \quad (2)$ (Fazriah, Alvina & Nryaman, 2022; Nazihah, Azwardi & Fuadah, 2019; Nurwati, Prastio & Kalbuana, 2021; Sari, Hermawan & Fitriana, 2021).
Leverage (L)	$L = \frac{\text{Total debts}}{\text{Total equity}} \quad (3)$ (Devita & Sholikhah, 2021; Fazriah, Alvina & Nryaman, 2022).
Financial Performance (ROA)	$ROA = \frac{\text{Net income}}{\text{Total assets}} \quad (4)$ (Al-Matari, Al-Swidi & Bt Fadzil, 2014; Azzura & Pratama, 2019; Dwianika & Ahmad, 2021; Fazriah, Alvina & Nryaman, 2022).

Source: own work based on literature review.

¹⁵ Hereafter referred to as NTRC.

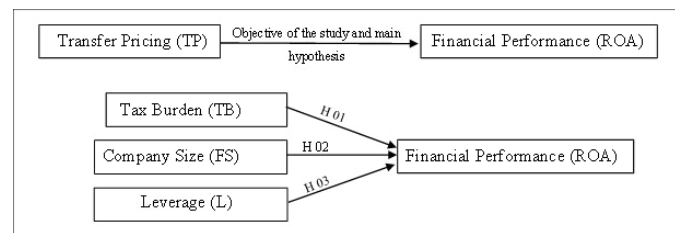


Fig. 1. Conceptual model

Source: own work based on literature review.

2.7. Conclusion of the theoretical framework

The issue of international taxation related to TP has attracted significant public concern in recent years (Osho et al., 2021; Samhane, 2018). This has been amplified by the fact that over 60% of global trade is conducted through intra-group transactions (Benkendil & El Ghazali, 2018; Ouelhadj & Bouchetara, 2021; Samhane, 2018). Moreover, TP has a direct impact on the FP and revenues of companies on a global scale (Widjaja, 2021).

Regrettably, TP has been perceived as a method of tax evasion (Dwianika & Ahmad, 2021; Nurwati, Prastio, & Kalbuana, 2021; Osho & Olayemi, 2020; Ouelhadj & Bouchetara, 2021), leading to increased scrutiny from both governments and shareholders regarding TP policies (Osho et al., 2021). This has further highlighted the importance of addressing the complexities and potential abuses associated with TP in the global business landscape.

Then, the authors aimed to establish an empirical link between TP and the FP of companies belonging to corporate groups in Algeria, because of the absence of many such studies in Algeria (Osho et al., 2021). After studying the relation between the variables according to the literature review, FP was measured by the ROA and TP represented by the three variables: tax burden, firm size, and leverage.

3. Empirical section

In this part of the study, the authors examine the empirical relation between the two study variables.

3.1. Materials and methods

Table 2 provides a summary of the characteristics of the data used in the reviewed studies.

Table 2. Summary of the literature review data

Authors	Sample size	Study period		
		Start	End	Duration (year)
(Osho & Olayemi, 2020)	50	2014	2018	4
(Kasztelnik, 2020)	02	2007	2009	2
(Baroroh, Suryani & Jati, 2021)	16	2016	2019	3
(Osho, Soynika, & Oluwafemi, 2021)	30	2011	2020	9
(Winarto & Apollo, 2021)	30	2014	2018	4
(Devita & Sholikhah, 2021)	60	2014	2018	4
(Tjandrakirana & Ermadiani, 2019)	22	2013	2018	5
(Azzura & Pratama, 2019)	17	2013	2017	4

(Nazihah, Azwardi & Fuadah, 2019)	28	2013	2017	4
(Sari, Hermawan & Fitriana, 2021)	not mentioned	2012	2019	7
(Nurwati, Prastio & Kalbuana, 2021)	07	2014	2018	4
(Dwianika & Ahmad, 2021)	32	2015	2019	4
(Fazriah, Alvina & Nryaman, 2022)	41	2016	2020	4

Source: own work based on literature review.

From the above table, we derive our sample size and study duration.

Table 3. Definition of the sample and number of years of study

Sample size		Duration of study (in years)	
Average	28	Average	5
Minimum	2	Minimum	2
Maximum	60	Maximum	9

Source: own work based on literature review.

By means of these results, the database comprised a sample of 60 companies belonging to groups of companies in Algeria for a period of five fiscal years from 2016 to 2020.

In Algeria, the NSO¹⁶ identifies 650 MNEs in 2020, and in addition, the LBM named approximately 180 tax groups in 2020 under the LBM’s¹⁷ control (DGE, 2022). Unfortunately, it was not possible to obtain exact information on the number of tax groups on the whole Algerian territory (DGE, 2022).

Following the theoretical study, the hypotheses were tested by a quantitative study using published financial statements extracted from NTRC¹⁸’s, SPSS software for regression analysis and a purposive sampling, in regard to the companies concerned by the TP documentation according to the decree of 17 November 2020.

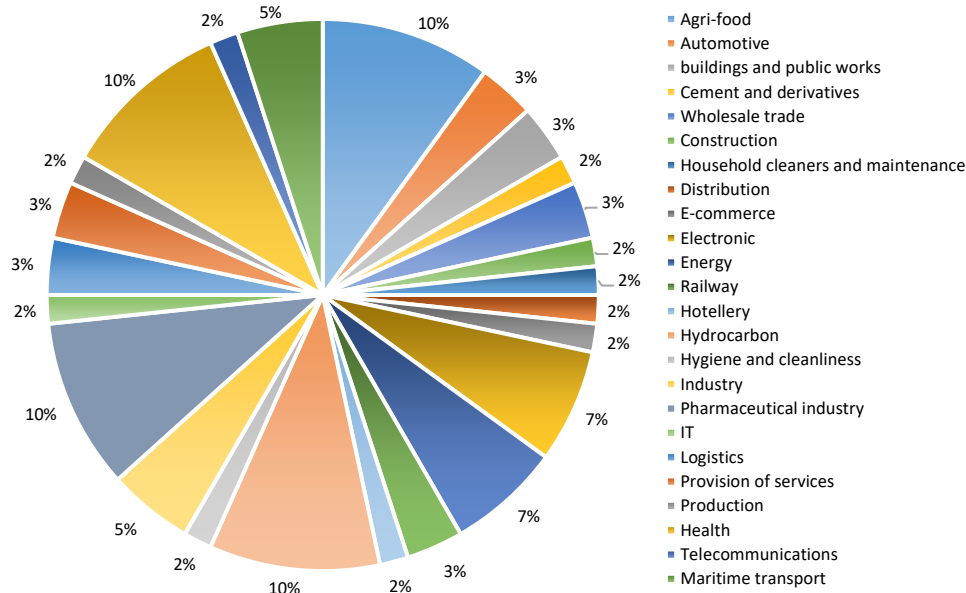


Fig. 2. Description of the study sample

Source: own study.

¹⁶ National Statistical Office.

¹⁷ Large Business Management.

¹⁸ National Trade Register Centre.

3.2. Regression model

To test the hypothesis, the regression model is as follows.

$$Y \approx f(X, \beta) \quad (5)$$

dependent variable: financial performance (ROA).

independent variables: tax burden (TB); firm size (FS); leverage (L).

$$ROA = f(TB, FS, L, \beta) \quad (6)$$

Thus,

$$ROA = \beta_0 + \beta_1 TB + \beta_2 FS + \beta_3 L + \varepsilon_i \quad (i = 1, \dots, n) \quad (7)$$

where

β_0 : constant regression term.

β_1 : impact of the tax expense ratio on ROA.

β_2 : impact of the company size coefficient on ROA.

β_3 : impact of the leverage ratio on ROA.

ε_i : random/residual error term.

3.3. Results

After submitting the data to SPSS, the following results were obtained.

Table 4. Descriptive statistics

Variable	Measurement unit	Minimum	Maximum	Average	Standard deviation
ROA	DZD ¹⁹	-171	160	5.08	17.66
FS	DZD	14.630	30.120	22.520	2.458
TB	DZD	0.00	171 266 261 760	1 963 151 236	12 666 457 998
L	DZD	-781.560	446.750	1.631	55.603

Source: IBM SPSS software.

From the table above, one can see that the minimum value of ROA, FS, TB and L is -171, 14.63, 0 and -781.56 respectively; the maximum is approximately 160, 30.12, 171 266 261 760 DZD and 446.750 for each variable respectively. The average of ROA, FS, TB, and L is 5.08, 22.52, 1 963 151 236.15 DZD and 1.631 respectively with a standard deviation of 17.66, 2.458, 12 666 457 998.03SZS and 55.603 for each variable respectively.

Table 5. Correlation matrix

	FS	TB	L	ROA
FS	1	0.393	-0.068	0.110
TB	0.393	1	-0.001	-0.010
L	-0.068	-0.001	1	0.077
ROA	0.110	-0.010	0.077	1

Source: IBM SPSS software.

The correlation matrix above demonstrates that there is a weak relation between TP and FP, the confidence interval used was 95%.

¹⁹ Algerian currency: Algerian dinar.

The authors found that the relation was positive for the size of the company (with a coefficient of 0.110) and the leverage effect with the ROA (with a coefficient of 0.077); on the other hand, the relation was negative between the tax burden and the ROA of the sample (coefficient of -0.010). In other words, the larger the size of the company and the higher the leverage effect, the better the FP, or when both variables (company size and leverage effect) are low, the ROA will also be low. Nevertheless, the more the company in the group of companies has considerable expenses, the lower the FP and vice versa.

Tax burden and ROA of group companies in Algeria

Table 6. Model parameters of hypothesis 1

Source	Value	Pr > t
Constant	5.156	< 0.0001
TB	0.000	0.725 > 10 %

Source: IBM SPSS software.

The authors concluded that the tax burden has no impact on the ROA of companies belonging to corporate groups in Algeria.

Table 7. Overall model fit and testing hypothesis 1

Role	Variable	F	Pr > F	Result
Dependent	ROA	0.124	0.725 > 10%	H1 rejected at 10% risk of error
Independent	TB			

Source: IBM SPSS software.

The model was rejected at the 10% risk of error threshold.

Company size and ROA of group companies in Algeria

Table 8. Model parameters of hypothesis 2

Source	Value	Pr > t
Company size	5.183	< 0.0001

Source: IBM SPSS software.

The size of the company has a positive impact on the ROA of member companies of groups of companies in Algeria.

Table 9. Overall model fit and testing hypothesis 2

Role	Variable	F	Pr > F	Result
Dependent	ROA	26.862	< 0.0001	H2 accepted at 1% risk of error
Independent	FS			

Source: IBM SPSS software.

The model was accepted at the 1% risk of error threshold, so it was deduced that the size of the company has a positive and significant impact on the ROA of the sample.

Leverage and ROA of companies belonging to groups of companies in Algeria

Table 10. Model parameters of hypothesis 3

Source	Value	Pr > t
Constant	5.050	< 0.0001
L	0.024	0.184

Source: IBM SPSS software.

It was found that leverage has no impact on the ROA of the sample at the 10% threshold (0.184 > 10%).

Table 11. Overall model fit and testing hypothesis 3

Role	Variable	F	Pr > F	Result
Dependent	ROA	1.775	0.184	H3 rejected at 10% risk of error
Independents	L			

Source: IBM SPSS software.

The model was rejected at the 10% risk of error threshold.

Impact of the three variables on the ROA of the sample

Table 12. Parameters of the panel data regression model on all variables

Source	Value	Pr > t	Result
Constant	-0.17756	0081	
FS	0.01020	0.024 < 5%	H2 accepted
TB	0.00000	0.295 > 5%	H1 rejected
L	0.00028	0.134 > 5%	H3 rejected

Source: IBM SPSS software.

It was deduced that the three variables studied have a positive impact on the FP of the sample. In addition, only the size of the company had a statistically significant impact at the 5% threshold (Pr < 5%) on the FP of the sample studied.

In the evaluation of the overall quality of the model constructed, the authors obtained the following results:

Table 13. Coefficient of determination

Variables	R2	R2 adjusted
FS / TB / L	0.023	0.013

Source: IBM SPSS software.

It was deduced that the FP measured by ROA could be explained by each of the variables of the study at only 2.3%.

Proceeding to the simultaneous test of all the hypotheses, the following were obtained:

Table 14. Testing all three variables simultaneously

Role	Variables	F	Pr > F	Result
Dependent	ROA	2.319	0.076 < 10%	Main hypothesis accepted at 10% risk of error
Independents	FS, TB, and L			

Source: IBM SPSS software.

It was deduced that TP had a positive and significant impact on the FP of group companies at the 10% threshold.

The results of the regression test allowed to construct the following model:

$$ROA = -0.17756 + 0.01020 FS + 0.00028 + \varepsilon_i, \quad (8)$$

3.4. Conclusion of the empirical section

The authors arrive concluded that there is a strong and significant empirical link between the TP and FP (ROA) of members of groups of companies in Algeria, at the threshold of 10% risk of error.

It was found that the tax burden and the leverage effect had no impact on the ROA of the companies studied, but company size had a positive and significant impact on the ROA of the sample.

4. Discussion

On the one hand, it was found that the studies linking the TP and ROA of companies in Algeria almost all converge towards the idea that one impacts on the other significantly (Benkendil & El Ghazali, 2018; Kasztelnik, 2020; Osho & Olayemi, 2020; Osho et al., 2021; Widjaja, 2021), as TP affects income and financial situations (Widjaja, 2021), which represent a growth factor (Osho & Olayemi, 2020) and contribute to the calculation of profits (Benkendil & El Ghazali, 2018), impacting on the bottom line, while bearing in mind that ROA is calculated with the ratio of net income to total assets (Al-Matari et al., 2014; Dwianika & Ahmad, 2021; Fazriah et al., 2022). On the other hand, the empirical results confirm those of the literature review, as the model is accepted with 10% margin of error, thus TP impacts positively and significantly on the ROA of the companies in the sample from 2016 to 2020 in Algeria.

Osho, Soynika & Oluwafemi (2021) concluded that tax expenses do not have a significant impact on FP (ROA), which was confirmed by the empirical study. However, they emphasised that tax burdens have a positive and significant impact on business growth, contrary to what has been found in the context of this study.

Abkar & Aajly (2020) stated that the larger the company, the more it tends to set TP at full competition (Abkar & Aajly, 2020), thus a better FP (Benkendil & El Ghazali, 2018; Osho & Olayemi, 2020) because it is in the public eye, unlike smaller companies (Osho et al., 2021). These results confirm those in the context of this study with a 1% risk of error.

The literature describes the direct relation between the leverage effect and TP (Devita & Sholikhah, 2021; Fazriah, Alvina & Nryaman, 2022). Fazriah, Alvina & Nryaman (2022) claimed that the companies concerned often seek to acquire debt from parties with relatively low tax rates, and this could be a factor in performance growth. In addition, Devita & Sholikhah (2021) recommended that companies reduce their leverage to boost their profitability, which is a form of FP (Al-Matari et al., 2014; Bouazzama, 2021). Contrary to this, in practice it was found that leverage had no impact on the FP of these samples.

5. Conclusion and study perspectives

This study investigated the existence of an empirical link between the TP and FP of companies belonging to groups of companies in Algeria (Benkendil & El Ghazali, 2018; Kasztelnik, 2020; Osho et al., 2021).

In theory, the authors found that TP has a positive and significant impact on company's FP, as confirmed by the empirical study in this context. Thus, the authors affirm the principal hypothesis.

In contrast, regarding the three hypotheses, the literature describes the positive impact of each of the variables on the ROA, but in practice in Algeria, the authors were able to confirm that only the size of the company has a positive and significant impact on the ROA of the companies belonging to groups

of companies in Algeria, contrary to the remaining hypotheses regarding tax charges and the leverage effect. Hence, one can say that the larger the company, the more likely it is to perform better financially, hence the need to respect its TP policies and statements in the Algerian context.

It is considered that the results of the study only apply in the context of the study in Algeria with a sample size of 60 out of a population of more than 180 companies, so one cannot extrapolate these results and consider that the hypothesis is true for a particular sector, or all the sectors combined. In addition, the topic of TP is still new in Algeria, which explains the lack of information on TP in Algeria (GMT, 2022).

Regarding recommendations in the Algerian context, it is preferable for companies to conform with TP regulations, in terms of applying the arm's length principle or providing convincing and complete information in the TP documentation, as suggested by Benkendil & El Ghazali (2018) and Osho & Olayemi (2020), because it will protect the company from any possible reassessment, and it may reflect a form of FP due to the savings generated.

Furthermore, the authors believe that this research could be developed by considering the variables not included in this study, or simply by addressing the major issues that follow it. In other words, FP has always been at the heart of everyone's concerns, and in the post-COVID-19 conditions, companies are now facing increased financial difficulties due to the health crisis, so they are currently tending to centralise their cash-flow, known as *cash pooling*, a phenomenon that has always existed – but in terms of TP this remains a topical subject of contemporary debate. Finally, regarding Pillar 1 and Pillar 2 of the OECD, addressing subjects of great necessity including the fight against tax evasion and tax havens (Pillar 2) with the new single tax set at 15%, which will come into force in 2023, it is considered timely to study its impact on TP and tax evasion practices as well as on the FP of companies.

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Ceny transferowe a wyniki finansowe: przypadek spółek algierskich

Streszczenie: Wzrost handlu międzynarodowego reprezentuje ponad 60% wzrostu gospodarczego. Spółki międzynarodowe, działające w ramach tej samej grupy kapitałowej, chcą zwiększać swoją rentowność, co skłania przedsiębiorstwa do ciągłego polepszania wyników finansowych. W artykule zbadano, czy ceny transferowe mają pozytywny i znaczący wpływ na wyniki finansowe grupy przedsiębiorstw w Algierii w okresie pięciu lat od 2016 r., przy zastosowaniu podejścia ilościowego z oprogramowaniem SPSS. Autorzy wykorzystali regresję oraz zmienne cen transferowych (obciążenie podatkowe, wielkość firmy i dźwignię finansową) na przykładzie wyników finansowych 60 spółek z grup kapitałowych działających w różnych sektorach. Wyniki pokazują, że ceny transferowe mają znaczący i pozytywny wpływ na te przedsiębiorstwa przy 10-procentowym marginesie błędu, mimo że tylko wielkość firmy ma istotny pozytywny wpływ na ROA tych spółek w Algierii, przy błędzie marginesu wynoszącym 1%. Autorzy doszli jednak do wniosku, że im większa firma, tym większą uwagę powinna zwracać na swoje ceny transferowe i składane deklaracje, aby uniknąć korekty podatkowej, która mogłaby pogorszyć jej wyniki finansowe.

Słowa kluczowe: ceny transferowe, wyniki finansowe, grupy kapitałowe.