Tax burden and pressure. A study of the effect on the liquidity, profitability and investment of taxpayers in Ecuador

Carga y presión tributaria. Un estudio del efecto en la liquidez, rentabilidad e inversión de los contribuyentes en Ecuador

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Abstract

High rates and different taxes determine tax collection in different economic cycles in economies; in this context the research analyses the effect of tax burden and pressure on liquidity, Profitability and investment of taxpayers in the Province of Chimborazo, Ecuador in times of the Covid-19 pandemic and its relationship to the economic cycle. It contemplates the inductive method and a causal level - explanatory, data collection was through the questionnaire to a sample of 307 contributors of a total effective population of 39 503, where the Cronbach Alpha index is 89.9%. The selection of sample elements was in the framework of simple random probabilistic sampling considering as a database the contributors of the Internal Revenue Service; the data analysis was performed with the multinomial and linear logistic regression model. The results show that a high tax burden significantly affects taxpayers' liquidity, profitability and investment, and that changes in rates and rates lead to increases and reductions in income, profits and investments. It is concluded that the presence of an external factor such as COVID-19 significantly deepens the negative effect on the financial income and results of the company and on future investments. There is a direct relationship between the business cycle and tax revenue.

Resumen

Las altas tasas y diferentes impuestos determinan la recaudación tributaria en los diferentes ciclos económicos de las economías; en ese contexto, la investigación analiza el efecto de la carga y presión tributaria en la liquidez, rentabilidad e inversión de los contribuyentes en la provincia de Chimborazo, Ecuador durante la pandemia de Covid-19 y su relación con el ciclo económico. Contempla el método inductivo y un nivel causal-explicativo, la recolección de datos fue a través de un cuestionario a una muestra de 307 contribuyentes de una población total efectiva de 39 503, donde el índice de Alfa de Cronbach es de 89.9 %. La selección de elementos muestrales fue en el marco del muestreo probabilístico aleatorio simple considerando como base de datos los contribuyentes del Servicio de Rentas Internas; el análisis de datos se realizó con el modelo de regresión logística multinomial y lineal. Los resultados muestran que una alta carga impositiva afecta significativamente en la liquidez, rentabilidad e inversión de los contribuyentes, y que las modificaciones de las tasas y el tipo de impuestos producen incrementos y reducciones en los ingresos, utilidades e inversiones. Se concluye que la presencia de un factor externo como el Covid-19 profundiza significativamente el efecto negativo en los ingresos y resultados financieros de la empresa y en futuras inversiones. Existe una relación directa entre el ciclo económico y las recaudaciones tributarias.

1.   Introduction

In Latin America, the tax burden and pressure on taxpayers are high due to the different tax rates they bear with respect to their income, at the country level, this contributes to the development of economies, which are cyclical, based on phases such as expansion, boom, crisis, recession, and depression evidenced through products, investment and company profitability.

Tax collections are a source of financing for national income and these are related to the economic cycles of the economies. The contributions depend on the types of taxes. The higher the tax burden and pressure, the greater the national and State income; however, for taxpayers they can have positive or negative effects related to income, profitability, and business investment.

On the other hand, from the tax accounting perspective of taxpayers, there is a relationship between commercial and tax accounting, because accounting serves as the basis for tax determination and the deductions in the financial statements through "the identification, measurement, and synthesis of the facts and the economic reality of an entity" (Archel & Goméz, 2014, pp. 103-104). In this way, it can be deduced that general and tax accounting are not independent.

In this context, the tax situation in Ecuador was analyzed based on tax revenues to identify reasons for the increase or reduction of the tax burden and pressure on taxpayers and economic cycles and determine their effect on liquidity, profitability, and investment, considering the case of the province of Chimborazo.

Data from the Internal Revenue Service (2020) show that tax collection in 2020 reached around 11,313 million, a decrease from 2019, which was 14,268 million dollars, observing a reduction in 2019 and 2020 in relation to 2018. Tax revenues reach 20.6 % of GDP (2018) (OECD et al., 2020, p. 60). This drop in tax collection could be a consequence of the global Covid-19 pandemic that occurred as of March 2019, having an effect on the economic cycle of Ecuador (Table 1).

Table 1. Ecuador. Evolution of gross tax collection and pressure (2000 to 2019) (Expressed in millions of dollars)

Years	Tax collection	Tax revenue (per capita)	Tax revenue (SUS)	Tax pressure (% GDP)	Central Government fiscal pressure	Tax pressure Subnational governments	Contributions to Social Security
1999		147.00	1819.40				
2000	1675.00	184.00	2300.80				
2001	2380.00	279.00	3573.80				
2002	2759.00	320.00	4184.50				
2003	2975.00	284.00	3778.60				
2004	3349.00	287.00	3892.20		10.4	0.7	2.8
2005	4046.00	334.00	4579.80		10.9	0.7	2.7
2006	4686.00	387.00	5407.40		11.2	0.6	3.3
2007	5344.00	395.00	5617.40	15.66	11.7	0.6	3.5
2008	6409.00	432.00	6255.70	15.83	11.5	0.7	3.4
2009	6890.00	477.00	7027.00	16.56	12.4	0.8	3.3
2010	8070.00	559.00	8397.80	17.39	13.1	0.7	3.7

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Years	Tax collection	Tax revenue (per capita)	Tax revenue (SUS)	Tax pressure (% GDP)	Central Government fiscal pressure	Tax pressure Subnational governments	Contributions to Social Security
2011	8894.00	658.00	10 042.90	18.66	12.5	0.7	5.0
2012	11 216.00	868.00	13 471.40	20.66	14.1	0.8	5.4
2013	12 638.00	887.00	13 999.50	20.54	14.6	0.8	4.8
2014	13 523.00	919.00	14 736.30	20.27	14.4	0.8	4.6
2015	14 341.00	1171.00	19 059.70	21.96	15.9	1.0	5.1
2016	13 388.00	1087.00	17 962.50	19.83	14.2	0.9	4.7
2017	13 680.00	1095.00	18 363.70	19.82	13.7	0.9	5.2
2018	15 145.00	1106.00	18 830.20	20.40	14.6	1.0	5.2
2019	14 268.00	1125.00	19 422.70	20.10	13.6	1.00	5.50
2020	13 313.00						
Promedio	8523.29	590.95	9214.70		13.92	0.86	4.54

Source: SRI (2020a), Landázuri (2019).

Likewise, considering that the tax burden:

It not only obeys tax legislation. It is also influenced by non-tax regulations (labor, for example), tax administration, and taxpayer compliance, as well as the level, composition, and distribution of economic activity and income. (Rodríguez & Ávila, 2017, p. 119)

According to data in Table 1, the tax burden for 2018 was 20.40 % and in 2019 it was 20.1 % (latest data), observing an increase from 2007 of 4.4 % to 2019. On the other hand, the fiscal pressure borne by taxpayers from the Central Government in 2019 reached 13.6%, subnational governments 1 % and the contribution to social security 5.2 %, deducing that there is greater fiscal pressure on social security and taxes. Therefore, the increase in the tax burden can "significantly limit the possibilities of investment and the creation of companies with a sustainable trend in the long term" (Sarmiento, 2010, p. 202), as well as reduce income.

The taxpayers with the highest business participation are the microenterprise sector (latest data) with 90.81 %, small business 7.13 %, Medium-sized business "A" 0.95 %, Medium-sized business "B" 0.64 % and large business 0.47 %; where 42.66 % are service companies and 34.93 % trade, Agriculture, livestock, forestry, and fishing 10.38 %, Manufacturing Industries 8.38 %, Construction 3.43 %, Mining and Quarrying 0.22 % (Directory of Companies- DIEE, 2018, in INEC, 2020). On the other hand, on average, companies close between the third and fifth year of existence, which influences tax collection (Alcivar & Saines, 2011), that is:

The chances of survival for microenterprises reach 52.7 % and for small enterprises 32.1 % and for medium enterprises A 25.8 %, Medium enterprises B 25%, and large enterprises 17.9 %, with the inverse relationship between size and the birth/death rate of the companies. (INE, 2017, p. 64).

The entry rate during 2010 to 2015 in the manufacturing sector was 20.66 % and exit 11.57 %, relatively lower than the rest of the sectors, but higher than 10 % (table 2).

Table 2. Business entries and exits (percentage) 2010-2015

Sector	Entry rate	Exit rate	Difference
Construction	38.65	24.91	13.74
Mines	37.07	18.13	18.94
Services	28.94	17.12	11.82
Commerce	24.16	11.64	12.52
Manufacture	20.66	11.57	9.09
Average	29.90	16.67	13.22

Source: INEC (2017, p. 70)

According to data from INEC (2020), total sales in 2018 (latest data available) in the commerce sector has the highest participation with 38.08 %, followed by services (24.40 %), manufacturing (21.43 %), mining, and quarries (6.85 %), agriculture, livestock, forestry, and fishing (5.75 %) and construction (3.49 %); sales being higher in large companies 71.97 %, small companies 11.29 %, medium-sized companies B 9.65 %, medium-sized companies A 6.15 % and micro-companies 0.93 %.

Therefore, it can be deduced that sales levels influence business liquidity. However, financial liquidity may be subject to tax burden and fiscal pressure; as the tax burden is high, a percentage of the liquidity could be used to pay taxes, which could affect profitability and investment.

Regarding profitability, authors such as Fernández (2004a) and Chen et al. (2010):

> How companies with higher profitability will have greater incentives to deploy strategies to reduce their tax burdens, showing a greater divergence between nominal and real rates. Finally, tax risk could also explain the behavior of companies in the tax order and be a moderator of more aggressive tax practices. (Monterrey & Sánchez, 2015 cited in Monterrey & Sánchez, 2020, p. 223)

With this background, the research sought to answer the question: How does a high tax burden affect the economic liquidity, profitability, and investment of taxpayers in Ecuador in times of pandemic-Covid-19, and what is the relationship with the economic cycle?

After a bibliographic review, different studies are observed in different countries, such as Belloso (2010) who analyzes the transaction tax; Sarmiento (2010) the tax burden; Pecho and Peragón (2013) and Quispe et al. (2019) evolution of tax reforms; Crespo (2016) the different ways to calculate the tax burden; Monterrey and Sánchez (2017) the relationship of the tax pressure on investment; Salto et al. (2018) the benefits of the taxes; Márquez et al. (2018) the effects of tax reforms on collection; Monterrey and Sánchez (2020) the evolution of the fiscal pressure; Rodríguez and Ávila (2017) distribution of the tax burden; Piedra et al. (2016) characterize taxpayers; Cardoso and Funchal (2011) evaluate the effect of labor and tax regulation; Llamas et al. (2019) measure the effect of income tax; Lima and Resende (2019) verify the taxes that contribute the most to the tax burden; Chávez and López (2019) analyze the factors that affect real estate collection; Brito-Gaona and Iglesias (2017) show about the increase in taxes and public spending.

It is important to highlight the research carried out by Sarmiento (2010, p. 204) who mentions "that a level of tax burden adversely affects the financial situation"; in this framework, Crespo (2016) and Quispe et al. (2017) show the different taxes that make up the tax burden in the case of Ecuador, and Monterrey and Sánchez (2017)

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state that "future tax payments are an additional motivation to adopt an investment"; Márquez et al. (2018, p. 3) "show the incidence of the tax burden on taxpayers due to tax changes"; Ruiz-Vargas and Navarro-Morato (2016, p. 109) state that there is an effect on income tax when the rate is deducted; and Brito-Gaona and Iglesias (2017) show that tax pressure "has significant effects on private investment".

In this way, the research with the practical and theoretical background aimed to determine the effect of the tax burden on the liquidity, profitability, and investment of taxpayers in Ecuador during the Covid-19 pandemic and its relationship with the economic cycle, is relevant given that most of the studies were carried out before the pandemic and foreign investment is considered in almost exclusively and very little consideration is given to internal investment. For this reason, it was proposed as a general H1 hypothesis: high rates, types, changes, and Covid-19 significantly affect the income, profits, and investment of taxpayers and secondary taxpayers. High tax rates negatively influence taxpayers' income; H1b high rates and various types of taxes have a negative effect on taxpayers' liquidity, profitability, and investment because they reduce investment and profitability and affect liquidity; H1c changes in taxes and rates generate reductions or increases in income, profits and investment depending on the degree of significance of the type of tax; H1d the presence of an external factor such as Covid-19 significantly influences income, and H2 there is a direct relationship between the economic cycle and the tax collection cycle.

1.1. Theoretical aspects

The investigation understands that a taxpayer "is the natural or legal person to whom the law imposes the tax obligation for the verification of the generating event" (National Congress, 2018, Art. 25).

Executive Decree 1021 published under Official Registry No. 173 of March 31, 2020, reforms the Regulation for the Application of the Internal Tax Regime Law (LORTI) D.E. 374, R.O 209 of June 8, 2010, defines a monthly withholding on the total taxable income. The Organic Law for the Reactivation of the Economy, Strengthening of Dollarization and Modernization of Financial Management (2017) R.O.l No. 150 of December 29, 2017, mentions that there are two types of taxpayers:

> 1) Natural persons: a) obliged to keep accounting (income greater than $ 100,000 or working capital greater than $ 60,000 and annual costs and expenses greater than $ 80,000 (Art. 37) and b) taxpayers required to keep accounts of income and expenses (Art. 38). 2) Legal persons: companies. (National Assembly of Ecuador, 2018, Art. 98)

Regarding legal persons, the law obliges taxpayers to keep accounts and pay a set of taxes depending on the type of activity; for instance; Corporate Tax (22 %), Income Tax (25 %) of total taxable income and subject to a reduction of 10 % for reinvestment and 15 % for profit distribution); Tax on the currency leaving the country (5 %); Value added tax (12 %); Property tax; Municipal tax on total assets (0.12 %), among others. From this perspective, liquidity is "the ability of the company to generate resources that allows it to meet its short-term commitments" (Díaz, 2012, p.139).

In article 98 of the 2018 Tax Code of Ecuador, liquidity is "the degree to which a company can meet its current obligations, it is the measure of its short-term liquidity" and "that liquidity refers to the solvency of the overall financial position of the organization, which translates into the facility for the company to pay its debts" (Nava, 2009, p. 613).

Profitability "is the relationship that exists between profit and the investment necessary to achieve it" (Zamora 2008, p. 57), it is "a coefficient that measures the profit

generated by an investment" (Parada 1988, p.15). In this way, "Investment decisions are based on expected profitability" (Monterrey & Sánchez, 2020, p.198).

Roca et al. (2004, p. 33) mention that the impact or effects of the tax burden can be measured in four ways: "i) market equilibrium, ii) the profitability of formal and informal companies in the sector, iii) tax collection, and iv) the budget and well-being of the users". The impact on the profitability of the companies consists of "estimating the cost structure, through cash flows and the profit and loss statement" (Roca et al., 2004, p. 46), and the impact on Tax collection involves "considering the two models of both costing and tax incidence analysis" (Roca et al., 2004, p. 46).

With this background, the research considered measuring the impact through the effects of the tax burden on the liquidity, profitability, and investment of companies in a qualitative and quantitative manner, since the effect is a chain that begins in the tax reforms enacted by the different governments, where taxes and their rates are modified, which would bring as a consequence variation in income flows, profits, profitability, investments and prices, the labor force and, finally, in the economy.

2. Methodology

The inductive method was used and has a causal-explanatory level. A survey was conducted with 381 taxpayers, corresponding to the size of the sample, of which 307 were validated, the difference corresponds to questionnaires not completed in their entirety that are considered as lost cases; the 307 valid surveys were treated statistically. The selection of the subjects was random considering the SRI taxpayer database with cutoff to 2019 and a zonal stratification through urban parishes (Table 3).

Table 3. Population and sample

Type of taxpayer	Class of taxpayer	Total population	Sample size	Effective sample size	% effective sample	Strata
Special	Societies	374	4	5	2	Parroquia Lizarzaburo
	Natural person	46	0	0	0	Parroquia Veloz
Others	Societies	2023	20	1	0	Parroquia Maldonado
	Natural person	27 256	262	175	57	Parroquia Velasco
RISE	Natural person	9804	95	126	41	Parroquia Maldonado Centro
Total	Total	39 503	381	307	100	Total

Source: Own elaboration

Information was collected in different parish areas; the elaboration of the questionnaire responds to the operationalization of variables; the questionnaire considered Likert-type measurement scales of 5 points, it has a global Cronbach's Alpha index of 0.899 (89.9 %) that corresponds to an internal or content validation, considering that "the values are acceptable when they are equal to or greater than 0.70 and less than or equal to 0.90" (Campo-Arias & Oviedo, 2008, p. 837); and also correspond to an external evaluation through a pilot test carried out on 20 expert taxpayers and two tax

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specialists, their analysis allowed improvements in the questions. The consistency of each section of the questionnaire is presented in Table 4.

Table 4. Consistency of the questionnaire by sections

Questions	Cronbach's alpha	Cronbach's alpha based on standardized elements	No. of elements
Characterization of taxpayers	0.834	0.781	12
Accounting elements	0.687	0.695	6
Tax Types	0.897	0.900	23
Income, expenses, savings and investment	0.806	0.816	8
Destination of savings	0.747	0.746	6
Motivation for tax compliance	0.829	0.829	7
Causes	0.872	0.872	11
Effects edit	0.883	0.883	11
Tax culture	0.823	0.823	13
Quantitative values on sales, expenses, profits, payment of taxes	0.609	0.843	13

Source: Own elaboration

For the analysis and demonstration of the hypotheses, we applied regression models considering that the effects are related to: wealth, income, and consumption. Regarding the types of rates, two are considered: public services and tax rates, where contributions can be direct or indirect, and finally, in relation to their incidence, companies should be considered from the point of view of their tax burden and tax pressure, giving rise not only to the economic effect but also to the legal aspect of taxes (Sarmiento, 2010).

Thus, the multinomial logistic regression model was used for qualitative data and linear regression for quantitative data.

3. Results

3.1. *Geographic characterization and concentration of taxpayers*

The city of Riobamba in the Chimborazo province, Ecuador, has a population, according to the last population census of 2010 (INEC, 2020), of 234,170 inhabitants, which represents 49 % of the total population of the province of Chimborazo. According to a projection for 2020, there were 264,048 inhabitants, which would represent 50 %.

There are around 39,503 active taxpayers for 2020 (data that may change depending on the update of the SRI) located in the different parish areas of the city of Riobamba that carry out different economic activities at the local, provincial and national levels. They have their production, transformation, and commercialization plants located in five urban parishes: Maldonado parish, Lizarzaburo parish, Velasco parish, Veloz parish, and Yaruquies parish. The research reveals that there is a higher concentration of taxpayers in the Lizarzaburo parish at 40.4 %, followed by the Velasco parish with 23.8 %, Maldonado parish with 18.9 %, Veloz parish with 14.7 %, and Yaruquies parish with 2.3 % (figure 1).

Figure 1. Geographic concentration of taxpayers
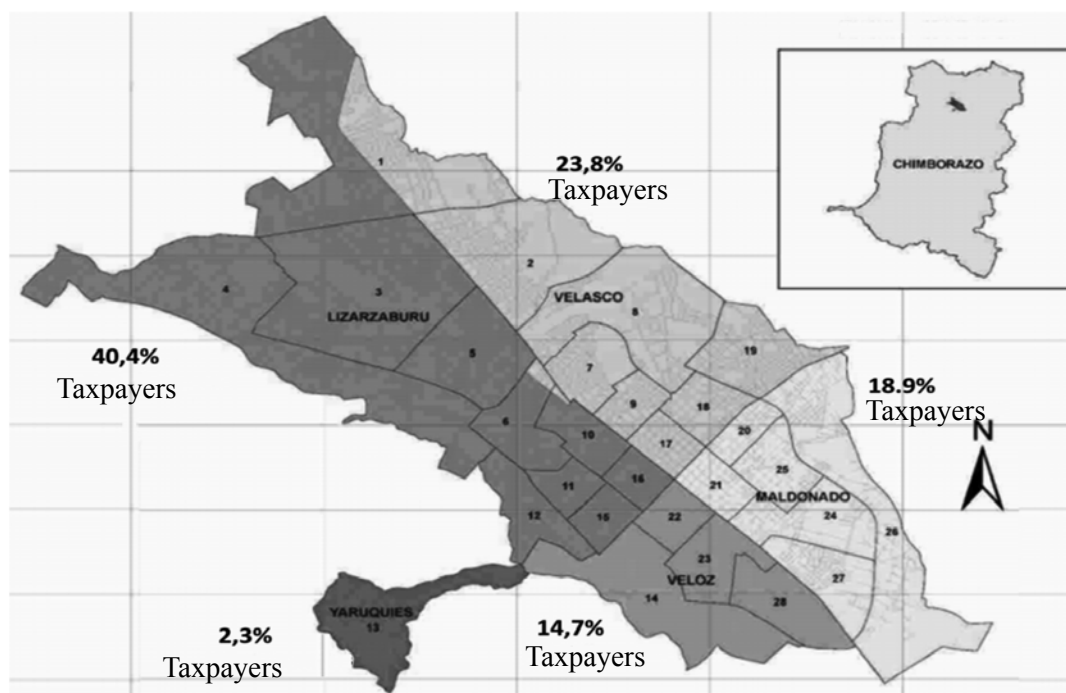
Source: Own elaboration

3.2. *Participation of taxpayers in economic activities*

Commerce is the activity with the highest participation 46.9 %, followed by services 35.8 %, constructions 8.1 %; cooperatives 5.9 %, manufacturing industry 2 %; exploitation of mines and quarries 0.7 %; agriculture, livestock, forestry, and fishing 0.7 % (table 8).

### 3.3. *Classification of taxpayers*

The results show that the taxpayers classified by type of legal constitution are the following: 53.19 % are individual; 28.76 % society; 17.26 % family and 0.98 % other. Likewise, 41.04 % belong to the Simplified Tax Regime (RISE); 57 % General Regime (RG); 1.63 % Special and 0.33 % others. When performing a crossing of variables: 1) 54.6 % individual taxpayers belong to RISE, 44.8 % RG, 0.6 % special; 2) those of society, 14.6 % RISE, 85.2 % RG, 1.1 % special, and 3) family, 47.2 % belong to the RISE, 47.2 % RG and 5.7 % special. Deducing that RISE taxpayers are mostly individuals (70.6 %); in the General Regime (47.2 %) and Special Regime they are family (60 %).

3.4. *The components of the tax burden and their relationship to taxpayers' income*

The tax burden allows:

Estimate the relative weight of each item on total sales or income, then weigh, individually, by the corresponding tax rates that it affects, with which finally the net tax incidence is obtained as a percentage of total income. (Roca et al., 2004, p. 23)

The results show that the tax burden is made up of 23 types of taxes, the most significant being: Income Tax (78.2 %), Value Added Tax (73 %), Municipal Patent Tax (57.7 %), Tax to the Urban Property (47.9 %) (figure 2).

Figure 2. Tax burden of taxpayers (Expressed in percentage)
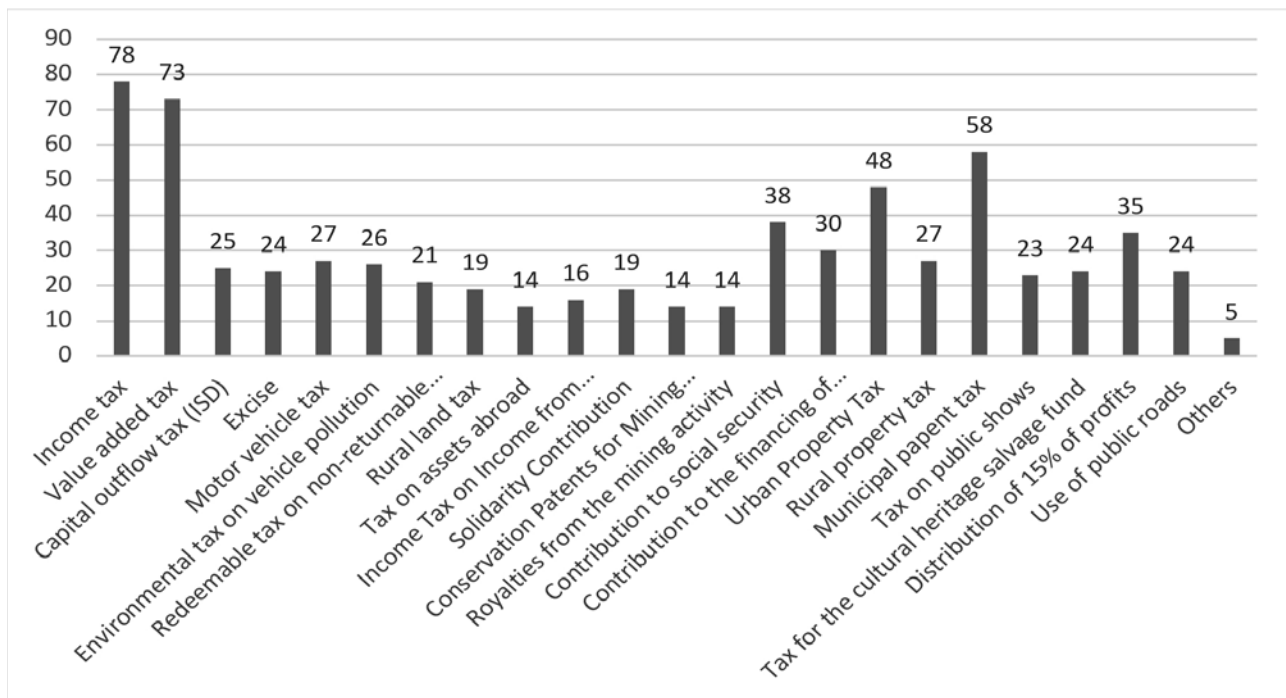
Source: Own elaboration

Likewise, the average monthly income of taxpayers reaches an average of $ 24,329 per month and $ 149,457.87 per year; in 2020 they were affected by the pandemic, causing the dissolution or liquidation of the companies. The data shows that around 0.7 % of the companies registered with the Superintendency of Companies were dissolved or liquidated (Superintendency of Companies, 2020). Consulting taxpayers, 47.7 % agree that tax rates are high, 45.6 % agree that there exist various types of taxes, and 44 % agree that they affect their income (table 5).

Table 5. Variables related to taxes and taxpayers' income (percentage)

Variables	Strongly disagree	Disagree	Indifferent	Agree	Strongly agree	Total
V1. High tax rates	4.20 %	10.10 %	22.10 %	47.60 %	16.00 %	100.00 %
V2. Various types of taxes to pay	2.00 %	10.10 %	27.60 %	45.60 %	14.70 %	100.00 %
V3. Affects the company's income	5.20 %	7.50 %	26.10 %	44.00 %	17.30 %	100.00 %
Model 1 a. Dependent variable: Affects the income of the company b. Predictors: V1 high tax rates	R squared 0.339	Adjustment Sig. 0.000	Deviation 0.000	Contribution to the explanation Agree 73.30 % Beta 2.836 Sig. 0.000	Contribution to the explanation strongly agree 58.50 %	Contribution to the indifferent explanation 40.00 % Beta 2.923 Sig. 0.000

Source: own elaboration

The polynomial logistic regression model applied to the categorical variables; the results allow to show that H1a high tax rates (fiscal pressure) significantly affects the income of taxpayers in 33.9 % (Dependency Sig. 0.000) deepening in 2020 as a consequence of restrictions due to the Covid-19 pandemic. In addition, an increase in tax rates would represent a reduction of 0.257 in income, and an increase in the total number of taxes would affect a reduction of income by 0.542, therefore the tax burden negatively affects taxpayers.

3.5. Qualitative measurement of the effect of the tax burden and pressure on liquidity, profitability, and investment

The application of the multinomial logistic regression model to independent variables: high rates and types of taxes; Dependent variables: income Model 1, profit Model 2, investment Model 3. The results of Model 1 show that high tax rates affect income by 33.9 % (R2 = 0.339 Sig. 0.000). In Model 2, it affects the reduction of profits by 30.2 % (R2 = 0.302 Sig. 0.001) with a ratio of 55 % (R = 0.550). In Model 3 it affects the reduction of investment by 28.9 % (R2 = 0.289 Sig. 000) with a ratio of 44.1 % (R = 0.441) (table 6). This means that H1b high tax rates and various types of taxes have a negative effect on the liquidity, profitability, and investment of taxpayers is true, because they reduce investment and profitability and affect liquidity. In addition, the taxpayer has the obligation to pay a set of taxes and not receive tax incentives that improve profitability. As mentioned by Hall and Dale (1967), tax incentives in investment are effective because a deduction of investment tax rates can stimulate an increase in investment in assets. Therefore, the increase in the tax burden on taxpayers discourages investment, affects liquidity and profitability and the dynamics of business development, exacerbating the economic crisis in a country affected by the Covid-19 pandemic.

Table 6. Results of the regression model

Model	R squared	Sig.	Pearson	High rates Indifferent	Type of taxes Agree
Model 1. (Y1) Affects income	0.339	0.000	0.000	Beta 2.836 Sig. 0.000	Beta 2.923 Sig. 0.000
Model 2. (Y2) Reduction in profits	0.302	0.000[b]	0.550	Beta 2.808 Sig. 0.001	Beta 1.800 Sig. 0.001
Model 3. (Y3) Reduction in investment	0.289	0.000	0.441	Beta 3.670 Sig. 0.000	Beta 1.574 Sig. 0.000

Source: Own elaboration

3.6. Quantitative measurement of the tax burden

The application of linear regression to the quantitative data of the variables shows that the tax burden significantly affects income in 93.1 % (R^2 = 0.931, R = 0.965, Sig. 0.000); financial liquidity 92.6 % (R^2 = 0.926, R = 0.962, Sig. 0.000); and profitability in 91.2 % (R^2 = 0.912, R = 0.955, Sig. 0.000); and not investment (0%) (table 7).

Table 7. Quantitative measurement of the impact of the tax burden

Summary				
Model	**R**	**R squared**	**Adjusted R squared**	**Sig.**
Income	0.965[a]	0.93	0.93	0.000[b]
Liquidity	0.962[a]	0.93	0.93	0.000[b]
Cost effectiveness	0.955[a]	0.91	0.91	0.000[b]
Investment	0.001[a]	0.00	0.00	0.000[b]
a. Predictors: (Constant), How much is the company's tax payment? Annual (dollars)				

Source: Own elaboration

It means that a high tax burden has a significant negative effect on taxpayers' liquidity and profitability, but it does not have a negative effect on investment, and this becomes more acute when there is a pandemic, H1b being true.

3.7. *Effects of taxes and tax rates*

It is identified that H1c changes in taxes and tax rates generate reductions or increases in income, profits, and investment depending on the degree of significance of the type of tax (table 8), where: an increase in income tax can reduce investment by 19.8 %, profits by 1.7 %; however, it would not have an effect on income, since it is not a significant determinant (Sig. 0.823). On the other hand, the reduction of the Value Added Tax would increase investment (15.9 %), profits (4.8 %), and income (3.7 %) although the profit and income do not depend on VAT. The solidarity contributions would have a significant effect on the reduction of the investment (25.0%) and profits (19.4), such as the contributions destined for the comprehensive financing of cancer treatment, it would reduce the profits by 15.5 % and the Tax for the heritage salvage fund would affect in revenue by 14.6 %. Also, it is observed that an increase in conservation patents for the mining concession would significantly increase income by 15.4 %, in the same way, the Tax on patents would increase profits (14.9 %) and income (12.9 %), and the payment for the occupation of public roads would increase by 13.7 %. Finally, an increase in tax rates would reduce investment by 14.2 %, profits by 18.9 %, and affect income by 47.8 %. Also, it is observed that an increase in conservation patents for the mining concession would significantly increase income by 15.4 %, in the same way, the Tax on patents would increase profits (14.9 %) and income (12.9 %), and the payment for the occupation of public roads would increase by 13.7 %. Finally, an increase in tax rates would reduce investment by 14.2 %, profits by 18.9 %, and affect income by 47.8 %.

Table 8. Coefficients of the regression models

	Non-standardized coefficients	Standardized coefficients	t	Sig.	Non-standardized coefficients	Standardized coefficients	t	Sig.	Non-standardized coefficients	Standardized coefficientss	t	Sig.
	B	Beta			B	Beta			B	Beta		
	Reduce investment				Reduce profits				Affects income			
(Constant)	2,864		5,831	,000	2,682		6,018	,000	2,352		6,006	,000
Income tax	,198	,169	2,539	,012	,017	,016	,241	,809	-,014	-,013	-,224	,823
Value added tax	-,159	-,144	-2,234	,026	-,048	-,047	-,743	,458	-,037	-,036	-,649	,517
Capital outflow tax (ISD)	,111	,091	1,214	,226	,248	,220	2,984	,003	-,078	-,069	-1,070	,286
Excise	-,020	-,017	-,219	,827	-,157	-,145	-1,861	,064	-,024	-,022	-,324	,746
Motor vehicle tax	-,008	-,007	-,082	,935	-,057	-,057	-,671	,503	,056	,055	,740	,460
Environmental tax on vehicle pollution	-,074	-,068	-,835	,405	,011	,011	,137	,891	,108	,109	1,543	,124
Redeemable tax on non-returnable plastic bottles	,036	,030	,368	,713	-,031	-,028	-,346	,730	,190	,170	2,439	,015
Rural land tax	,085	,070	,817	,414	-,018	-,016	-,192	,847	-,099	-,088	-1,197	,232
Tax on assets abroad	-,159	-,106	-1,213	,226	-,064	-,047	-,542	,589	,184	,133	1,765	,079
Income Tax on Income from Inheritances, Bequests, and Donations	-,088	-,062	-,819	,414	-,051	-,039	-,522	,602	-,137	-,105	-1,597	,111
Solidarity Contribution	,257	,218	2,674	,008	,194	,178	2,220	,027	,012	,011	,157	,875
Conservation Patents for Mining Concession	-,061	-,040	-,527	,599	-,044	-,032	-,421	,674	-,217	-,154	-2,345	,020
Royalties from the mining activity	-,018	-,012	-,147	,884	-,033	-,025	-,307	,759	-,033	-,025	-,344	,731
Contribution to social security	-,102	-,100	-1,234	,218	,017	,018	,229	,819	,108	,115	1,649	,100
Contribution to the financing of comprehensive cancer care	,114	,115	1,561	,120	,142	,155	2,140	,033	,093	,101	1,586	,114
Urban Property Tax	,004	,004	,051	,960	,005	,005	,072	,942	-,049	-,053	-,846	,398
Rural property tax	-,037	-,030	-,423	,673	-,117	-,103	-1,490	,137	-,046	-,040	-,666	,506
Municipal papent tax	-,012	-,012	-,185	,853	-,136	-,149	-2,250	,025	-,119	-,129	-2,231	,026
Tax on public shows	,044	,032	,413	,680	,083	,066	,856	,393	-,027	-,022	-,323	,747
Tax for the cultural heritage salvage fund	,029	,026	,313	,755	,088	,087	1,065	,288	,148	,146	2,041	,042
Distribution of 15% of profits	-,004	-,004	-,049	,961	-,036	-,038	-,441	,659	-,019	-,020	-,264	,792
Use of public roads	-,127	-,110	-1,549	,122	-,017	-,016	-,231	,817	-,145	-,137	-2,231	,026
High tax rates	,142	,129	2,216	,027	,189	,187	3,252	,001	,478	,471	9,378	,000

Source: Own elaboration

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3.8. *Effects of the tax burden and pressure due to the restrictions of the Covid-19 pandemic*

Data shows that 2020 taxpayer income was medium 62.9 %, low 26.7 %, and high 10.4 %. The application of linear regression shows that the average levels of income influence (Sig. = 0.006) the amount of taxes to be paid by 2 % (R^2 = 0.024), also, the changes that income may undergo due to the Covid-19 pandemic would significantly increase (sig. 0.006) the payment of taxes by 15.6 %. Therefore, H1d the presence of an external factor such as Covid-19 significantly influences income (figure 3).

Figure 3. Effect of tax burden and pressure
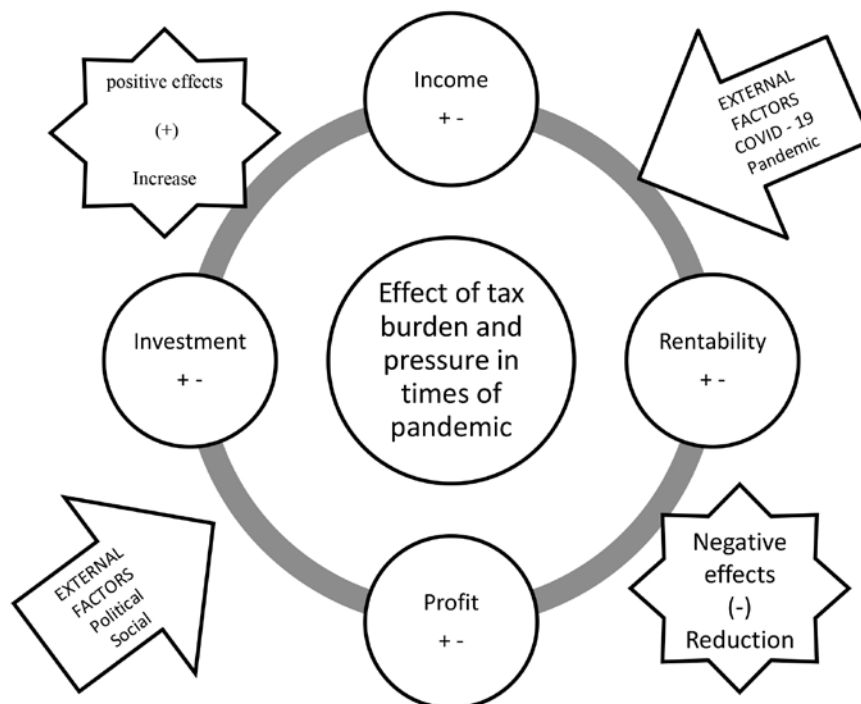
Source: Own elaboration

4. Discussion and conclusions

The results allow corroborating that "there is empirical evidence that shows the negative effect that taxes have on the economy" Serrano (2009, p.133) and there are "significant negative effects of taxes on economic activity" Blanchard and Perotti (2002, p. 1329); on the other hand, variations in tax rates can have a "positive influence on foreign direct investment" (Klemm & Van, 2010, p. 5), however the same does not happen with domestic investments.

In this context, it is evident that the tax burden and pressure has a negative effect on income, profitability, and investment. On the other hand, if these were reduced, they would contribute to the improvement not only of income and profits but mainly it could become a motivating element for investment, as Cardoso and Funchal (2011, p. 152) mention, the "effect of the tax regulation on investments, the results show that there is statistical significance and that a reduction in the tax burden, measured by taxation on business profits, can raise investment levels".

On the other hand, the presence of significant effects on the investment of taxpayers shows that "tax pressure has significant effects on private investment". Brito-Gaona and Iglesias (2017, p.153) and Caballero and López (2012) concluded that the "Income Tax and the Value Added Tax seem to have a direct and not an inverse relationship with private investment" (p. 54); However, it is true that "Income Taxes have a perverse effect on private investment decisions, therefore, on economic growth and employment" (Caballero & López, 2012, p. 62), as was also found in the present investigation.

Finally, in H2 there is a direct relationship between tax collection and the economic cycle because both the pressure and the tax burden fall on collection. There is a direct relationship between tax collection and GDP in 63.2 % and explains 39.9 % (R = 0.632, R2 = 0.399), with a dependency (Sig. 0.000); that is, if there is an increase in GDP, there is also an increase in collection or vice versa, although it may be proclive, as is also the case in other countries (figure 4). However, there are problems for collection due to factors such as "the economic structure and level of development, political institutions, cultural and ideological aspects and the relationship between the State and society" (Gómez, 2009, p. 36). State intervention is important to generate tax policies that regulate the tax burden and pressure which improves the economy through the creation of a "tax culture based on management control, information integration and social equity" (Mejía et al., 2019, p. 1152).

Figure 4. Economic cycle GDP and tax collection (2000-2020)
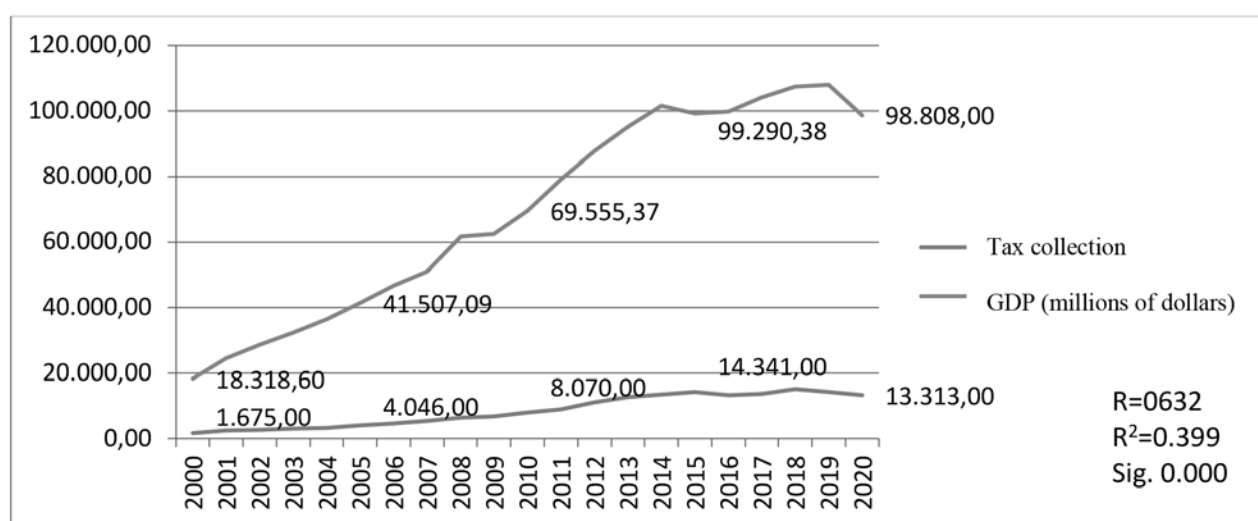
Source: Own elaborationINEC, 2021.

Therefore, it is shown that it is true that tax burden and pressure has a negative impact on liquidity, profitability, and investment because a variation in the rates and in the number of taxes significantly influences those aspects, since a high tax burden not only reduces liquidity and profitability but also investment, affecting the economic cycle. This means that the impact of the tax burden is not only related to the impact on the distribution of real income from taxes (Pablo et al., 2006) but also to the impact on the subject (taxpayer) who "really supports the burden of the tax causing his/her profitability to be diminished by the tax effect" (Sarmiento, 2010, p. 208) since it presupposes a reduction in liquidity, since most cash is directed towards the payment of taxes. In this way, the research shows that the collection and business performance depend on the variations in the tax burden and pressure that taxpayers have, and has a direct relationship with the economic cycle, because the increase in tax obligations can affect the

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profits and investment in a positive or negative manner as well as the economy since one of the factors of economic growth is related to business development and this can only happen if there is business success. This will depend on factors such as:

> Organizational culture, the way in which they reacted to the conditions of the environment, the availability of resources, the decisions they make, the reduction of risk, and the use of the business opportunities they have. (Tapia-Alba & Chiatchooua, 2021, p. 9)

The research shows that the pressure and tax burden have a negative effect, however, tax incentives can have a positive effect:

> Since by not paying taxes, liquidity increases, thus having more resources to meet commitments. On the other hand, solvency is improved, since it reduces in a significant amount the liabilities for Income Tax. (Yaguache et al., 2019, p. 377)

This affects the income of the economy. Therefore, the economic cycle also depends on collections, which has a significant positive and negative effect on the business activity and performance of taxpayers and not only on tax collection, but at the same time affects the economic cycle of a country, since it was determined that there is a direct relationship.

Therefore, we conclude that:

The type and number of taxes that people are obliged to pay as a RISE, RG, or special taxpayer has an effect on the decrease of investment, profit, and income.

Variations in Income Tax, Solidarity Contribution, and the increase in tax rates significantly decrease investment, while the Value Added Tax stimulates investments.

There would be a reduction in profits due to changes in the Tax on the Outflow of capital, Solidarity Contributions, Contribution to the financing of cancer treatment, and an increase in tax rates; however, the Patent Tax would increase profits.

There is a negative effect on taxpayers' income as a consequence of the changes in the Tax for the Fund for the Salvage of Cultural Heritage, occupation of public roads, high tax rates. On the other hand, it is positive when there is an increase in Conservation Patents for Mining Concession, Tax on municipal patents, Tax for the cultural heritage salvage fund and Occupation of public roads.

It is evident that tax pressure has a significant effect on taxpayers' investment and there is a direct relationship between tax collection and the economic cycle in Ecuador.

The limitations of this research are related to access to updated and disaggregated data, because the limited access to accounting information of taxpayers who are not obliged to keep accounting, has meant that this segment is not considered in the research, which represents the need to deepen and broaden the study to this segment and to other regions of Ecuador in order to compare the results and reach a generalized conclusion.

One of the possible lines of research created by this study is the approach and deepening of the taxpayer's behavior in the context of taxation at the national level.

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