Impact of Trade Liberalization on Tax Revenue Mobilization: Case of Morocco

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Résumé
Le présent travail cherche à explorer la relation entre l’ouverture commerciale d’un pays et le niveau de ses recettes fiscales et budgétaires. La revue de littérature montre qu’il n’y a pas de consensus quant à la relation entre la libéralisation commerciale et les recettes fiscales d’un pays. Ce papier fait appel à une estimation économétrique par l’estimateur des doubles moindres carrés, traitant une série chronologique pour la période 1985-2019. Les résultats montrent que le Maroc ne profite pas pleinement de sa libéralisation, en effet lasignature des ALE et le manque de compétitivité des exportations impact négativement les recettes fiscales du Maroc, suite à la réduction voire même la suppression des droits de douane. Ainsi ce constat, oblige le pays à trouver des solutions à travers des réformes commerciales et fiscales dans le but de remédier aux effets négatifs de la libéralisation par lacomplementation des pertes douanières à travers des politiques de transition fiscale.

Mots clés : Libéralisation commerciale ; Recettes fiscales ; Accords de libre-échange ; Droits de douane.
Abstract
This work seeks to explore the relationship between the trade openness of a country and the level of its fiscal and budgetary revenues. To verify this relationship, we focus on the case of Morocco. This paper uses an econometric estimation by the two-stage least squares estimator, dealing with a time series for the period 1985-2019. The results show that Morocco does not take full advantage of its liberalization. Indeed, the signing of FTAs and the lack of export competitiveness negatively impact Morocco’s tax revenues, following the reduction or even the abolition of customs duties. Thus, this observation obliges the country to find solutions through trade and tax reforms in order to remedy the negative effects of liberalization by compensating for customs losses through tax transition policies.

Key words: Trade liberalization; Tax revenues; Free trade agreements; tariffs

INTRODUCTION
The openness of a country is considered conducive to its development insofar as it increases the efficiency of its economy while widening the set of possible choices for national agents. Morocco is among the countries that have opted for a liberal model with a strong external openness, oriented particularly towards Western countries for a long time. Such commercial openness is materialized by the signing of a panoply of free trade agreements and a multitude of integrations into free trade areas with the European Union (EU) in the mid-1990s, then with the countries Arabs (Agadir agreement), the United States and Turkey.

The opening of the Moroccan economy has made it possible to achieve significant progress in terms of strengthening trade, attracting foreign direct investment and modernizing the national productive fabric. Nevertheless, the fiscal incidents of this decision were not favorable enough for the country's budget revenues. The relationship between trade liberalization and tax revenue has been the subject of intense debate within the theoretical and empirical literature, these studies often focus on its economic and social effects only. This makes this problem a major concern for policymakers, especially in developing countries that have an economic structure where fiscal resources may be limited and therefore,

Therefore, although economists widely recognize and accept that tariffs are a second-best method of achieving fiscal policy objectives, trade liberalization is often feared for a possible consequence due to the revenue loss potential following reforms tariffs (Michael et al., 1993).

The general objective of this paper is to analyze the impact of trade liberalization on the dynamics of the mobilization of total, internal and external fiscal resources. The specific aim is
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firstly to understand the factors explaining the convergence of tax revenues, and secondly to analyze the direct effect of liberalization on tax revenues. It then becomes important to ask about the effect of trade liberalization on Morocco's tax revenues. The objective of this research is to answer the following central question: To what extent does trade liberalization affect total tax revenue for the Moroccan economy?

Based on the work of Greenaway (1980); Blejer and Cheasty, 1990; Grossman & Helpman (1991); Srinivasan (2001); Khattry & Rao, 2002; Peters, 2002; we can assume that removing export taxes should reduce tax yield, but other measures could be considered to address this loss.

The research hypotheses are formulated as follows: The reduction in customs duties following the signing of Free Trade Agreements leads to a loss of overall tax revenue (H1); The tax and commercial reforms implemented by the Moroccan government will be able to reduce the fiscal influence of liberalization through the establishment of a fiscal transition policy (H2). And finally, in a context of openness, tax revenues can be improved by a trade reform aimed at increasing the competitiveness of Moroccan exports and the manufacture of products with a high technological content (H3). These hypotheses will be confirmed or invalidated after a theoretical study and an econometric analysis testing the impact of each variable on trade and tax revenues.

Based on an econometric research approach, we seek to highlight the impact of the degree of trade openness on the dynamics of public finances, particularly the mobilization of the country's tax revenue and mainly that of customs and the various flows of research involved in examining this topic.

1. LITERATURE REVIEW ON NON-TARIFF MEASURES

The theory of free trade clearly shows the development of the world economy through the opening of countries. However, the effect of this liberalization is not always favorable, it can have a negative impact on economic growth from the point of view of exposing the country to volatility in production and terms of trade, in certain specific sectors (Grossman & Helpman, 1991 and Srinivasan, 2001). In addition, trade openness is necessarily associated to a reduction, or even an elimination of taxes on goods and services (including tariffs and import duties), which can have a negative effect on the revenue collected by the State. Reducing these taxes
could lead to fiscal instability, particularly in developing countries (Khattry, 2003; Khattry & Rao, 2002; Peters, 2002; Blejer and Cheasty, 1990).

1.1. THE BUDGETARY AND FISCAL IMPLICATIONS OF TRADE LIBERALIZATION

Trade openness presupposes the abolition and/or reduction of customs duties, this alignment of national prices with world prices has a price effect on the national economy. Revenue from taxes on foreign trade would decrease after countries liberalize their trade. This finding is confirmed by numerous studies which point out that the reduction in import duties, associated with trade freedom, often leads to a drop in customs revenue, particularly for small open economies whose tax revenue tends to be dependent on international trade.

Peters (2002) investigates this issue and suggests that the revenue effect of taxes applied to trade is generally uncertain depending on many factors, such as; the position of customs duties and the level of elasticity of import substitution, it proves that trade liberalization leads to a reduction in commercial tax revenue and finally to a reduction in total tax revenue.

Ebrill et al (1999) mention that if liberalization is accompanied by the reduction of tariff dispersion, revenue from trade taxes could increase. This is often justified by lowering the highest prices and increasing the lowest ones, in order to bring them back to the average value of the goods requested. As a result, a reduction in tariff dispersion can lead to an increase in tax revenue.

Trade liberalization does not only involve the reduction or elimination of tariffs and quantitative restrictions, but it may also involve the reduction or elimination of an export tax. As in the case of tariff reduction, if reducing the export tax leads to a substantial increase in the volume of a country's exports, it can lower these trade taxes.

According to the literature of international trade, free trade is supposed to bring benefits to countries that encourage it. This by encouraging the creation of exchanges, the reduction of consumer prices, the improvement of the welfare of the countries and the competition for the national economy, which must help the internal markets to achieve greater efficiency (Viner (1950), Lipsey (1957), Kemp and Wan (1976), Wonnacott and Lutz (1989) and Krugman (1991))
and Summers (1991) Very few studies have paid attention to issues of the impact of trade liberalization, lower tax revenues, not only trade taxes, due to the reduction of tariffs, but also on domestic taxes due to erosion of tax bases.

This leads to controversy over whether liberalization is a potential source that can provide fiscal stability or instability, especially for countries that have trade-tax-dependent rates for their fiscal revenues.

1.2. TAX TRANSITION POLICY IN THE FACE OF TRADE LIBERALIZATION

In most developed economies where the domestic tax base is well structured, the loss of income can be easily compensated through increased consumption. Solution which remains more or less difficult to apply in less developed and developing countries, where national tax bases are poorly developed, and the tax on international trade is the main source of tax revenue, it remains difficult then to fill the gap to gain in tax revenue through other compensatory national taxes. There are generally two strategic choices to compensate for the loss of revenue resulting from the reduction in the customs tariff. Either, by resorting to an indirect internal tax, more specifically a consumption tax, or the application of a direct national tax.

Enthousiaste and Ligthart (1999, 2004) suggest that it is possible to improve tax revenue during the period of tariff reduction by coordinating the reduction in tariffs with a point-by-point increase in domestic consumption taxes. This must be accompanied by the establishment of several rigorous conditions, in order to guarantee an increase in both welfare and public revenue.

In their work on tariff and tax reforms, Keen and Lightthart (1999), developed a model to explain how to establish a simple and practical strategy to achieve the efficiency gains of tariff reform without reducing government revenues. The model considers a small open economy, which includes three sectors; a representative household, a competitive productive sector and a government. Under the hypothesis of a tax reform that stipulates a reduction in customs tariffs, and a simultaneous increase in the consumption tax of an exactly compensatory amount, they justify the modification of producer prices (due to the fall in tariffs), while consumer prices are entirely unchanged (due to a point-by-point increase in consumption taxes).
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Ebrill et al (1999) state that trade liberalization can affect goods and services tax revenues if imported goods, whose tariffs are reduced, are included, in a significant proportion, in the tax base interior. The conclusion of its impact depends on the volume of imports after trade liberalization.

Corporate income tax is supposed to be more important for less developed and developing countries. In these countries, corporate income tax is generally levied on large corporations that make considerable profits, moreover, taxing a few large corporations is administratively easy for the government in less developed and developing countries (Tanzi, 1987).

Unlike Keen and Ligthart (1999, 2004) who focus their study on compensating for the loss of tariffs using generalized consumption taxes, other studies propose a compensation strategy using other tax sources, which can serve as an alternative to the foreign trade tax.

Thus, Mujumdar (2004) considers the question whether the government can make up for a shortfall if it reduces a tariff on an intermediate input subject to imperfect competition. Reducing tariffs will lower prices and therefore improve the situation for consumers. Although the government increases the tax rate on profits in order to generate revenue to compensate for the shortfall, this will not affect the price and therefore does not reduce consumer welfare.

2. THE METHODOLOGICAL FRAMEWORK

2.1. CONSTRUCTION OF THE ECONOMETRIC MODEL

In the literature, several techniques have been used to study the impact of trade liberalization on tax revenue. Our study draws on the work of Ebrill and al. (1999) to show the link between trade and tax revenue. They explore the impact of trade liberalization on earnings using fixed effects panel regression.

Our basic equation takes the following form:

\[ PFT = b_0 + b_1 X + b_2 w + e_i \]

Where:

- **FTP** is total tax revenue as a percentage of GDP (Gross domestic product);
X represents trade variables as a percentage of GDP, such as; imports, exports and exchange rate;

W represents one or more other continuous variables, such as; GDP per capita, added values of agriculture, services and industry.

Baunsgaard and Keen (2005) use similar fixed effects regressions to assess the impact of trade liberalization on tax revenue. The dependent variable here is the domestic tax revenue which is regressed against a lagged dependent variable, trade tax revenue as a percentage of GDP and a vector X which includes GDP per capita, openness, inflation, aid per capita and agriculture as a percentage of total value added. Similar to what is advanced in the study by Ebrill and al. (1999), Baunsgaard and Keen (2005) include a dummy variable indicating whether the country has a VAT in place.

Gross domestic product

Bergstrand, Egger, and Larch (2013) show that countries' trade flows and GDPs are strongly correlated with their values observed in the case of bilateral Canada-US relations. On their part, Alaeibakhsh and Ardakani (2012) show that the gross domestic product (GDP) of trading countries represents both the production and consumption capacity which mainly determines trade flows between countries.

Agriculture Sector

When a country is heavily dependent on primary agricultural products, there may be an increased likelihood of the presence of export taxes on products from traditional export sectors (Burgess and Stern (1993)). As noted by Greenaway and Milner (1991) and Khattr and Rao (2002), removing export taxes should reduce tax yield, but other measures to promote exports could be considered, such as tax allowances likely to encourage an increase in exports and hence an increase in income.

Service sector

Agbeyegbe and al. (2006) use GMM estimation to evaluate the relationship between trade liberalization and tax revenue for a panel dataset of 22 Sub-Saharan African countries over the
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period 1980-1996. They find that the openness indicators are not significant in any case, that is, trade liberalization has no significant impact on trade tax revenues for this group of countries.

Industry Sector

The share of trade tax revenue in GDP varies according to the level of economic development of a country. Greenaway (1980) attributes an inverse relationship between trade tax revenue and the level of economic development to the level of industrialization of a country. According to the author, the maturity of infant industries leads to a general reluctance of countries to use trade taxes as a source of revenue.

Urbanization

Khattry and Rao (2002) highlight the structural constraints faced by many developing countries in relation to their level of urbanization and their aging dependency ratios. In Lewis's (1954) model of structural change, an economy becomes more urbanized as it grows. This increases its need and ability to tax, as the urban population demands the provision of additional public services and provides a targeted tax base through the economic activity generated.

Population

Alaebakhsh and Ardakani (2012) report that population can increase trade flows due to enlargement of market size. However, a large population can also mean low per capita income, therefore, it can negatively alter trade flows between countries.

Customs tariffs

According to Disdier et al (2008), discussions on trade liberalization always concern the reduction of customs tariffs which remain high. Customs tariffs considered as an instrument of commercial protection remain very important elements for countries that want to protect their national products. Greenaway and Milner (1991) and Khattry and Rao (2002) argue that removing tariffs reduces tax revenue.

Goods and Services Taxes

Taxes on goods and services are an important source of revenue for most developing countries (Ebrill, Keen, Bodin and Summers, 2001). A large part of the levies on taxes on goods and
services come from imports. In some countries, collections from imports represent half or more of the total collection of these taxes.

Export taxes

According to Ebrill, Stotsky & Gropp, 1999, there are three main arguments in favor of export taxes: First, they can be used as a substitute for income tax, especially in hard-to-tax sectors like agriculture. Second, they can be levied on windfall gains resulting from changes in international commodity prices. Third, for goods in which the country has market power, they can reduce supply and thus increase the price of the exported product. Overall, export taxes are primarily a means of raising revenue.

The imports

Agbeyegbe et al. (2006) showed that countries that import heavily are more likely to have more import tax revenue. This implies that when trade liberalization leads to an increase in imports, revenue may increase, and that trade liberalization should therefore not be accompanied by a decline in revenue.

Exports

The results found by Ebrill et al. (1999) highlight that a higher export share may be associated with an import pattern that is more focused on the use of imported inputs, which generally have lower tariff rates. On the other hand, higher exports are consistent with a more open trade regime and therefore a higher likelihood of associated pressure from exporters to limit tariffs.

The exchange rate

Dollar (1992) uses a cross-country index of real exchange rate depreciation to estimate 'outward orientation', using a measure of price levels compiled by Summers and Heston for 121 countries. They show that the downside that exists is the risk of exchange rate overvaluation by PPP because developed countries tend to have a comparative advantage in the traded goods sector (leading to higher exchange rates) which implies that traded goods cost more in developed countries than in developing countries using the same exchange rate.
The determinants of tax revenue will be analyzed empirically in 6 sub-equations of the model by regressing the share of tax revenue in GDP on the logarithm of GDP per capita (GDPPH), the logarithm of the size of the population (POP), the degree of urbanization (URB) the added value of the sectors of agriculture, industry and services, and by adding in each of the sub-equations one of the following variables: the share of exports and imports in GDP and finally the exchange rate.

By integrating these variables in each equation, we will have the following forms of models:

\[ PFT_{it} = a_0 + a_1 PFT_{i,t-1} + a_2 \log PIB_{it} + a_3 VAG_{it} + a_4 VAS_{it} + a_5 VAI_{it} + a_6 URB_{it} + a_7 \log POP_{it} + a_8 DD_{it} + \mu_t + \nu_t + \varepsilon_{it} \]

\[ PFT_{it} = a_0 + a_1 PFT_{i,t-1} + a_2 \log PIB_{it} + a_3 VAG_{it} + a_4 VAS_{it} + a_5 VAI_{it} + a_6 URB_{it} + a_7 \log POP_{it} + a_9 TBS_{it} + \mu_t + \nu_t + \varepsilon_{it} \]

\[ PFT_{it} = a_0 + a_1 PFT_{i,t-1} + a_2 \log PIB_{it} + a_3 VAG_{it} + a_4 VAS_{it} + a_5 VAI_{it} + a_6 URB_{it} + a_7 \log POP_{it} + a_9 TES_{it} + \mu_t + \nu_t + \varepsilon_{it} \]

\[ PFT_{it} = a_0 + a_1 PFT_{i,t-1} + a_2 \log PIB_{it} + a_3 VAG_{it} + a_4 VAS_{it} + a_5 VAI_{it} + a_6 URB_{it} + a_7 \log POP_{it} + a_9 TES_{it} + \mu_t + \nu_t + \varepsilon_{it} \]

\[ PFT_{it} = a_0 + a_1 PFT_{i,t-1} + a_2 \log PIB_{it} + a_3 VAG_{it} + a_4 VAS_{it} + a_5 VAI_{it} + a_6 URB_{it} + a_7 \log POP_{it} + a_9 PIB_{it} + \mu_t + \nu_t + \varepsilon_{it} \]

\[ PFT_{it} = a_0 + a_1 PFT_{i,t-1} + a_2 \log PIB_{it} + a_3 VAG_{it} + a_4 VAS_{it} + a_5 VAI_{it} + a_6 URB_{it} + a_7 \log POP_{it} + a_9 TCE{\text{R}}_{it} + \mu_t + \nu_t + \varepsilon_{it} \]

With :

- **PFT_{it}**: represents tax revenue as a percentage of GDP;
- **\log (POP)_{it}**: is the logarithm of the population size;
- **\log (PIBPH)_{it}**: is the logarithm of GDP per capita;
- **VAG_{it}**: is the value added of the agriculture sector;
- **VAS_{it}**: is the value added of the services sector;
- **WILL**: is the added value of the industry sector;
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- **URBit**: is the degree of urbanization;
- **DD**: customs tariffs;
- **TBS**: taxes on goods and services;
- **YOU**: is the export tax;
- **M_GDP**: imports as a percentage of GDP;
- **X_GDP**: exports as a percentage of GDP;
- **REER**: is the exchange rate;
- **μ_i**: the country fixed effect;
- **Vt**: the fixed effect over time.

Our study covers the period 1985-2019. The data used in this modeling comes from two data sources. The macroeconomic control variables come from the World Bank databases, while the tax revenue data come from the database of the Moroccan Ministry of Finance and Administrative Reform (MEF).

### 2.2. Choice of econometric estimator

The choice of estimator is very important in the context of statistical analyzes based on non-random samples which can lead to erroneous conclusions. We have null observations due to the absence of import and export flows to certain countries; deleting these observations risks creating a selection bias. We will therefore opt for an econometric estimator that can take into account the problem of zero flows: Two-stage least squares (2SLS).

We also note that the problem of endogeneity is still present in our econometric specifications. The explanatory variables relating to trade openness are endogenous. As a result, the ordinary least squares (OLS) method gives biased estimates in the presence of the endogeneity problem. To remedy this problem of violation of assumption, we use the estimator of the double least squares (DMC) which consists in identifying the endogenous variable while associating it with a panoply of instruments considered to be robust.
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The instrumental variable estimation method consists first of all in estimating the models using the DMC method. Then it is necessary to proceed to the endogeneity test via the Wu-Hausman test and finally, to validate the instruments by means of the Sargan test. This leads us to better explain the impact of trade liberalization on the structure and weight of Moroccan tax revenues.

In order to carry out the present modeling, we will start with an estimation of the econometric models; then it is necessary to statistically validate the robustness of the estimators (multicollinearity, endogeneity, validity of the instruments, etc.), finally, interpret the results obtained and formulate recommendations.

Before interpreting the results of our econometric model, we have tested whether we have a problem of heteroscedasticity. Indeed, the variance of the errors of our model is the same for all the observations. That is, the variance of the errors is the same regardless of the observation chosen. Thus, using the Durbin-Watson test, we tried to detect the residual autocorrelation problem. No problem was detected.

3. EMPIRICAL RESULTS

Despite the divergence of the theoretical and empirical literature on trade openness and its tax impact, it is clear that a definitive result can only be determined if we carry out a very specific econometric analysis in this direction, while dealing with the set of variables that can have a positive or negative impact on the challenge of liberalisation.

3.1. THE IMPACT OF SOCIO-ECONOMIC FACTORS

In this econometric study, we studied the impact of trade openness on total tax revenue, as a dependent variable. Our specifications include variables that take into account the standard variables of the basic model (control variables), namely: GDP per capita, sector composition, population size and degree of urbanization.

Table 1: Estimation results of the effect of socio-economic factors on tax revenue
The effect of GDP per capita

GDP per capita remains a development indicator and proxy for the contributory capacity of citizens in terms of taxation. Free trade theories suggest that trade liberalization increases the global production of goods and services and that it is a positive-sum game in which all participating countries achieve economic gains. In their research dealing with trade data from a number of countries, Piancastelli (2001), Eltony (2002), Agbeyegbe et al. (2004) and Lambrechts, Erin, and Rule (2012) demonstrate a strong correlation between a country's level of trade freedom and its GDP per capita. For the Moroccan case, our econometric results confirm a strongly positive relationship with the structure of tax revenues. This observation can be explained by the orientations of the public authorities which seek to stimulate foreign trade (signing of free trade agreements, dismantling of tariffs, etc.), as well as social and economic changes (2008 economic crisis and the Arab spring) that the country's main trading partners had and which negatively impacted the volume of foreign trade in terms of imports and exports.

The effect of sector composition

The added value linked to the main productive sectors (Agriculture, industry and service) plays a very determining role in the fiscal and commercial profile of a country. The results obtained
show that agricultural products and services impact Morocco's tax revenues (presence of statistical significance). Thus, the volume of the population and the level of urbanization of Morocco impact the percentage of tax revenues in relation to GDP.

As for industry, this sector has no effect on tax revenue. This observation is explained by the weakness of Morocco's global businesses given that they remain concentrated on small segments.

3.2. The impact of trade liberalization on tax revenue

Effect of customs duties

We note from the estimates made for the Moroccan economy that customs duties have a negative and significant effect on the Moroccan tax structure. This result confirms the work of Khattry and Rao (2002). Trade liberalization, induced by lower customs duties, reduces the amount of revenue from foreign trade (customs revenue), and therefore a reduction in total tax revenue.

Historically, customs duties are the element of trade protection and where restrictive effect is proven in the literature of international trade. Morocco lowered its average customs tariff from 15.6% in 1985 to 1.74% in 2019. Nevertheless, budgetary customs revenues contributed 40.7% to tax revenues, which shows the importance of these revenues for the Moroccan economy.

The effect of the goods and services tax

The level of development of the country is an important factor in the mobilization of tax revenues. Internal tax revenue is negatively related to the level of development. As confirmed by several theoretical and empirical research, the estimation for the Moroccan economy is no exception, with regard to the impact of internal taxation on total tax revenue, which remains negative and very significant. This is mainly due to the productive capacity and the productive fabric of the country, which has had structural and radical changes since the 2000s.

The effect of budgetary and tax reforms in the first place played a very decisive role in the structure and the broadening of the tax base while trying to mobilize and collect the maximum of internal tax revenues (Value Added Tax accounted for approximately 58% of the overall amount of budget revenue in 2019, followed by the Domestic Consumption Tax with 30%).
The effect of exports and their revenues

Economic theory suggests that trade openness increases the state's domestic tax revenues via two transmission channels: economic growth and export revenues. However, in Morocco, trade openness has a weak, even negligible, impact on economic growth, and export revenues are quite low given the low quality of exportable supply.

Thus, the modeling results indicate that the share of exports in GDP has a negative and insignificant effect on Morocco's tax revenue. Admittedly, Morocco is not an oil-exporting country and does not have strong natural resources. Consequently, it is normal that we do not expect export revenues, and therefore tax revenues. We also affirm that even the rate of openness is very high; the problem lies in the quality of the Moroccan exportable offer.

The effect of imports

Econometric modeling reveals that the import/GDP ratio positively and significantly influences domestic revenue. The increase in imports to Morocco generates an increase in tax revenue for the State.

The effect of real effective exchange rate variability

In their econometric research, Agbeyegbe et al. (2004), show that trade liberalization has a limited impact on tax revenue collection, when it is accompanied by reforms, the negative impact tends to decrease. The real exchange rate, taken as a control variable, does not affect tax revenue. The results of the modeling reveal that the effect of exchange rate variability is significantly negative on trade revenue.

The results tell us about the impact of exchange rate devaluation policies. These policies have a favorable effect on overall economic activity and therefore the increase in domestic tax revenues. Devaluation increases the value of imported products which becomes more expensive, which leads to lower trade taxes. As a result, the consumption of tradable goods becomes more expensive and will shift to non-tradable goods, which reflects an increase in local demand, and therefore, an increase in domestic tax revenue.

Table 2: Estimated impact of trade liberalization on tax revenue
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<table>
<thead>
<tr>
<th>Instrumented variable</th>
<th>Coeff.</th>
<th>Standard. Err.</th>
<th>z</th>
<th>P-value</th>
<th>Wald chi2</th>
<th>Pro chi2</th>
<th>R-squared</th>
<th>Root MSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD</td>
<td>-1.052</td>
<td>0.843</td>
<td>-4.81</td>
<td>0.000</td>
<td>294.71</td>
<td>0.000</td>
<td>0.896</td>
<td>1,217</td>
</tr>
<tr>
<td>TBE</td>
<td>-5.872</td>
<td>1,085</td>
<td>-5.41</td>
<td>0.000</td>
<td>314.76</td>
<td>0.000</td>
<td>0.902</td>
<td>1,187</td>
</tr>
<tr>
<td>YOU</td>
<td>-3.353</td>
<td>13,780</td>
<td>-2.93</td>
<td>0.003</td>
<td>126.25</td>
<td>0.000</td>
<td>0.762</td>
<td>1,850</td>
</tr>
<tr>
<td>X_GDP</td>
<td>-0.058</td>
<td>0.199</td>
<td>-0.29</td>
<td>0.770</td>
<td>140.64</td>
<td>0.000</td>
<td>0.800</td>
<td>1,692</td>
</tr>
<tr>
<td>M_GDP</td>
<td>0.362</td>
<td>0.112</td>
<td>3.21</td>
<td>0.001</td>
<td>188.86</td>
<td>0.000</td>
<td>0.843</td>
<td>1,502</td>
</tr>
<tr>
<td>REER</td>
<td>0.036</td>
<td>0.790</td>
<td>2.05</td>
<td>0.038</td>
<td>142.49</td>
<td>0.000</td>
<td>0.803</td>
<td>1,681</td>
</tr>
</tbody>
</table>

Dependent variable: PF_PIB  
Number of observations = 35

Instrumental Variables (2SLS) regression

Source: Authors’ elaboration based on statistical results

Statistically, the estimation technique using the 2SLS method was able to show the robustness of our estimators. The Wu-Hausman test confirms the status of endogeneity of trade openness indicators. Similarly, the Sargan test affirms the validity of the instruments associated with the proxy variables of the variable geographical characteristics of Morocco’s bilateral trade. 

By using these indicators for measuring trade openness for the Moroccan economy, we can confirm through the results of the modeling, the hypothesis according to which a liberalization of foreign trade (by a reduction in customs duties) has a negative impact on the foreign trade receipts, and therefore total tax receipts. In fact, the efforts involved by the Moroccan public authorities to improve foreign trade through the signing of a panoply of free trade agreements have generated a loss of customs revenue, which has led to changes in the Moroccan tax structure, by moving away from international taxation and compensating for the loss of trade taxes by increasing internal taxes, in particular corporate and income tax.

Discussion of results and conclusions

Positive or negative, research economists have taken different positions, between those who opt for a process of liberalization, given that it offers countries an opportunity for development, and those who defend a certain resistance, following the negative effects of countries, especially the least developed. The literature review allowed us to identify the main research hypotheses that stem from the central research question. In addition, the international trade literature emphasizes the importance of trade openness in trade and in the collection of tax revenues, which influences wealth and economic development.
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In order to analyze the budgetary implications of trade liberalization in Morocco, the estimation technique used in this paper is based on the Two-Stage Least Squares (2SLS) estimator. This estimate is adopted for the Moroccan case with a period ranging from 1985 to 2019.

The results suggest a negative relationship between trade liberalization, measured by the index of openness represented by the volume of imports and exports as a percentage of GDP, and total tax revenue. The impacts of the variables are significant in our regression equations, and the signs of the coefficients are similar to those obtained by Khattry and Rao (2002). However, the results suggest that the share of tax revenue in GDP increases with the advancement of the level of urbanization, income per capita, contrary to the conclusion of Khattry and Rao (2002).

For the Moroccan case, the results of the regression confirm that the relationship of the structure of tax revenues is strongly positive with GDP per capita (statistically significant), unlike internal taxation and exports and imports which influence it negatively.

These results can be explained by the orientations of the public authorities which seek to stimulate foreign trade (signing of free trade agreements, dismantling of tariffs, etc.), as well as social and economic changes (2008 economic crisis and the Arab spring) that the country’s main trading partners had and which negatively impacted the volume of foreign trade in terms of imports and exports.

Thus, the results obtained confirm that the weak influence of the agricultural value added despite its importance in the composition of the Moroccan GDP, indeed, according to the tests carried out we found that it does not contribute to the receipts of international trade (absence of statistical significance). This is primarily due to the low exportable supply of Moroccan agricultural products (non-competitive and non-diversified products that do not meet the criteria and requirements of world demand). Moreover, the same result was observed for the Moroccan industrial sector. This finding is due primarily to the weakness of Morocco’s global businesses, given that they remain focused on small segments. As a result, the country does not expect revenue from exports.

According to the results of the econometric study, we can confirm the hypothesis according to which the signing of Free Trade Agreements leads to a loss of overall tax revenue and this by the drop in customs revenue. Thus, the tax and trade reforms implemented by the Moroccan
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government have a different impact on Morocco's overall tax revenue. Changes in the goods and services tax, export tax, and changes in the exchange rate; affect the country's tax revenue. We confirm our second hypothesis. However, the hypothesis that tax revenues can be improved by a trade reform aimed at increasing the competitiveness of Moroccan exports and the manufacture of high-tech products has been rejected.

Trade openness can either improve or deteriorate tax bases, depending on different factors. On the one hand, tax revenues can be improved if trade liberalization is accompanied by an expansion of economic growth, job creation, an increase in income level and exchange rate devaluation. On the other hand, tax revenues may deteriorate if liberalization is associated with a contraction in the volume of trade, job losses and a deterioration in corporate profits. Although it is difficult to determine precisely the direction of the evolution of aggregate tax revenues as a function of trade liberalization,

It should be kept in mind that the ultimate impact of trade liberalization on tax revenue depends on other factors such as the existing tariff structure of a country where tariffs are situated relative to their revenue maximizing levels, the availability of domestic substitutes and their elasticities of supply and demand and other structural constraints faced by individual economies.

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