The Impact of Covid-19 on the Moroccan Foreign Trade Balance: Examining Effects of Income and Price Variables

Leila Zniber*
Ahmed Hefnaoui**
Rachida El Yamani***
Mounia Bettah****

Abstract

This paper seeks to analyze the structure and the evolution of Moroccan trade in goods and services as well as the impact of the Covid-19 crisis on trade balance. It sets up the coverage rate and explains the factors underlying its dynamics especially economic activity and price competitiveness. A cointegration approach is used to assess to what extent the variations in this balance can be explained by macroeconomic developments in Morocco as well as among its main foreign partners and by trade prices. The results obtained show that Moroccan trade balance of goods and services deficit is also due, despite cyclical dynamics, to structural origins.

وقع كوفيد 19 على الميزان التجاري للمغرب: دراسة تأثير متغيرات الدخل والأسعار

ليلى زنيبر، أحمد حفناوي، رشيدة اليماني، مونية بطاح

تسعى هذه الورقة البحثية إلى تحليل بنية وتطور تجارة السلع والخدمات وكذا تأثير أزمة كوفيد-19 على الميزان التجاري للمغرب. كما تتطرق لمعدل التغطية الاسمي والفعلي، وتحلل العوامل المحركة لديناميته. ويستند ذلك إلى المحددات التقليدية للتجارة حسب دوال الطلب للصادرات والواردات، أي النشاط الاقتصادي والقدرة التنافسية للأسعار. وقد مكن اللجوء إلى نموذج الانحدار الذاتي للفجوات الزمنية الموزعة من تقييم إلى أي مدى يمكن تفسير تغيرات الميزان التجاري بالتطورات الماكرو-اقتصادية في المغرب وكذلك لدى أهم شركائه وبأسعار التجارة الخارجية. وتبين النتائج المحصل عليها بأن عجز ميزان السلع والخدمات في المغرب يعزى، بالإضافة إلى التطورات الدورية، إلى عوامل هيكلية.

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* II University of Casablanca - Morocco. Email: zniber.leila@gmail.com
** II University of Casablanca - Morocco. Email: hefnaoui_ahmed@yahoo.com
*** II University of Casablanca - Morocco. Email: ra.elyamani@gmail.com
**** Mohammed V University of Rabat - Morocco. Email: mounia_bettah@yahoo.fr

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1. Introduction

Starting from the outbreak of the financial and economic crisis, and in a global context marked by excessive external imbalances, the sources of external vulnerability of the Moroccan economy increased alarmingly. Indeed, the deficit in the balance of goods and services deteriorated to reach more than 114 billion dirhams in 2018 against only 61 billion dirhams in 2007. In 2020, it has been reduced to nearly 84 billion dirhams due to Covid-19, to get back to its 2010 value before growing again to 116 billion dirhams in 2021.

The growing openness of the Moroccan economy has triggered a considerable influx of imports of consumer products and intermediate goods, which is coupled with the Kingdom's structural dependence on incompressible imports. At the same time, the geographical concentration of Morocco's exports to European Union countries reinforces the permanent risk of exposure to demand shocks.

Although the development of the trade balance reflects a process of transformation of the productive apparatus, aiming to support major investment projects and satisfy domestic demand, it is nevertheless a real source of concern in terms of durability and sustainability of trade balance deficits in the medium and long term.

The spread of the corona virus and the global economic meltdown question the resilience of the Moroccan economy through its external dependence. Therefore, the pandemic had a mixed effect on goods and services amid falling household consumption and foreign demand, disruptions to global supply chains and containment measures. In short, the decline in imports was greater than the sharp decline in exports of goods, while the drop in services receipts –mainly tourism revenues- was higher than the fall in services payments.

In the light of these developments, this study highlights the specificities of Morocco's foreign trade balance of goods and services through the identification of the economic and structural factors responsible for its deficit. We study to what extent the variations of this balance can be explained by macroeconomic developments in Morocco and its main foreign partners as well as foreign trade

prices, through the application of an ARDL model to quarterly data going from the first quarter of 2007 to the fourth quarter of 2020.

2. Structural analysis of the trade balance: What are the effects of Covid-19?

2.1 A structural merchandise deficit alleviated by a decrease in demand during Covid-19

The efforts made by Morocco within the framework of the various sectoral plans have made it possible to promote a diversification of the national productive fabric, leading to the development of the exportable supply. However, the measures taken have not paved the way to contain the structural trade deficit in an attempt of greater integration of Morocco into the world market.

This openness, which is shown by the liberalization of trade, the reduction of the quotas applied to products subject to the common law regime and the facilitation of trade procedures, caused imports to progress at a rate higher than that of exports.
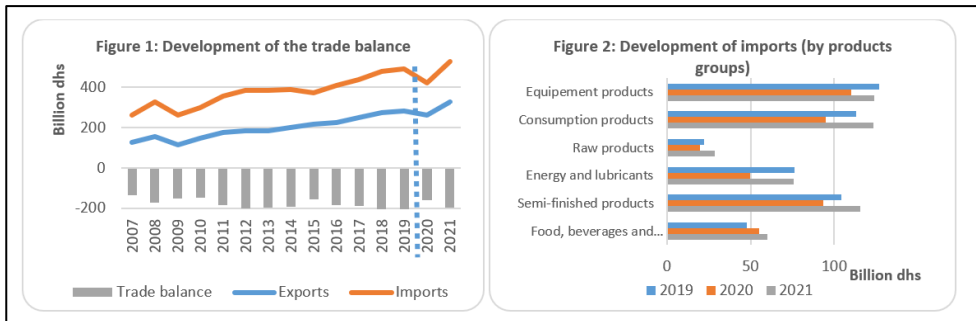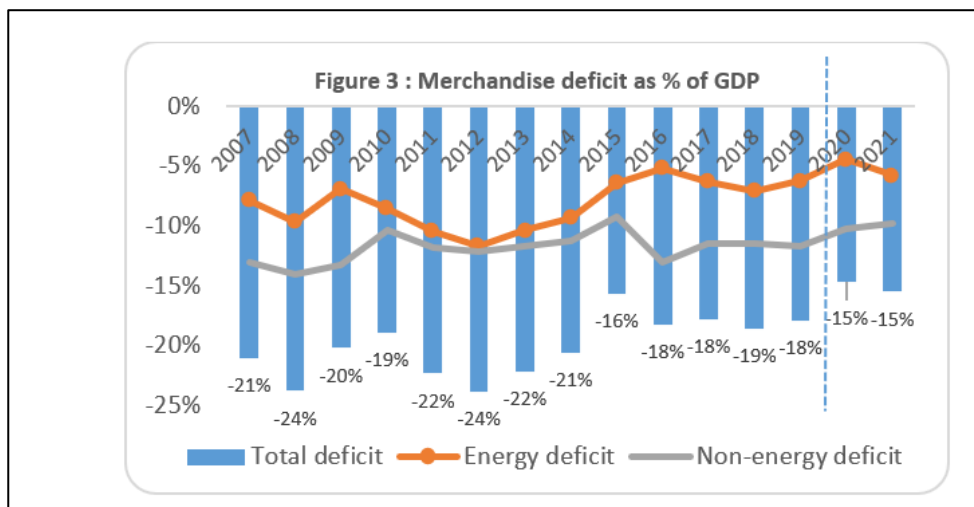

Source: Office des changes.

Morocco's merchandise trade deficit increased from 148 billion dirhams in 2010 to 206 billion dirhams in 2019, which is a widening of 58 billion dirhams[1]. Energy products were responsible for nearly 35% of Morocco's goods deficit in 2019 compared to 45% in 2010. In turn, non-energy products saw their deficit increase gradually, before stabilizing around a new level of 130 billion dirhams on
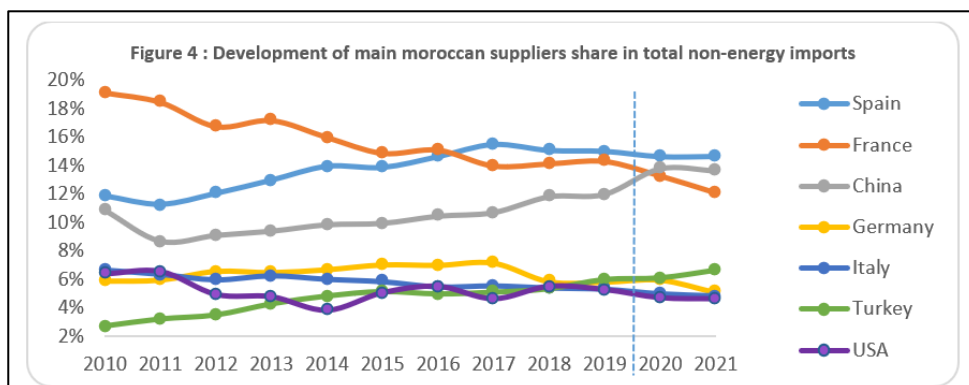
average between 2016 and 2019 compared to 100 billion dollars between 2012 and 2015.

It should be mentioned that the trade deficit, as a % of GDP, has stabilized since 2016 at around -18% after having reached -22% on average between 2007 and 2014. This decrease is due to the significant drop in the energy deficit following the fall in the oil prices on the world market. However, the non-energy deficit remained stable overall and close to -12%[2] of GDP.

Figure 3 : Merchandise deficit as % of GDP

Source: Office des changes.

The outbreak of Covid-19 led to a significant decline in the merchandise deficit, which stood at 160 billion dirhams in 2020 (or 15% of GDP) due to the induced drop in imports of the various product groups, except those of food. The decline mainly concerned energy and finished consumer products (-26 and -18 billion dirhams respectively). In 2021, imports show a notable recovery (+25%) to exceed their pre-pandemic level due to world supply dynamics. Exports increased at the same rate. Thus, the merchandise balance remained stable as a ratio of GDP but dropped in value to -199 billion dirhams.

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Figure 4 : Development of main moroccan suppliers share in total non-energy imports
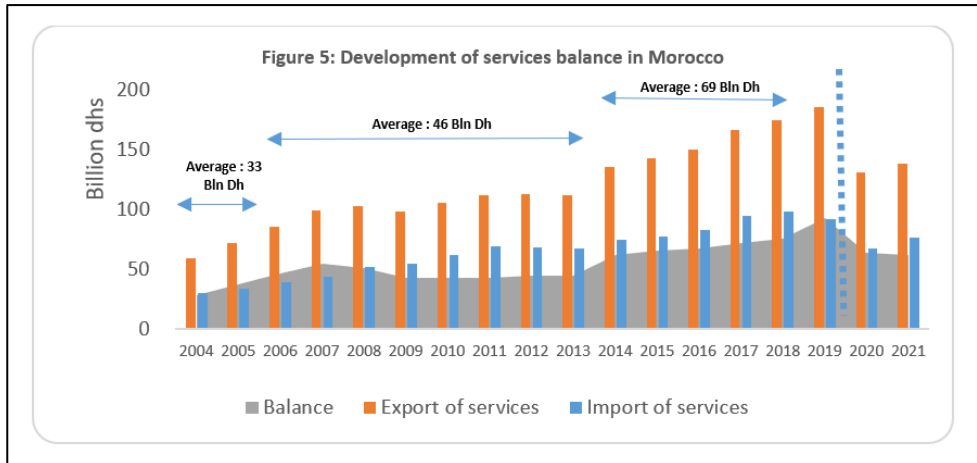
Source: Office des changes.

While the geographical structure of Morocco's exports remained almost stable in recent years, non-energy imports reveal some interesting findings. On one hand, France experienced its weight decline sharply as the leading supplier, falling from 19% to 14% of total imports between 2010 and 2019. This share fell further in the post-pandemic phase to settle at 12% in 2021. While on the other hand, China gradually increased its weight with a notable increase during the health crisis, to stand at 14% in 2021. Similarly, Spain and Turkey globally consolidated their position from 12% and 3% respectively in 2010 to 15% and 7% respectively in 2021.

2.2 A positive balance of services undermined by the pandemic

The balance of services shows a structural surplus, which has oscillated, since 2014, around 70 billion dirhams, before peaking at 94 billion dirhams in 2019. It is mainly determined by the balance of travel, which constitutes, behind transfers from Moroccans living abroad, the 2nd source of current account financing.

Figure 5: Development of services balance in Morocco

Source: Office des changes.

After a favourable growth up to 2007, the services surplus decelerated due to the slowdown or even the one-off drop in tourism revenues, particularly from the French and Spanish markets, which together account for nearly half of revenues, combined with the sustained increase in expenditure, mainly those of tourism and tuition fees.

The sharp recovery recorded since 2014 has been propelled by the improvement of travel, transport and other business services revenues, in particular offshoring incomes. Thus, the services balance strengthened in 2019 by 17 billion dirhams.

Figure 6 : Development of service revenue by principal allocations
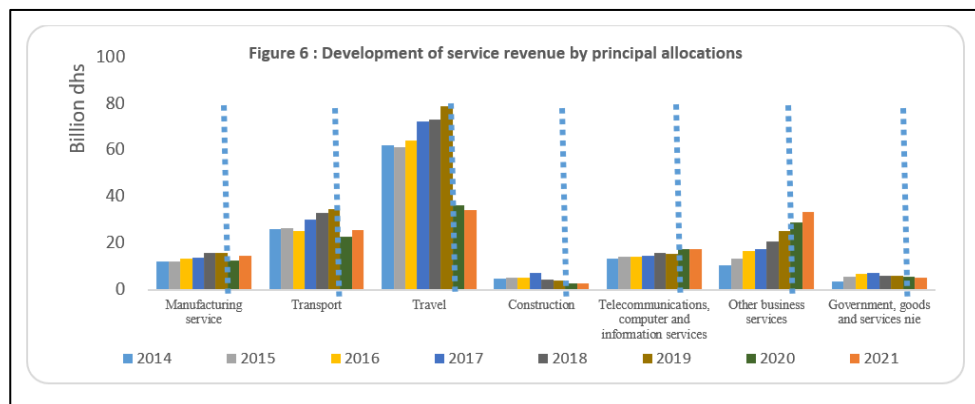
Source: Office des changes.

Due to the spread of Covid-19 and the preventive measures taken by the Moroccan authorities, which led in particular to prolonged border closures, the balance of services saw its surplus fall by a third in 2020 to stand at 64 billion dirhams, then to 62 billion dirhams in 2021. In this regard, it should be noted that travel exports collapsed by more than half (-53%) in 2020 and decreased further in 2021. Transport revenues also dropped (-34%) in 2020 and recovered slightly in 2021.

2.3 A slight improvement in the coverage rate of goods and services trade optimized by terms-of-trade effect

Based on the developments raised previously, the balance of goods and services recorded a chronic nominal deficit that has been significantly exacerbated between 2002 and 2012, from -2.7% to -15.3% of GDP before gradually lightening up to -8.6% in 2019 and worsening slightly in 2021.

Figure 7: Development of the balance of goods and services expressed as coverage rate
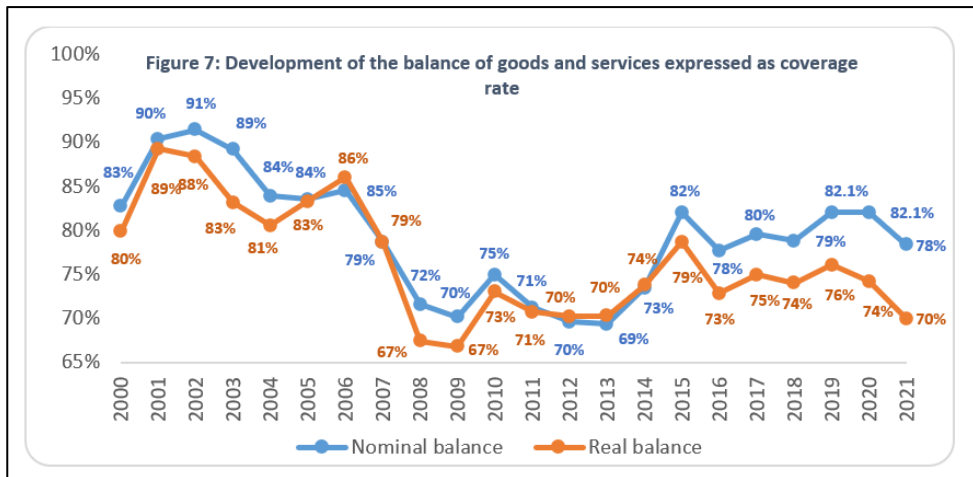
Source: HCP.

Expressed at a coverage rate, the balance of external exchanges has set on an upward trend since 2013, with an increasingly marked rebound in value, driven by the positive behaviour of the terms of trade. It was established at 74% by volume in 2020 vs 82% in value. The significant decrease recorded in 2021 is mainly explained by a volume effect, where real imports grew faster than real exports.

3. Modeling the trade balance in Morocco through conventional determinants of flows: What could be the impacts of Covid-19?

3.1 Conceptual framework: Export and import sensitivity to income and price competitiveness

Empirical analysis of export and import demand is based on the traditional determinants of trade flows, namely price competitiveness and income (Goldstein and Khan (1985)).

Indeed, relative prices influence competitive positions (market share) both domestically and abroad. The intensity of domestic and foreign economic activity explains demand and acts respectively on the volume of imports and exports. The development of trade is thus attributed to an activity variable which influences the demand for products (GDP, final demand, industrial production) and a

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competitiveness variable which makes it possible to take into account the impact of the modification of relative prices of domestic tradable goods relative to foreign goods, on the volume of exports and imports (Nivat, D., & Villetelle, J. P, 2002; Deutsche Bundesbank; 2001; BCEAO, 2013).

Table (1): Variables included in demand functions for exports and imports

Concept	In an open economy, the volumes of imports and exports result from the consumer utility maximization within their budget constraint, between locally produced goods and imported ones, which are imperfectly substitutable (Armington, 1969).
Used variables	Estimation of export and import functions by price competitiveness and an income variable. - The competitiveness variable (REER or terms of trade): takes into account the impact of the change in the relative prices of domestic tradable goods compared to foreign goods, on the volume of exports and imports. - The activity variable (in particular income, domestic and foreign demand, the volume of world trade, etc.): allows to capture the impact of variations in domestic and foreign activity levels on the volume of trade. An increase in domestic (foreign) activity is expected to increase imports (exports), leading to a deterioration (improvement) in the trade balance.
Basic equation	The demand for imported goods depends on the real income of the consumer and the relative prices of imports compared to the prices of local products. Exports are an increasing function of an indicator of foreign demand and the relative price of domestic exports to that of competitors in export markets.
Theoritical basis	Agénor (1999): If domestic and foreign goods are imperfectly substitutable, but conversely, capital mobility is perfect, the

|	current account balance is determined by the balance of goods and services.
	Armington (1969): The hypothesis of imperfect substitutes between the same goods of different geographical origin enables the existence of intra-industry trade and avoids describing an extreme specialization of production. For each product category, demand is defined as a constant elasticity of substitution function between domestic and imported goods.
	Goldstein and Khan (1985): Trade flows are essentially explained by two demand factors: a competitiveness variable and an income or activity variable.
	Alfred Marshall (1923), Joan Robinson (1937) and Abba Lerner (1944): According to the critical elasticity theorem, a depreciation of the national currency will only have a positive effect on the trade balance if the sum of the price elasticities of the exports or imports is greater than unity. In response to a devaluation, the trade balance may deteriorate before experiencing an improvement linked to the volume effect (J-curve). The immediate impact of a devaluation on the nominal trade balance may be negative. This reflects the unfavorable effect of the terms of trade which is linked to the increase in the value of imports expressed in national currency.
	Laursen and Metzler (1950) and Harberger (1950): The LMH effect states that a negative terms-of-trade shock would lead to lower savings for a given level of household income since consumers want to maintain their standard of living. This decline in savings (increase in spending) will result in a deterioration of the trade balance.
	Dixit (1989) and Baldwin and Krugman (1989): The delay in adjusting quantities to changes in relative prices is explained by adjustment costs (trade relations take time to develop and contracts are often made in a given period with purchase commitments).

Source: Elaborated by the authors.

3.2 Factors responsible for the variation of the external trade balance

In this paper, it is worth detecting the structural and cyclical factors responsible for the development of Morocco's trade balance and how the health crisis impacted this development. According to the export and import demand functions which are based on the estimation of the income and price elasticity, an increase in domestic (foreign) activity is supposed to increase imports (exports). This can lead to a deterioration (improvement) of the trade balance. At the same time, an increase in relative prices, approximated by the terms of trade, reflects a loss of competitiveness which should have the impact of weakening the volume of exports and increasing the imports but at the opposite, also a positive income effect on the nominal balance. Therefore, it becomes useful to analyse the development of each of these determinants before estimating the model.

3.2.1 An expansion of the growth differential between Morocco and its partners

The worsening of the nominal deficit of the balance of goods and services of Morocco since 2007 is explained by the expanding of the growth differential between Morocco and its main export partner countries[3]. This would have resulted in a faster increase in national demand for foreign products in comparison with foreign demand addressed to Morocco.
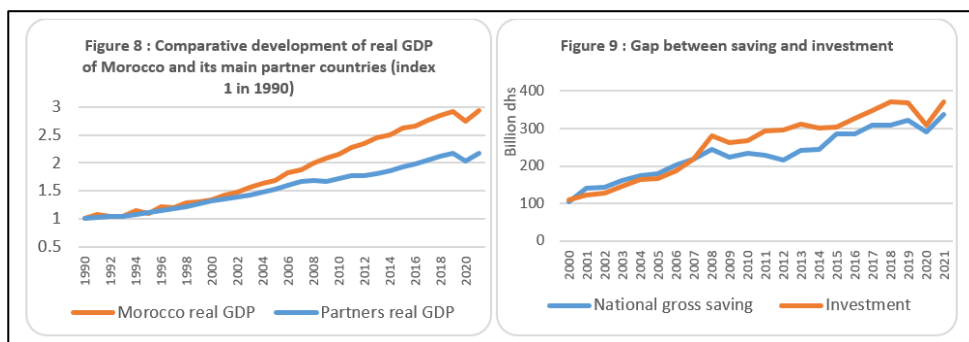
Source: World Bank.   Source: HCP.

According to another approach, called intertemporal, also known as the absorption approach (Obstfeld, M., & Rogoff, K., 1995), the post-crisis deterioration of the current balance is driven by the lack of national savings in a dynamic investment between 2008 and 2018 (figure 8). This depletion comes from a slightly faster increase in the final consumption expenditure compared to the gross disposable national income.

The 2020 data shows a significant drop in investment as a result of the pandemic. It fell by 16% against a drop in gross national savings of 9%, mainly explained by a drop in gross national disposable income. The year 2021 showed then a recovery is both indicators.

3.2.2 A slight improvement of the terms of trade after a downward trend

The terms of the trade capture the fluctuations of the ratio of export price and import price indices, resulting from a weighting of products exchanged according to their quantity.

An increase in the terms of trade is supposed to result in an improvement in nominal trade balance, although this impact is mitigated while considering price variation impact on the volume traded.

Figure 10 : Development of terms of trade (Basis 1 in 1990)
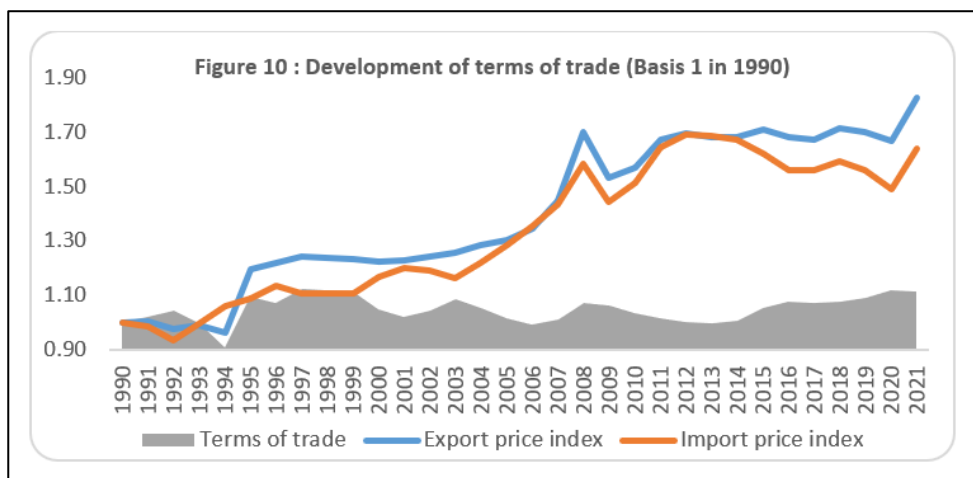
Source: HCP.

The development of Morocco's terms of trade reveals small fluctuations over the period 1990 and 2020, with an index between 0.91 and 1.11. Nevertheless, it is worth noting that this indicator has been first set in a slightly downward trend between 1998 and until 2012, before stabilizing and then starting rise from 2015, in particular with the decline in the price of imported energy products.

4. Model estimation

4.1 Data and specification

In the analysis of trade in goods and services, the coverage rate (CR) corresponds to the ratio of exports of goods and services in relation to their imports. It depends on domestic demand for goods and services (GDPm), measured by the Moroccan real gross domestic product, foreign demand, measured by the weighted average of the real GDP of the main partners (GDPp), and terms of trade (TT). The latter is obtained by using the export and import price indices which is calculated by dividing the current value of each of these flows by its value at constant prices.

A Dummy variable has been added to the model (Cov19) starting from the second quarter of 2020 in order to consider the effect of Covid-19, where it takes the value 0 before the covid-19 crisis, and 1 since the covid-19 crisis. Thus, the relationship can be expressed in semi-logarithmic form as follows:

$$CR_t = a \ln(GDPm_t) + b \ln(GDPp_t) + c\ TT_t + d\ Cov19_t + u_t$$

The data used for the various aggregates are quarterly from Q1-2007 to Q4-2020, from the High Commission for Planning (HCP), except for partners' GDP (or foreign GDP) which is calculated by the authors, supplied by the World Bank data[4].

Foreign GDP was obtained by calculating an average of Moroccan main partners GDP, weighted by the recalculated weight of the latter in the Kingdom's exports over the period 2007-2020, knowing that the sample represents 79% of total merchandise exports, for which the structure by country is available unlike services. The countries selected are assumed to represent 100% of exports. They are presented with their weightings in the following table:

Table (2): Main partners of Morocco (Average 2007-2020)

Countries	Weight in sample
FRANCE	28%
SPAIN	27%
ITALY	6%
INDIA	5%
BRAZIL	5%
USA	5%
GERMANY	4%
UK	4%
NETHERLANDS	3%
TURKEY	3%
BELGIUM	2%
PORTUGAL	2%
SINGAPORE	1%
CHINA	1%
RUSSIA	1%
JAPAN	1%
SWITZERLAND	1%
Total	**100%**

Source: Authors' calculations based on data from the Office des Changes.

4.2 Stationarity test results and validation of the ARDL model

The modelling exercise required a series of steps:

Checking series stationarity

An ADF unit root test was performed on all the variables of interest. Except the terms of trade (TT) variable which is stationary at level, all the series become stationary after the first differentiation. Therefore, it is possible to estimate an ARDL model.

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Table (3): Unit root results

Unit root Test			CR	LGDPm	LGDPp	TT
ADF	Trend & Intercept	ADF statistic (table)= 3,18	T-statistic= 3,55 (>3,18) P-Value=0,0036	T-statistic= 2,66 (<3,18)	T-statistic= 3,65 (>3,18) ; P-Value= 0,0116	T-statistic= 2,37 (<3,18)
	Intercept	ADF statistic (table) = 2,89		T-statistic= 3,87 (>2,89) P-Value= 0,0902		T-statistic= 3,02 (>2,89) ; P-Value= 0,0402
	None	At 5% level				
Cointegration order			I(1)	I(1)	I(1)	I(0)

Validation of the model

A series of tests was performed on the ARDL residuals for the validation of the model. The results of the robustness test indicate that the errors are not autocorrelated, they are also homoscedastic, so the model is well specified.

Table (4): Diagnostic Analysis

Diagnostic test	p-values	Result
Breusch-Godfrey LM	0,8595	No evidence of serial correlations
Breusch-Pagan-Godfrey	0,6193	No evidence of heteroscedasticity
Ramsey RESET test	0,7052	Model specified correctly

Then, the estimated ARDL model (1, 0, 1, 1) is overall good and explains 80,28% of the real coverage rate dynamics in Morocco, from Q1-2007 to Q4-2020,

Bounds test results and ARDL long run

A co-integration test has also been performed for all the variables:
CR, LGDPm, LGDPp and TT, and, which have different order of integration. While
the Engle and Granger and Johansen cointegration tests are inefficient, the bounds
test for cointegration (Pesaran, 2001) is more appropriate.

Table (5): Bounds test results

Test Statistic	Value	k
F-statistic	5,1827	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2,01	3,1
5%	2,45	3,63
2,5%	2,87	4,16
1%	3,42	4,84

The bounds test results reveal the existence of cointegrating relationship
between the variables of interest. The value of the Fisher statistic (F =5,18) is greater
than the upper bound value (=3,63 at 5% as level of significance). This makes it
possible to estimate the long run effects of the variables LGDPm, LGDPp and TT
on CR.

4.3 Long-term coefficients and short-term dynamics

Due to the fact that Morocco's supply capacity requires a certain volume of
imports, and the supply capacity of the main partners generates demand for the
Kingdom's exports, which is impacted respectively by the relative prices of imports
and exports, it becomes possible to assess the sensitivity of the nominal balance to
the development of supply capacities and prices. The estimation of the coefficients
of equation by an ARDL (1,0,1,1) model yields the following results:

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Table (6): ARDL Cointegrating and Long Run Form

Short-term relationship

Cointegrating Form				
Variable	**Coefficient**	**Std, Error**	**t-Statistic**	**Prob,**
D(LGDPP)	0,277294	0,119550	2,319480	0,0247
D(TT)	0,479811	0,061669	7,780387	0,0000
Cov19	0,001909	0,014496	0,131662	0,8958
CointEq(-1)	-0,295219	0,062902	-4,693278	0,0000

Long-term relationship

Variable	**Coefficient**	**Std, Error**	**t-Statistic**	**Prob,**
LGDPM	0,450785	0,301184	1,496706	0,1410
LGDPP	-0,413590	0,562822	-0,734851	0,4660
TT	0,631598	0,042819	14,75037	0,0000

The Error correction term, here represented as CointEq(-1), is statistically significant and negative with an associated coefficient estimate of (−0,2952). This shows the existence of a cointegrating relationship between variables and implies that about 30% of any movements into disequilibrium are corrected for within one period.

The results of this modelling exercise show terms of trade (TT) as the only variable with a significant coefficient in the long-run. The short-term results show that partners' GDP (LGDPp) and terms of trade (TT) coefficients are both significant and consistent with the expected effects.

In fact, an increase in partners' GDP, suggesting improving foreign demand for Moroccan products, is supposed to enhance Moroccan exports and thus the coverage rate.

Regarding terms of trade, an increase indicate a faster growth in export prices relatively to import price which is supposed to have a mitigated impact 1/deteriorate moroccan price competitiveness leading to weakening of exports volume and strengthening of imports volume, thus penalizing the real coverage rate (negative volume effect), 2/boost the value of exports increasing export revenue and making imports relatively cheaper (positive income effect).

In the long-term, the terms of trade have a positive effect on the coverage rate. Thus, ceteris paribus, any increase in the terms of trade of one percentage point respectively, leads to enhancing the nominal balance of goods and services, expressed as a coverage rate, of nearly 0,63 points. In the short-term, an increase in partners' GDP of 1% leads to an improvement of this balance of 0,27 percentage points.

The variable cov19, which captures the effect of the health crisis since 2020 seems from the modelling results to have no impact on the balance of goods and services in terms of coverage rate. However, it has had certainly great impact on other variables like moroccan exports driven by partners' demand (LGDPp) and moroccan imports driven by domestic demand (LGDPm). The stabilization of the nominal balance in 2020 at 82% can be explained by growing terms of trade which offset, the drop in real exports of goods and services (-15%), while real imports declined by 12%.

5. Conclusion

Moroccan trade balance of goods and services deficit is, despite cyclical dynamics, also due to structural origins. In fact, an important factor that may explain the regularly negative contribution of Morocco's foreign trade to growth is that structural growth in Morocco is more vigorous than among its main partners. This is attributed to a population-lag effect and an economic catch-up effect.

Furthermore, the high penetration rate of imports into domestic market (47% for goods and 30% for goods and services[5]) questions the shortcomings of the national productive system in terms of labor cost competitiveness, capacity for innovation, technological absorption and construction of specialization profiles, This is also reflected in export patterns, which suffer from problems related to low diversification and low technology content.

Hence, a series of measures are necessary in order to correct these structural external imbalances, aimed at coordinating the various public policy instruments and laying the foundations for a proactive strategy. A judicious articulation between trade policy and the various sectoral strategies implemented by Morocco should be ensured to improve the specialization profile of the moroccan economy and strengthen its resilience to competition.

It also seems necessary to enhance the incentives for investment and export, to develop a strategy for monitoring the international market, to adopt a proactive approach for the promotion of exports and to exploit the Private-Public partnership as a real management and organization tool to motivate all the players in the development of national exports.

Continued conquest and opening up to new markets is required. This raises the question of the performance of Morocco's open trade policy, which has led to several free trade agreements. However, the results obtained so far do not seem to be consistent with the effort to liberalize tariffs.

To deal with this unfavorable situation, Morocco would benefit, without shirking its trade commitments, from actively working to optimize its foreign trade policy through a triple action: 1/ Conduct a comprehensive review of the free trade agreements concluded and explore the best possible ways to promote a rebalancing of trade relations with partners, 2/ Provide mechanisms and tools for the protection of national production (competitive intelligence, anti-dumping mechanism, standardization, etc,), 3/ and explore the opportunity to use a new doctrine for the conclusion of free trade agreements, that favor regional groupings rather than the bilateral approach and targeting Southern countries as a priority to prevent asymmetric competitive shocks, Currently, Morocco would benefit from more effectively mobilizing its African depth and its status as a hub and making it an essential axis of its foreign economic policy.

Furthermore, better exploitation of tourism potential, in particular through improved training in tourism professions and the strengthening of reception infrastructures, could boost travel revenues, which represent one of the main sources of financing the current account.

Footnote

[1] Figures are taken from the Office des Change foreign trade database. They take into account FOB-CAF trade instead of FOB-FOB as well as temporary admissions without payment, contrary to the nomenclature of the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6).

[2] The improvement observed in 2015 is mainly due to the significant recovery in the balance of food products.

[3] Weighting of foreign GDP is based of Moroccan exports structure by partner country from 1998 to 2021 (available data from Office des Changes).

[4] Global Economic Monitor.

[5] Source: Authors' calculations based on HCP data.

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