

Foreign Direct Investment, Exports and Industrial Growth in Morocco: Empirical Evidence.

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Abstract

This paper examines the relationship between Foreign Direct Investment (FDI), exports, and industrial growth in Morocco, with a particular focus on exports as a potential spillover channel through which FDI may influence industrial performance. To address this issue, the study employs an Autoregressive Distributed Lag (ARDL) approach, allowing for the analysis of both short-run dynamics and long-run relationships among the variables. The results show that exports have a positive and statistically significant impact on industrial growth in both the short and long run, confirming the importance of export-led industrialization in Morocco. However, FDI does not exhibit a significant direct effect on industrial output over either time horizon. The findings further indicate that FDI positively influences exports in the short run, suggesting the presence of indirect spillover effects through trade channels. Nevertheless, this relationship is not sustained in the long run, limiting the overall contribution of FDI to sustained industrial growth. These results highlight the conditional nature of FDI effectiveness and emphasize the importance of domestic absorptive capacity and structural conditions in shaping its impact. Overall, the study concludes that while FDI plays a role in supporting export performance, its direct and long-term contribution to industrial development in Morocco remains limited. Policy implications point to the need for strengthening local industrial linkages, improving absorptive capacity, and enhancing the integration of domestic firms into global value chains.

Keywords : Foreign Direct Investment (FDI); Exports; Industrial Growth; ARDL Model; Spillover Effects; Morocco; Export-led Growth, International Trade.

Résumé :

Cette étude examine la relation entre les investissements directs étrangers (IDE), les exportations et la croissance industrielle au Maroc, avec un accent particulier sur les exportations en tant que canal potentiel de retombées (spillovers) par lequel les IDE peuvent influencer la performance industrielle. Pour traiter cette problématique, l'étude utilise une approche ARDL (Autoregressive Distributed Lag), permettant d'analyser à la fois les dynamiques de court terme et les relations de long terme entre les variables. Les résultats montrent que les exportations exercent un impact positif et statistiquement significatif sur la croissance industrielle, tant à court qu'à long terme, confirmant ainsi l'importance de la stratégie de croissance tirée par les exportations dans le cas du Maroc. En revanche, les IDE n'exercent pas d'effet direct significatif sur la production industrielle sur aucun des horizons temporels étudiés. Les résultats indiquent également que les IDE influencent positivement les exportations à court terme, ce qui suggère l'existence d'effets indirects de diffusion via les canaux commerciaux. Toutefois, cette relation ne se maintient pas à long terme, ce qui limite la contribution globale des IDE à une croissance industrielle durable. Ces résultats mettent en évidence le caractère conditionnel de l'efficacité des IDE et soulignent l'importance de la capacité d'absorption interne et des conditions structurelles dans la détermination de leurs effets. Dans l'ensemble, l'étude conclut que, bien que les IDE jouent un rôle dans le soutien de la performance exportatrice, leur contribution directe et durable au développement industriel au Maroc reste limitée. Les implications politiques suggèrent la nécessité de renforcer les liens industriels locaux, d'améliorer la capacité d'absorption et de favoriser l'intégration des entreprises nationales dans les chaînes de valeur mondiales.

Mots-clés : Investissements directs internationaux (IDI) ; Exportations ; Croissance industrielle ; Modèle ARDL ; Effets de retombées (spillovers) ; Commerce international.

Introduction

In recent years, Morocco's industrial exports have experienced a remarkable expansion, reflecting a significant transformation in the country's productive structure and its integration into global markets. A closer examination of this performance reveals that a substantial share of these exports is driven by multinational enterprises operating within Morocco, particularly in export-oriented industries. This evolution is not accidental ; rather, it is the outcome of sustained and deliberate efforts undertaken by Moroccan authorities in the areas of industrial policy, business environment reform, and investment attraction strategies. Indeed, Morocco has implemented a series of structural reforms aimed at enhancing its attractiveness as a destination for Foreign Direct Investment (FDI), including the development of industrial acceleration plans, the establishment of export-oriented industrial zones, and the strengthening of logistics and trade infrastructure. These policies have contributed to positioning the country as an emerging hub for international outsourcing and manufacturing activities, particularly in sectors such as automotive, aerospace, electronics, and textiles. Against this backdrop, an important research question arises regarding the actual impact of FDI on Morocco's industrial development. Specifically, to what extent do foreign direct investments contribute directly or indirectly to industrial growth in Morocco ? Moreover, do these effects operate solely through direct channels, or do they also materialize indirectly through spillover mechanisms, particularly via export performance and technology diffusion ? This paper examines exports as a key spillover channel through which FDI may influence industrial growth in Morocco. The study focuses on the industrial sector and investigates both the direct and indirect effects of FDI on industrial performance. To achieve this objective, the analysis is conducted using an Autoregressive Distributed Lag (ARDL) econometric approach, which allows for the examination of both short-run dynamics and long-run relationships among the variables. The central research question guiding this study is : Do Foreign Direct Investments contribute significantly to industrial growth in Morocco, and to what extent are these effects transmitted through export-related spillover channels ? This question is part of a broader debate on the developmental role of FDI in host countries, particularly regarding its capacity to generate productivity gains through technology transfer and knowledge diffusion. To address this issue, the study adopts a hypothetico-deductive approach. It proceeds from established theoretical assumptions on FDI spillovers and empirically tests them within the Moroccan industrial context. By doing so, the paper aims to contribute to the literature by providing evidence on the effectiveness of FDI as a driver of industrial development in emerging economies, with a specific focus on Morocco.

1. Literature review

This section is organized into two main parts. The first part examines the relationship between foreign direct investment (FDI), economic growth, and the industrial sector, highlighting how FDI supports industrial development and overall economic performance. The second part focuses on the link between FDI, economic growth, and exports, with particular attention to trade openness and export performance as key transmission channels. Together, these two parts provide a comprehensive overview of how FDI can influence economic growth through both production and trade channels as spillover effects.

1.1. Foreign Direct Investment and Economic Growth, Industrial Sector

From the neoclassical growth theory perspective (Solow, 1956), an exogenous rise in FDI leads to a temporary increase in capital per capita and output (GDP), but it does not affect the long-run growth rate. In this framework, sustained economic growth can only be achieved through technological progress or labor force expansion, both of which are treated as exogenous factors (Belloumi, 2014). Similarly, Tanaya and Suyanto (2022) argue that FDI contributes to long-term growth only when it generates technological advancement.

In contrast, endogenous growth theory (Romer, 1986, 1993 ; Lucas, 1988 ; Barro, 1990) considers FDI an important channel for technology transfer and spillover effects (Yao, 2006). Empirical studies on the FDI–growth nexus provide mixed evidence, with some confirming positive effects while others report contrasting results. As highlighted by Zhang (2001), Abbes et al. (2015), and Sarker and Khan (2020), the relationship between FDI and GDP is generally interpreted through four hypotheses : FDI-led growth (FDI-LG), growth-led FDI (G-LFDI), feedback, and neutrality.

Under the FDI-LG hypothesis, FDI stimulates growth by increasing capital accumulation, facilitating technology transfer, and creating employment opportunities (de Mello, 1997 ; Borensztein et al., 1998). The G-LFDI hypothesis, on the other hand, suggests that higher economic growth, larger markets, improved infrastructure, and better human capital attract more FDI inflows (Zhang, 2000, cited in Zhang, 2001). The feedback hypothesis indicates a bidirectional relationship where FDI and economic growth reinforce each other : strong growth attracts more investment, while FDI further promotes economic expansion through direct and indirect channels (Zhang, 2001). Finally, the neutrality hypothesis implies no causal relationship between the two variables (Abbes et al., 2015).

Sarker and Khan (2020) examined the causal relationship between FDI inflows and real GDP in Bangladesh over the period 1972–2017 using ARDL and time-series techniques. Their results

confirmed a long-run cointegration relationship between the logarithms of FDI and GDP. They also found that real GDP positively influences FDI in the long run, while FDI shows a negative long-term elasticity with respect to income. Short-run results indicate a limited but significant effect of income on FDI. Diagnostic tests confirmed the robustness and stability of the model, including checks for heteroscedasticity, autocorrelation, normality, and structural stability.

Similarly, Tanaya and Suyanto (2022) analyzed Indonesia over 1970–2018 and identified a long-run relationship between GDP and FDI using an ARDL approach. Their findings show that FDI responds strongly to changes in income in both the short and long run, although it exhibits negative dependence on its past values. The error correction mechanism confirms a stable long-run equilibrium between the variables.

The impact of foreign direct investment (FDI) on host country development has been widely analyzed in the literature from multiple perspectives. Studies in this area consider various determinants such as regional conditions, economic sectors, types of investment, and other contextual factors. Among these, the industrial sector—recognized as a major engine of economic growth, especially in developing economies—has received considerable attention. A large number of studies have explored the link between FDI and industrial output growth, emphasizing the complexity and multifaceted nature of this relationship in the development process of host countries.

Although empirical results are not fully consistent, most research suggests that FDI generally has a positive effect on economic growth, particularly in the industrial sector. However, the strength of this effect differs across countries. Developed economies tend to be more capable of absorbing the benefits and spillovers generated by FDI (Globerman, 1979), while in developing countries, some are able to benefit from these spillovers (Blomström, 1986), whereas others do not, resulting in an insignificant impact of FDI on growth (Aitken et al., 1997 ; Pitic et al., 2014).

The literature has mainly emphasized the long-term role of FDI in promoting economic growth through technology transfer between foreign investors and host economies. Many scholars identify technology transfer as the primary channel through which FDI influences growth (Caves, 1974 ; Hymer, 1976 ; De Mello, 1997; Blomström & Kokko, 1998; Campos & Kinoshita, 2002; Blonigen & Wang, 2004; Lipsey, 2004; Lin & Saggi, 2005).

1.2. Foreign Direct Investment, Exports, and Economic Growth

Several empirical studies have examined the dynamic relationship among the three variables—FDI, exports, and economic growth. Exporting to foreign markets is often a costly and complex

process for domestic firms, requiring preparation such as market research and demand analysis (Bernard & Jensen, 2004 ; Melitz, 2003 ; Kneller & Pisu, 2004). A key constraint is limited access to information, which can hinder firms' ability to enter export markets (Aitken et al., 1997). In developing countries, multinational enterprises help overcome this barrier by transferring knowledge about international markets. Their presence generates spillovers—particularly through information diffusion—that encourage domestic firms to engage in exporting (Greenaway et al., 2004 ; Sinani & Hobdari, 2010 ; Girma et al., 2007). Overall, FDI can indirectly foster economic growth by stimulating export activity through multinational spillovers (Aitken et al., 1997). Below, we summarize selected empirical studies that investigate the relationship among the three variables using ARDL and VECM time series models.

Aitken et al. (1997), using data on Mexican firms between 1986 and 1990, show that domestic firms are more likely to start exporting when they are located near exporting multinational enterprises (MNEs), while no significant effect is found when they are close to domestic exporters. They identify three main spillover channels : information diffusion, competition, and imitation, concluding that FDI plays a key role in promoting exports and recommending policies to attract more foreign investment.

Baliamoune-Lutz (2004) examined the relationship between FDI, exports, and economic growth in Morocco from 1973 to 1999 using Granger causality analysis. The findings revealed a bidirectional causal relationship between exports and FDI, while both variables positively influenced economic growth. The study highlights the complementary role of exports and FDI in promoting growth.

Andraz and Rodrigues (2010) investigated the links among FDI, exports, and economic growth in Portugal during 1977–2004. Using a VECM framework, they found a long-run equilibrium relationship among the variables. Results showed that both FDI and exports stimulate economic growth, with FDI emerging as the main driver of growth directly and through export expansion. Similarly, Greenaway et al. (2004), based on UK firms, confirm that the presence of exporting MNEs encourages domestic firms' entry into export markets. Their results highlight information spillovers as the main channel, followed by competition and imitation effects, all of which positively influence export participation.

In terms of the joint relationship between FDI, exports, and growth, Yao (2006) finds a positive relationship among the three variables in China, a result confirmed by Rahman (2007) for several Asian countries (Bangladesh, India, Pakistan, and Sri Lanka). In contrast, Alaya (2006) reports mixed effects in Morocco, Tunisia, and Turkey, with exports positively affecting

growth, while FDI shows a negative impact. Conversely, Alguacil et al. (2000) find a positive link between FDI and growth in Latin America but no significant relationship between exports and growth.

Dritsaki and Stiakakis (2014) analyzed Croatia over the period 1994–2012 using the ARDL approach. Their results indicated that exports positively contribute to economic growth in both the short and long run, whereas FDI exerts a negative effect on growth. The authors concluded that exports and domestic investment are the primary engines of Croatian economic development.

Szkorupová (2014) studied the impact of FDI and exports on economic growth in Slovakia between 2001 and 2010. Cointegration and VECM results confirmed a long-term relationship among the variables. Exports were found to have a strong positive effect on GDP, emphasizing their importance for economic performance.

Akoto (2016) explored the interaction between FDI, exports, and economic growth in South Africa using quarterly data from 1960 to 2009. The study identified a long-run equilibrium relationship and showed that FDI positively influences both exports and GDP. These findings support the view that FDI contributes to growth through export promotion.

Nguyen (2017) assessed the effects of FDI and exports on Vietnam's economic growth during 1986–2015. The ARDL results revealed that FDI positively affects growth in the long run, while exports exhibited a negative long-run effect. In the short run, neither variable showed a significant influence on economic growth.

Sultanuzzaman et al. (2018) investigated Sri Lanka from 1980 to 2016 using an ARDL model. The results confirmed a long-run relationship between FDI, exports, and growth. FDI positively affected economic growth in both the short and long term, whereas exports had mixed effects, being positive in the short run but negative in the long run.

Sharmiladevi (2020) examined the relationship among FDI, exports, and economic growth in India over the period 1971–2014. The study identified long-run cointegration among the variables, suggesting that economic liberalization strengthened the links between foreign investment, trade, and growth. However, some VECM results differed from the cointegration findings.

Hobbs et al. (2021) analyzed Albania's transition economy between 1992 and 2016. The study found a long-run relationship between GDP and FDI and identified a unidirectional causality running from economic growth to FDI. The results suggest that higher income levels attract foreign investment and reinforce growth prospects.

Sopta et al. (2021) investigated the nexus between FDI, exports, and economic growth in Croatia during 2000–2020. Using an ARDL model, the authors confirmed the existence of a long-run equilibrium relationship among the variables. Their findings support the importance of trade and foreign investment in sustaining economic growth.

Overall, the empirical literature shows that the effects of FDI on exports and growth are heterogeneous and depend strongly on country-specific conditions and economic structures.

2. Empirical study

2.1. Data and methodology.

This econometric study aims to examine the relationship between foreign direct investment (FDI), exports, and economic growth in Morocco's industrial sector over the period 1977–2024. To achieve this objective, a set of variables considered essential for the analysis is employed. The selection of these variables is based on the existing empirical literature and the theoretical framework adopted in this study. Industrial Gross Domestic Product (IGDP) is used as an indicator of economic growth and represents the total value of goods produced and services generated by the industrial sector within a given year. Exports (EXPRT) refer to the total value of goods and services exported during a given year. Foreign Direct Investment (FDI) represents the annual inflows of foreign direct investment into the Moroccan economy. Domestic Investment (DI) includes all domestic investments undertaken within the country and is measured by Gross Fixed Capital Formation (GFCF). Human Capital (HK) refers to the stock of knowledge, skills, qualifications, and individual attributes that contribute to economic and social well-being. Since human capital is difficult to measure directly, the gross secondary school enrollment rate is used as a proxy in this study. Labor Force (LAB) represents the economically active population and is measured by the potential workforce available in the economy. The data used in this study were obtained from the World Bank's World Development Indicators (WDI) database and the database of the Moroccan Ministry of Finance. Data processing, management, and econometric estimations were carried out using Microsoft Excel and EViews software.

2.2. Theoretical Model

Based on the literature review, we selected a linear model inspired by the work of Van den Berg and Ghosh Roy (2006), Bende et al. (2001), and Alaya (2006). This specification is designed to address the limitations of earlier models by incorporating the interaction effects between FDI and other explanatory variables affecting industrial GDP. The baseline model is formulated as follows :

$$IGDP_t = \alpha + \alpha_1 HK_t + \alpha_2 FDI_t + \alpha_3 DI_t + \alpha_4 EXPRT_t + \alpha_5 LAB_t + \varepsilon_t \text{ With :}$$

IGDP : Industrial Gross Domestic Product

DI : Domestic investement

EXPRT : exports

HK : humain capital

FDI : Foreign direct investement

LAB : Potentially available workforce

We opted in our study for an Autoregressive Distributed Lag (ARDL) model developed by M. Hashem Pesaran et al. (2001), the model is generally formulated as follows :

$$Y_t = \alpha + \sum_{i=1}^p a_i Y_{t-i} + \sum_{j=0}^q b_j X_{t-j} + \varepsilon_t$$

Where Y_{t-p} is the lagged dependent variable,

X_t denotes the explanatory variables X_{t-q} their lagged values

t: Time unit

ε_t : The error term of the model

In our study, based on the endogenous growth model, we have six variables available, and several model specifications could be considered in which each variable serves as the dependent variable. However, for reasons of economic interpretability and theoretical consistency, and in line with our main research question concerning the relationship between FDI, exports, and economic growth, we restrict our analysis to two models. In these specifications, economic growth and exports are alternatively used as dependent variables, while the remaining variables are included as explanatory factors. The study model is presented as follows :

$$\textbf{Model 1 : } IGDP_t = \alpha + \sum_{i=1}^p a_i IGDP_{t-i} + \sum_{j=0}^q b_j FDI_{t-j} + \sum_{j=0}^q b_j DI_{t-j} + \sum_{j=0}^q b_j EXPRT_{t-j} + \sum_{j=0}^q b_j HK_{t-j} + \sum_{j=0}^q b_j LAB_{t-j} + \varepsilon_t$$

$$\textbf{Model 2 : } EXPRT_t = \alpha + \sum_{i=1}^p a_i EXPRT_{t-i} + \sum_{j=0}^q b_j FDI_{t-j} + \sum_{j=0}^q b_j DI_{t-j} + \sum_{j=0}^q b_j IGDP_{t-j} + \sum_{j=0}^q b_j HK_{t-j} + \sum_{j=0}^q b_j LAB_{t-j} + \varepsilon_t$$

2.3. Results

In this section, we describe and interpret the results of statistical tests and econometric estimations performed in this article

2.3.1 Stationarity of the Series : ADF Test

To determine the order of integration of the variables included in the model, unit root tests were performed on the level series using the Augmented Dickey-Fuller (ADF, 1981) test. The results indicate that all variables are integrated of order one, $I(1)$, except for the labor force variable,

which is stationary at level, $I(0)$. These findings justify the use of the ARDL approach as the appropriate econometric framework for the analysis.

Table N°1 : ADF Test

Variable	Critical value (Model 3)	Critical value (Model 2)	ADF Probability	Process	Order of Integration	Variable retained for estimation
IGDP	2,06	1,01	1,00	DS	I(1)	D(IGDP)
FDI	3,359	-	0,00	TS	I(1)	D(FDI)
PAWF	0.52	2.95	0.000	DS	I(0)	D(PAWF)
DI	2 ,17	0,49	0,00	DS	I(1)	D(ID)
EXP	3 ,73	-	0,0027	TS	I(1)	D(EXPRT)
HK	3,63	-	0,016	TS	I(1)	D(HK)

Source : Prepared by the author using EViews

2.3.2 Short-run estimation

The short-run estimation results of Model 1 (see Appendix 1) show that, for the exports variable, the coefficient is 0.2370 with a t-statistic of 7.3674, which is statistically significant (p-value = 0.0000). This indicates a strong positive effect of exports on IGDP. In contrast, the coefficient of EXPORT (-1) is -0.0504 with a t-statistic of -1.4514 and a p-value of 0.1558. The relatively high p-value suggests that this coefficient is not statistically significant, implying that exports lagged by one year do not have a significant impact on the dependent variable. Regarding our main variable of interest, FDI, the estimation results show no significant impact or relationship with IGDP in the short run. The short-run estimation results of the second model (see appendix 2) indicate that exports lagged by one year (coefficient of 0.4679 with a t-statistic of 3.1809 and a p-value of 0.0045) and by three years (coefficient of 0.4112 with a t-statistic of 2.522 and a p-value of 0.0198) have a positive and significant effect on current exports. However, exports lagged by two years (coefficient of -0.057090 with a t-statistic of -0.38 and a p-value of 0.70) show a negative but statistically insignificant relationship with current exports. Concerning our FDI variable, the probability is significant (p-value = 0.018) and moves in the same direction as the endogenous variable (exports). Specifically, a one-unit increase (or decrease) in FDI leads to a corresponding change in exports of 0.012 units in the same direction.

2.3.3 Cointegration Test (Bounds Test)

For the first model, the F-statistic is 7.349451, which is higher than the critical values at all significance levels (10%, 5%, 2.5%, and 1%). This suggests that we can reject the null hypothesis, indicating evidence of a cointegration relationship. (See appendix 3) For the second model, the F-statistic (2.385043) does not exceed the critical values at the stricter significance levels (5%, 2.5%, and 1%). For example, at the 5% significance level, the critical value is 3.38, while the statistic is 2.385. This indicates that the Fisher statistic is not statistically significant, and we fail to reject (accept) the null hypothesis of no cointegration between the studied series. (See appendix 4)

2.3.4 Long-run estimation

The long-term estimation results show that foreign direct investment does not have a significant impact on IGDP. It records a small negative coefficient of -0.0038 with a p-value of 0.40, which is higher than 5%. Domestic investment, on the other hand, has a strong and significant positive influence, with a coefficient of 0.3555 and a p-value equal to zero. Exports also show a positive coefficient of 0.1967 and a p-value of 0.0111, indicating a significant and important positive impact on the dependent variable. As for human capital and the active population, their impact on IGDP appears to be statistically insignificant, given their probabilities (0.0762 and 0.5959), which are higher than 5%.

2.4. Validation of the ARDL Model

2.4.1 Breusch–Godfrey Test.

Based on the data presented in the table below, the Breusch-Godfrey test for serial correlation indicates the absence of autocorrelation in the error terms of the four ARDL models. The test probability exceeds the 5% threshold in both models, meaning that the errors in each model are not correlated with each other. This confirms that the model estimations are reliable.

Table2 : Breusch–Godfrey Test.

MODEL	F-statistic	Obs*R-squared	Prob.	Prob. Chi-square
1	0.451105	1.261.364	F(2.32) 0.6409	0.5322
2	1.633.575	6.455.905	F(2.19) 0.2215	0.0396

Prepared by the author using EViews

2.4.2 Heteroskedasticity Test (Breusch–Pagan–Godfrey).

Based on the results presented in the table above, the Breusch-Pagan-Godfrey test for heteroskedasticity indicates the absence of heteroskedasticity in the error terms of models 1 and 2. The test probability exceeds the 5% threshold, suggesting that the errors do not exhibit variation among themselves. This finding supports the robustness of the model estimation.

Table3 : Test Breusch–Pagan–Godfrey

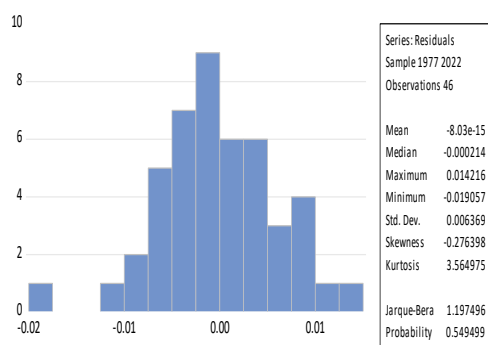
MODEL	F-statistic	Obs*R-squared	Scaled explained SS	Prob.	Prob. Chi-square
1	0.950962	1.082.277	6.522086	F(11.34) 0.5066	0.4582
2	0.587027	1.675.510	5.628.166	F(22.21) 0.8886	0.7767

Prepared by the author using EViews

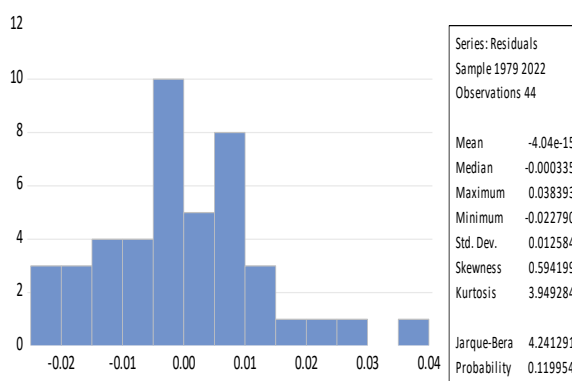
2.4.3 Jarque–Bera Normality Test

For models 1 and 2, the Jarque-Bera normality test shows a probability greater than 5%, indicating that the model residuals follow a normal distribution. We can therefore accept the null hypothesis of normality of the errors, reinforcing the validity of the ARDL model results and allowing a reliable interpretation of the estimations for models 1 and 2.

Figure 1 : Jarque–Bera Normality Test 1



Model 1



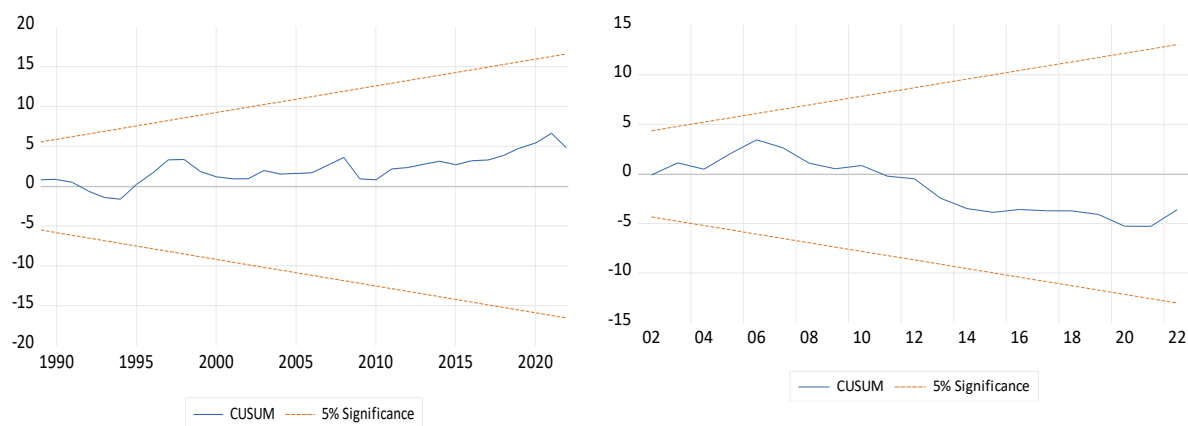
Model 2

Prepared by the author using EViews

2.4.4 Model Stability : CUSUM Test.

The figures show that the parameters of the two models are considered stable, as the blue CUSUM line remains within the confidence interval boundaries, defined by the red lines. This observation allows us to conclude that the models under consideration are stable.

Figure 2 : CUSUM Test



Model 1

Model 2

Prepared by the author using EViews

Overall, the diagnostic tests confirm that the ARDL model is well specified, with no evidence of autocorrelation or heteroskedasticity, normally distributed residuals, and stable parameters over time, ensuring the reliability and robustness of the estimated results.

3. Discussion

The short-run estimation of the first ARDL model reveals a significant impact of exports, which exert a positive and statistically significant influence on Morocco's industrial sector. This finding highlights the importance of exports in promoting industrial development in Morocco and confirms the predictions of endogenous growth theory, which considers such variables as key determinants of productivity. In contrast, the estimation indicates no significant relationship between foreign direct investment (FDI) and industrial GDP (IGDP) in the short run, suggesting that, in the Moroccan context, variations in FDI do not have a significant impact on industrial GDP. The long-run estimation of the first ARDL model also indicates a significant influence of exports on Morocco's industrial GDP. Exports display a relatively high coefficient (0.19) with statistically significant probability values, reflecting a strong and significant positive effect on industrial GDP growth. This result further supports the endogenous growth theory, according to which productivity is driven by exports. Regarding FDI, the results show a weak negative effect (coefficient = -0.003), which is not statistically significant (p -value = 0.40). This finding

rejects the hypothesis that industrial productivity in Morocco is driven by foreign direct investment in the long run.

The short-run estimation results of the second ARDL model show that foreign direct investment (FDI), as the explanatory variable, has a positive and statistically significant effect on exports. Specifically, a one-unit increase (or decrease) in FDI leads to a corresponding increase (or decrease) of 0.012 units in exports. This finding supports the hypothesis that FDI can indirectly influence industrial GDP (IGDP) through the promotion of exports and the diffusion of spillover effects. Furthermore, the model exhibits strong explanatory power, indicating that the included variables account for a substantial proportion of the variation in exports. However, the long-run estimation reveals no statistically significant relationship between FDI and exports. This suggests that, although FDI contributes to export performance in the short run, its effect is not sustained over the long term in the Moroccan context. Consequently, the hypothesis that FDI indirectly promotes industrial GDP through export expansion and spillover effects is supported only in the short run and not in the long run.

The results of our empirical analysis indicate that Foreign Direct Investment (FDI) does not have a statistically significant direct effect on Morocco's industrial sector in either the short run or the long run. This finding contrasts with the predictions of endogenous growth theory and a large body of empirical literature, which generally argue that FDI promotes economic growth by stimulating industrial development, enhancing productivity, facilitating technology transfer, and generating positive spillover effects. Therefore, the hypothesis that Morocco's industrial growth is driven directly by FDI is not supported by the findings of this study. One possible explanation is that the benefits of FDI are conditional upon the host country's absorptive capacity. In other words, the positive effects of foreign investment depend on the existence of favorable economic, institutional, and industrial conditions that enable domestic firms to absorb advanced technologies, managerial know-how, and productivity spillovers generated by multinational enterprises. In the Moroccan context, several structural constraints appear to limit the transmission of these benefits to the industrial sector. Despite the significant progress achieved in recent years, Morocco's industrial sector continues to face a number of challenges that may reduce the effectiveness of FDI. These include infrastructure gaps in certain regions, complex administrative procedures, bureaucratic inefficiencies, limited transparency, and difficulties in accessing finance, particularly for small and medium-sized enterprises. In addition, strict quality standards, customs-related barriers, import restrictions affecting production inputs, and insufficient collaboration between public institutions and the private

sector may hinder the integration of domestic firms into the production networks of multinational corporations. As a result, foreign investment may remain concentrated in enclaves with limited spillover effects on the broader industrial economy.

Our econometric results also show that FDI has a positive and statistically significant effect on exports in the short run. This finding suggests that foreign investment contributes to improving Morocco's export performance by attracting export-oriented multinational firms and strengthening the country's integration into global value chains. However, this relationship becomes statistically insignificant in the long run, indicating that the export-enhancing effects of FDI are not sustained over time. Nevertheless, the overall relationship between FDI and exports remains positive. This outcome may reflect Morocco's continuous efforts to strengthen its attractiveness as an international outsourcing and manufacturing platform. Through investment-friendly reforms, the development of industrial and logistics zones, improvements in transport infrastructure, and an extensive network of free trade agreements, Morocco has succeeded in attracting multinational firms, particularly in export-oriented industries such as automotive, aerospace, electronics, and textiles. While these policies have contributed to higher exports in the short term, the absence of long-term significance suggests that additional measures are needed to strengthen domestic productive capacities, deepen linkages between foreign and local firms, and increase the technological and knowledge spillovers generated by FDI. Such policies would enhance the absorptive capacity of the Moroccan economy and allow foreign investment to make a more substantial and lasting contribution to industrial development.

Conclusion

This paper investigated the role of Foreign Direct Investment (FDI) in Morocco's industrial development, with a particular focus on exports as a potential spillover channel. Using an Autoregressive Distributed Lag (ARDL) framework, the study examined both the short-run and long-run relationships between FDI, exports, and industrial growth. The central objective was to determine whether FDI contributes directly or indirectly to industrial performance in Morocco through export-led spillover effects. The empirical findings provide a nuanced picture. On the one hand, exports appear to play a significant and robust role in driving industrial growth in both the short and long run, confirming the importance of export-led industrialization in the Moroccan context. On the other hand, FDI does not exhibit a significant direct effect on industrial GDP over either time horizon. These results suggest that, contrary to theoretical expectations, FDI alone is not a sufficient driver of industrial development in Morocco. However, the analysis reveals that FDI does positively influence exports in the short run, indicating the presence of indirect transmission channels. Nevertheless, this effect is not sustained in the long run, which limits the extent to which FDI can be considered a stable engine of export-led industrial growth. Overall, the findings suggest that the contribution of FDI to industrial development in Morocco is conditional and largely dependent on complementary structural factors. Despite its contributions, this study is subject to several limitations. First, the analysis is constrained by data availability and the level of aggregation of macroeconomic indicators, which may mask sectoral heterogeneity within the industrial sector. Second, the ARDL methodology, while suitable for dynamic analysis, does not fully capture potential structural breaks or nonlinear relationships that may exist in the Moroccan economy. Future research could extend this work in several directions. First, disaggregated sectoral or firm-level data could be used to better capture heterogeneous effects of FDI across different industrial activities. Second, alternative econometric approaches, could be employed to explore asymmetric or structural effects. Third, future studies could incorporate additional spillover channels beyond exports, particularly human capital and domestic investment, to provide a more comprehensive understanding of how FDI influences industrial development. Finally, comparative studies involving other emerging economies could help position Morocco's experience within a broader international context and identify the specific institutional and structural conditions under which FDI becomes a more effective driver of industrial growth.

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APPENDICES

Appendice 1

ARDL Error Correction Regression Dependent Variable: D(PIBI) Selected Model: ARDL(1, 0, 2, 2, 1, 0) Case 2: Restricted Constant and No Trend Date: 07/31/24 Time: 18:35 Sample: 1975 2022 Included observations: 46				
ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ID)	0.215508	0.027536	7.826345	0.0000
D(ID(-1))	-0.156079	0.028752	-5.428395	0.0000
D(EXPORT)	0.236993	0.032168	7.367354	0.0000
D(EXPORT(-1))	-0.050399	0.034725	-1.451369	0.1558
D(KH)	0.247610	0.056645	4.371282	0.0001
CointEq(-1)*	-0.693839	0.089185	-7.779775	0.0000
R-squared	0.814278	Mean dependent var		0.011900
Adjusted R-squared	0.791062	S.D. dependent var		0.014778
S.E. of regression	0.006755	Akaike info criterion		-7.035991
Sum squared resid	0.001825	Schwarz criterion		-6.797473
Log likelihood	167.8278	Hannan-Quinn criter.		-6.946641
Durbin-Watson stat	2.023634			

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Appendice2

ARDL Error Correction Regression Dependent Variable: D(EXPORT) Selected Model: ARDL(4, 4, 1, 0, 4, 4) Case 2: Restricted Constant and No Trend Date: 08/01/24 Time: 19:24 Sample: 1975 2022 Included observations: 44				
ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXPORT(-1))	0.467994	0.147125	3.180926	0.0045
D(EXPORT(-2))	-0.057090	0.149504	-0.381865	0.7064
D(EXPORT(-3))	0.411286	0.163017	2.522964	0.0198
D(ID)	-0.026085	0.152317	-0.171256	0.8657
D(ID(-1))	0.454117	0.094167	4.822444	0.0001
D(ID(-2))	0.171771	0.102526	1.675393	0.1087
D(ID(-3))	0.267918	0.100532	2.665008	0.0145
D(IDI)	0.012758	0.004984	2.559860	0.0182
D(PIBI)	1.429799	0.249600	5.728362	0.0000
D(PIBI(-1))	-1.687408	0.415441	-4.061724	0.0006
D(PIBI(-2))	-0.618828	0.356602	-1.735350	0.0973
D(PIBI(-3))	-0.866918	0.347601	-2.494001	0.0210
D(POPA)	-0.285448	0.583426	-0.489263	0.6297
D(POPA(-1))	0.579704	0.612688	0.946165	0.3548
D(POPA(-2))	-2.488531	0.656375	-3.791327	0.0011
D(POPA(-3))	1.145999	0.666040	1.720617	0.1000
CointEq(-1)*	-0.738070	0.159304	-4.633076	0.0001
R-squared	0.834745	Mean dependent var		0.022017
Adjusted R-squared	0.736815	S.D. dependent var		0.030955
S.E. of regression	0.015880	Akaike info criterion		-5.163106
Sum squared resid	0.006809	Schwarz criterion		-4.473760
Log likelihood	130.5883	Hannan-Quinn criter.		-4.907463
Durbin-Watson stat	1.922602			

* p-value incompatible with t-Bounds distribution.

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Appendice 3

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic k	7.349451 5	Asymptotic: n=1000		
		10%	2.08	3
		5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Actual Sample Size	46	Finite Sample: n=50		
		10%	2.259	3.264
		5%	2.67	3.781
		1%	3.593	4.981
		Finite Sample: n=45		
		10%	2.276	3.297
		5%	2.694	3.829
		1%	3.674	5.019

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Appendice 4

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic k	2.385043 5	Asymptotic: n=1000		
		10%	2.08	3
		5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Actual Sample Size	44	Finite Sample: n=45		
		10%	2.276	3.297
		5%	2.694	3.829
		1%	3.674	5.019
		Finite Sample: n=40		
		10%	2.306	3.353
		5%	2.734	3.92
		1%	3.657	5.256

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