



Macroeconomic Determinants of Tourism Private Investment in Egypt: An ARDL Model

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Abstract

With the increasing number of tourist arrivals and changing tourism patterns and preferences, the importance of stimulating tourism investment in Egypt has become apparent. This paper aims at examining the macro-economic determinants of tourism private investment in Egypt from 2002 to 2019. Seven macro-economic variables are used to model tourism private investment in Egypt using Autoregressive Distributed Lag (ARDL) framework. The main findings of the study show that in the long run public (government) investment, real exchange rate, tourist arrivals and tourism revenue are positively correlated with private investment in the tourism sector, while real lending rate and political stability are negatively correlated with tourism private investment in Egypt. Short-run results are also consistent with the long-run outcomes. The outputs of this paper provide essential data for formulating and executing policies that aim at enhancing private investment in the tourism sector in Egypt.

Introduction

Over the last few decades, the tourism industry has continued to grow exponentially and has emerged as a major contributor to economic and social growth in many economies across the world. According to the United Nations World Tourism Organization (UNWTO) in 2019, 1.5 billion international tourist arrivals were recorded worldwide, with a 4 percent increase over the previous year. The Middle East emerged as the fastest growing region for international tourist arrivals in 2019, growing almost twice the global average (+8%) (UNWTO, 2020). UNWTO report stressed that international tourism growth would continue to outpace the global economy in spite of global situations of international trade tensions, social unrest, and geopolitical uncertainty. Based on current trends and the UNWTO confidence index, UNWTO is forecasting global growth in international tourist arrivals by 3 to 4 percent in 2020 (UNWTO, 2020).

The strong growth in the volume of tourism forecasts to 2030, together with changes in tourist demand patterns and travel behaviors, and the intense competition between and within destinations have created a serious challenge for tourist destinations related to the urgent need to boost tourism investment. Not only to increase destination carrying capacity and balance supply and demand in a sustainable manner, but also to track recent changes and trends in the markets, including technological developments, digitization, safety and security issues, the emergence of new outbound travel markets, as well as the transition to more sustainable practices (OECD, 2018).

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In broad economic terms, investment refers to capital expenditure that increases the stock of tangible capital goods such as equipment, structures or inventory (Mukherjee, 2002). Tourism investment, in a common sense, includes capital expenditure targeting primarily the tourism sector and supporting tourism development while achieving returns (Dwyer et al., 2010). Tourism investment is a strategic determinant of the growth of the tourism industry and income in a destination. Moreover, given the correlation between the tourism sector and other major economic sectors, the growth of tourism investment and income can stimulate growth in other economic sectors, including industry, agriculture, transport and services. This leads to increased GDP growth, increased employment opportunities, and poverty reduction. In this regard, the development of a tourism investment policy that stimulates investment in areas to meet national economic and social objectives is of great importance to developing countries (Ash, 2005).

In general, both public and private investments are vital for tourist destinations. Public investment by all levels of government is essential for the provision of tourism infrastructure, the accessibility of tourist facilities and the promotion of private sector investment. However, the burden of major tourism investments falls on the private sector (such as hotel facilities, attractions, etc.), especially in developing countries (OECD, 2017). Private investment is also perceived as more efficient and effective compared to public sector investment (Ngoma et al., 2019). Developing a business environment that encourages the private sector as a major player in tourism investment and provides incentives and rewards is therefore of paramount importance.

Investment decision is one of the most complex decisions, especially when it comes to the tourism sector due to its exceptional characteristics, particularly its high level of risk and its high sensitivity to internal and external changes. A variety of factors influence private investment decision and shape the decisions of where, when and how much to invest. According to Mendes et al. (2014), these factors can be divided into two main groups: internal conditions of the firm and external conditions relating to the macroeconomic environment in which the firm operates.

The implication of induced investment policy becomes very clear when policy makers better understand the macroeconomic accelerator variables of tourism investment decision and the sensitivity of the tourism private investment to each of these variables. Unfortunately, as Dwyer et al. (2010) points out, many researches affirm that macro-economic variables such as exchange rate and inflation rate have an effect on the tourism investment decisions, but these determinants of investment decisions are taken as guaranteed and are not sufficiently examined in particular cases. The literature review also confirms the gap in this area of research.

Realizing the significant contribution of tourism investment to achieve robust economic growth in Egypt, this paper aims at examining the main macroeconomic variables that determine tourism private investment in Egypt from 2002 to 2019, using Autoregressive Distributed Lag (ARDL) framework. The outputs of this paper provide inputs for designing the effective policy to further stimulate and mainstream tourism private investment in Egypt by identifying the macro-economic variables determining tourism private investment decision.

1- Literature review

The mainstream economic wisdom argues that there exists a causal relationship between investment behavior and macroeconomic variables. Various investment behavior theories have been proposed in the general finance and economic literature, and can be extended to tourism research in order to reach a conclusion that explains the behavior of tourism investment. Main

theories of investment behavior include the accelerator model, the neoclassical theory and Tobin's Q theory.

The simple accelerator model or acceleration as developed by Keynes (1936) starts from the assumption that capital investment outlay is a linear proportion of changes in output. This implies that capital investment outlay responds to the changing demand and income conditions. For example, if demand or income increases over time, firms respond by increasing investment, thereby increasing profits as well. The simple accelerator model was criticized for ignoring other variables that could influence investment decision, including uncertainty, profits and financial factors; therefore, it has over time been reformulated into the flexible accelerator model of investment (Goodwin 1948; Chenery 1952; Lucas 1967; Gould 1968; Treadway, 1971). The flexible accelerator model suggests that investment varies with other variables, including uncertainty and market imperfections; it also implies that adjustment to the desired capital stock is not considered to be immediate (Wai & Wong, 1982; Dehn 2000; Erden & Holcombe, 2005; Shih et al., 2007). The flexible accelerator model also faced a high level of criticism because it ignores the price of capital as the main determinant of investment and thus lacks a sound theoretical foundation. (Twine et al., 2015; Mickiewicz et al., 2004).

The neoclassical investment behavior model as postulated by Jorgenson (1971) is based on Keynes' original approach of optimal capital accumulation, which is determined by relative cost of production factors. It argues that the increase in investment rate is demonstrated by the difference between the existing and the desired capital stock. This model shows that investment is positively related to marginal product of capital and negatively related to real interest rate that raises the cost of capital (Chirinko, 1993; Asante, 2000; Lugo, 2008). Other literature, however, establishes a positive relation between real interest rate and investment volume and quality since higher interest rate encourages both total and financial savings and, therefore, investment. At the same time, higher interest rate will transfer capital from less efficient to more efficient forms of accumulation (McKinnon, 1973; Shaw, 1973; Fry, 1988).

Tobin's Q investment theory developed by Tobin and Brainard (1968) argues that the investment level of firms is based on the q ratio that demonstrates the market value of installed capital asset to its replacement cost. It follows that enterprises will invest if the additional unit's market value rise exceeds the cost of replacing it. In short, the Q investment theory identifies interest rate as the major determinant of investment (Chirinko, 1993; Ghura & Goodwin, 2000; Lin et al., 2018).

Theoretical work also establishes a connection between public investment and private investment through two key channels. The first channel assumes that public investment crowds-out private investment as a result of inefficient public investment or competition with the private sector for domestic lending assets. Whereas the second channel counters this argument and suggests that public investment crowds-in or complement private investment as such capital expenditure leads to increasing the productivity of private enterprises (Dash, 2016; Lugo, 2008; Erden & Holcombe, 2005; Apergis, 2000).

Recent studies have also introduced an element of uncertainty into investment theory due to the irreversible investment feature (Pindyck, 1991). Various forms of uncertainty could arise from a variety of circumstances, including political instability and economic crises (Salahuddin & Islam, 2008).

A large and growing empirical literature examines the macroeconomic determinants of private investment over a long period of time. They list various variables as determinants of private investment, including real GDP growth, real exchange rate, real interest rate, credit to the private sector, government investment, inflation rate, trade openness, external debt, and tax. For example, Greene and Villanueva (1991) conduct studies on 23 countries from 1975-1987. They note the positive influence of real GDP growth, level of per capita GDP and the rate of public sector investment on private investment, and negative influence of real interest rates, domestic inflation, the debt-service ratio and the ratio of debt to GDP.

Jayaraman (1996) investigated macroeconomic factors determining private investment in the South Pacific developing member countries (SPDMCs). Findings display that real foreign exchange rate instability has a negative influence on private investment, output growth has an expansionary effect, and public investment has a contractionary influence.

In their paper "Modeling Private Manufacturing Investment in Turkey," Attar and Temel (2002) model Manufacturing private investment in Turkey on the basis of the neoclassical model, using multivariate co-integration techniques and Error Correction Model (ECM). Results reveal that manufacturing private investment positively linked to real income of manufacturing sector and negatively to public investment and cost of capital in the long-run.

Salahuddin and Islam (2008) investigated gross investment behavior in a panel of 97 developing countries covering the period from 1973 to 2002. Difference Generalized Method of Moments (GMM) dynamic panel data analysis is used. Results suggest that investment decisions are significantly affected by per capita growth rate, domestic savings and trade openness. However, they have not been able to highlight the effect of real interest rate and uncertainty through corruption on investment.

In Egypt, Shafik (1992) attempted to model private investment using the error correction and cointegration models. Results indicate that private investment depends on mark-ups, internal financing, demand and the cost of investment goods. The impact of government policy on private investment is mixed, with some evidence of crowding out in credit markets and of crowding in connected to government investment in infrastructure. In a recent empirical study, Sallam (2019) investigated the determining factors of private investment in Egypt from 1982-2015 on the basis of Tobin's Q theory. The study employs vector error correction model (VECM) and cointegration long run analysis. Results illustrate that a stochastic shock in the firm's value or in the capital goods prices has a slight positive influence on the rate of investment rate.

The quest for empirical studies of investment in the tourism sector has resulted in few hits. A number of surveys are conducted among small groups of tourism investors to investigate the investment behavior within a particular sector of tourism industry. They are primarily judgmental in nature and provide descriptive data statistics capturing the respondents' general opinion or judgment as to what appears of significant influence on their investment behavior. For example, Newell and Seabrook (2006) investigated factors affecting the decision making of hotel investments in Australia. They systematically analyzed the questionnaires by applying an analytical hierarchy process (AHP) to the data. Results reveal that economic factors come at the third level of importance (weighted by 14.5 %) in influencing hotel investment after financial factors (37.0%) and location factors (29.9%). Among the investigated economic factors hotel investors rank market demand, interest rates, and tourist spending patterns as key factors in investment decision making. Moreover, Snyman and Saayman (2009) attempted

to identify the key factors influencing foreign direct investment (FDI) in the South African tourism industry. A survey is conducted on various estate agents that are specialized in dealing with foreign direct investors. Five macroeconomic factors are captured as determinants of investment decision, including exchange rate, Interest rate, Inflation, Market size and growth, and expected high return. Similarly, FDI determinants in Malawi are investigated by Nansongole (2011). The analysis identifies market size and growth, interest rates, currency volatility, expected high returns, inflation, financial markets, economy of Malawi and profitability as significant factors in investment decision making process.

In conclusion, the very limited empirical studies on investment in the tourism sector illustrate the need for paying extra attention and conducting more exploratory research on tourism investment behavior, applying in depth investigations and quantitative analysis to define the factors that determine tourism private investment decision.

3. Research Methodology

- Data Sources

Secondary data are used over the period from the first quarter of the fiscal year 2002/2003 to the first quarter 2019/2020. The choice of this period depends on the availability of data for most of the variables used in the study. Seven macro-economic variables are used to estimate the tourism private investment model in Egypt: public investment, real GDP, real lending rate, tourist arrivals, tourism revenues, real exchange rate, and inflation rate. Data are drawn from the World Bank's World Data, Central bank of Egypt reports (various issues), and the Egyptian Ministry of Planning.

- Methodology

The main objective of the study is to examine the long run and short run relationships between tourism private investments and macro-economic determinants in Egypt. This can be done using cointegration analysis and error correction model. The cointegration test and error correction model are used within an Autoregressive Distributed Lag (ARDL) model. ARDL model was developed by Pesaran and Shin (1999) and Pesaran et al. (2001). It is an Ordinary Least Square (OLS) based model with three main advantages. First, it can be used if the underlying variables are integrated of mixed orders or some of them are non-stationary. Second, the ARDL test is relatively more efficient in the case of small and finite sample data sizes compared to other traditional cointegration models. Finally, it leads to unbiased estimates of the long-run model (Harris & Sollis, 2003).

The following simple model is considered to illustrate the ARDL modeling approach:

$$y_t = \alpha + \beta x_t + \delta z_t + e_t$$

The error correction version of the ARDL model is derived as follows:

$$\Delta y_t = \alpha_0 + \sum_{i=1}^p \beta_i \Delta y_{t-i} + \sum_{i=1}^p \delta_i \Delta x_{t-i} + \sum_{i=1}^p \gamma_i \Delta z_{t-i} + \lambda_1 y_{t-1} + \lambda_2 x_{t-1} + \lambda_3 z_{t-1} + u_t$$

The first part of the equation with β , δ and e represents the short run dynamics of the model. While the second part with λ_s represents the long run relationship.

The null hypothesis in the equation is $\lambda_1 + \lambda_2 + \lambda_3 = 0$, which means that the long run relationship does not exist.

- Model Specification

For the analysis, the following simple dynamic model incorporating variables of accelerator, neoclassical and uncertainty (for political instability) is proposed for the study

$$I_p = f(RGDP, I_g, INFL, RLR, TA, TR, RER, D)$$

Where I_p = Private Investment (as a percentage of GDP), $RGDP$ = Real Gross Domestic Product (growth rate), I_g = Public Investment (as a percentage of GDP), $INFL$ = Inflation Rate, RLR = Real Lending Rate (lending rate – Inflation rate), RER = Real Exchange Rate (proxied by Real Effective Exchange Rate), TA = Tourist Arrivals (growth rate), TR = Tourism Revenues (growth rate), D = Dummy (proxy for political instability) takes 1 in the period from the 3rd quarter of 2010-2011 till the 4th quarter of 2012-2013, and 0 otherwise.

The explicit estimable econometric model is formulated as follows:

$$I_t^p = \beta_0 + \beta_1 RGDP + \beta_2 I^g + \beta_3 INFL + \beta_4 RLR + \beta_5 TA + \beta_6 \ln TR + \beta_7 RER + \beta_8 D + \varepsilon_t$$

Where ε_t , represents the usual error term and t is time.

-Descriptive statistics

The descriptive statistics for the research variables are presented in table (1). As shown in the table, the mean and median for tourism private investment in Egypt over the tested period are 0.3% and 0.2% respectively. Tourism private investment minimum value is 0.0046% and the maximum value is 1.3%.

Figure (1) depicts tourism private investment in Egypt during the study period. From the figure it can be inferred that tourism private investment suffers from high volatility. Also, it is clear that the maximum of private investments occurred at the second quarter of 2007/2008. From the Jarque-Bera test as shown in table (1), tourism private investment is not normally distributed with 95% level of confidence, as the p-value of the test is less than 5%.

Table 1

Descriptive Statistics of Variables

	I_p	I_g	INFL	RER	RGDP	RLR	TR	TA
Mean	0.003682	0.000416	0.298197	65.35130	4.839377	12.94993	0.043270	0.067410
Median	0.002248	0.000337	0.104947	69.25050	5.054000	12.42642	0.000000	0.005270
Maximum	0.013904	0.001710	6.743000	90.64800	9.731000	19.50348	0.752242	1.290799
Minimum	4.60E-05	1.17E-05	0.027367	17.51000	-4.334000	4.870833	-0.456725	-0.621773
Std. Dev.	0.003452	0.000338	1.090761	14.07150	2.189008	2.559092	0.266887	0.393553
Skewness	1.179313	1.378897	5.595036	-0.563962	-1.038287	0.322363	0.475414	1.411801
Kurtosis	3.496032	5.129204	32.44516	3.557270	6.625626	5.020264	3.117310	5.089259
Jarque-Bera	16.70134	34.89945	2852.676	4.550446	50.18981	12.92928	2.638777	35.47098
Probability	0.000236	0.000000	0.000000	0.102774	0.000000	0.001558	0.267299	0.000000
Observations	69	69	69	69	69	69	69	69

Note: Jarque-Bera null hypothesis is that “the data is normally distributed”

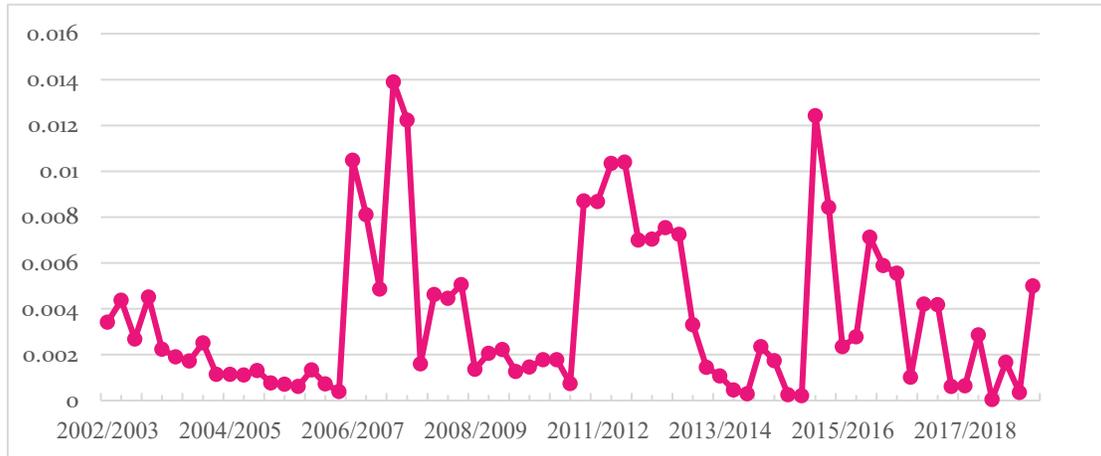


Fig.1. Line plot for tourism private investments

Empirical Results and Discussions

Unit Root Test Results

The initial step in time series analysis is to validate the stationarity assumption. The Augmented Dickey-Fuller (ADF) (1981) test is used to determine whether or not the data series is stationary (has no unit root) by calculating the respective statistics and p-values in the main level. The ADF test is one of the cited unit root tests in literature and is widely used.

Table (2) demonstrates the ADF test results. From the results it can be concluded that private investment, public investment, tourist arrivals and tourism revenues are stationary at their levels. Other variables are not stationary at their levels, but when the first difference is taken, they become stationary.

Table 2
ADF Test Results

Variable	ADF	p-value
Ip	-4.517651	0.0005***
Ig	-6.3505	0.0000***
TA	-14.13792	0.0001**
TR	-7.8255	0.0000***
RGDP	-2.46598	0.0000***
Δ RGDP	-6.57267	0.1285
RLR	-2.19367	0.0000***
Δ RLR	-10.92153	0.2106
INFR	-2.739345	0.0000***
Δ INFR	-15.23464	0.0729
RER	-2.160900	0.000***
Δ RER	-12.3722	0.2223

Note: *10%, **5%, ***1% significance. The ADF tests include an intercept. The appropriate lag lengths were selected according to the Schwartz Bayesian criterion; also, p-values are calculated using MacKinnon (1996) one-sided p-values.

Correlation Analysis Results

Before running the ARDL model, we have to check that the independent variables are not highly correlated and are thus accepted to be added in one model. It is evident from table (3) that there is no correlation coefficient in absolute value greater than 0.7, except for the relationship between inflation rate and real lending rate. Accordingly, inflation rate should be ruled out from the model.

Table 3

Pearson Correlation Coefficient for the Independent Variables

Probability	Ig	RER	RGDP	RLR	TR	TA	INFR
Ig	1.000000						
RER	0.024136	1.000000					
RGDP	0.119101	-0.206961	1.000000				
RLR	-0.077209	-0.169721	0.088197	1.000000			
TR	-0.035676	-0.079798	0.083942	0.237297**	1.000000		
TA	-0.091026	-0.088285	-0.097570	0.126069	0.260066**	1.000000	
INFR	-0.034113	-0.011368	0.022341	-0.794062***	-0.100302	-0.046818	1.000000

Note: *10%, **5%, ***1% significance

Cointegration Results

The ARDL bounds test for cointegration is based on the assumption that the tested variables are either I(0) or I(1). Table (4) displays the results of the bounds test for the existence of long-run relation

Table 4

Bounds Test Results for long-run Relation

K	90% level		95% level		99% level	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
6	1.63	3.23	1.79	3.61	2.96	4.26
Calculated F-Statistic: $F_{JP}(Ip /RGDP, Ig, RLR, TA, TR, RER)$						1.883**

Note: *10%, **5%, ***1% significance

From table (4) the F-statistic, which the joint null hypothesis of the lagged level variables of the coefficients is zero, is rejected at 5% significance level, since the calculated F-statistic for Ip (0)=1.883 which comes between 1.79 and 3.61. This implies that there is a unique cointegration relationship (i.e. long-run relation) between tourism private investment and independent variables in the model.

Results of the Long Run ARDL Model

The long-run ARDL model is estimated on the basis of Akaike Information Criterion (AIC) keeping a lag of 4 given the quarterly nature of data and lag 1 for regressors to avoid the relatively short sample properties of data. Results are presented in table (5).

Table 5
Long-run ARDL Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Ig	5.818697	1.705523	3.41168	0.0012
RER	0.4131	1.2625684	3.156421	0.0025
RLR	-0.0161	0.0458829	-2.849872	0.0399
RGDP	0.000165	0.0001228	0.744267	0.46
TR	0.1718	0.5017957	2.920813	0.03613
TA	0.0908	0.2477853	2.728913	0.04693
D	-0.2226	0.792698	-3.561087	0.001145
C	-0.000456	0.003759	-0.121424	0.9038

As shown in table (5), public investment (Ig) coefficient is positive and significant, indicating a potential crowd-in impact of tourism public investment. In the long-run, a 1% rise in tourism public investment would boost tourism private investment in Egypt by 5.8%.

Tourism revenues coefficient (TR) is also positive and statistically significant, confirming the potential positive effect of tourism revenues growth on tourism private investment in Egypt. In the long-run, 1% increase in tourism revenues would increase tourism private investment in Egypt in the long-run by 0.17%. Similarly, the coefficient for tourism arrivals (TA) is positive and statistically significant, and a 1% rise in tourism arrivals would increase tourism private investment in Egypt by 0.09%.

Surprisingly, the real GDP growth rate (RGDP) has a positive but insignificant coefficient at any of the conventional significance levels.

Real exchange rate (RER) has a statistically significant and positive impact on tourism private investment in Egypt in the long-run, and an increase in real exchange rate (depreciation of currency) by 1% would increase tourism private investment in Egypt by 0.41%.

Real lending rate (RLR) has a negative and significant influence on tourism private investment in the long run, and a 1% increase in the real lending rate would decrease tourism private investment in Egypt by 0.016%.

Finally, it is clear that the dummy (D) (for political instability) has a negative and significant impact on tourism private investment in Egypt, confirming the negative impact of January Revolution on tourism private investment in Egypt in the long run.

Results of the Short Run Dynamic Model

The next step is to model the short run dynamic parameters following the ARDL technique. The results of the short run estimates for tourism private investment in Egypt are presented table (6).

Table 6

Short-Run ARDL Estimates

Dependent Variable: Ip				
Selected Model: ARDL (4, 0, 0, 0, 0, 0, 0)				
Included observations: 65				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Ip(-1))	0.1575	0.1482	1.0623	0.2929
D(Ip(-2))	-0.1361	0.1245	-1.0932	0.2793
D(Ip(-3))	0.1696	0.1187	2.4292	0.0459
D(Ig)	4.1644	1.1100	3.7516	0.0004
D(RER)	0.2800	0.8794	3.1407	0.0026
D(RLR)	-0.1160	0.3323	-2.8645	0.0391
D(RGDP)	0.0001	0.0002	0.7289	0.4693
D(TR)	0.1229	0.3621	2.9462	0.0318
D(TA)	0.0650	0.1776	2.7323	0.0417
D(D1)	-0.1593	0.0011	-3.4780	0.0015
CoIntEq(-1)	-0.7157	0.1483	-4.8262	0.0000
CoInteq = Ip - (5.8187*Ig + 0.4131*RER -0.061*RLR + 0.0002 *RGDP + 0.17*TR + 0.09*TA +0.22*D1 -0.0005)				

As indicated in table (6) short-run findings are almost consistent with long-run findings of the model. Public investment (Ig) coefficient is positive and significant, confirming the crowd-in impact of tourism public investment on tourism private investment in Egypt in the short run too. A rise in public investment by 1 % leads tourism private investment to rise by 4.16% in the short run.

Tourism arrivals (TA) coefficient is positive and significant, consistent with the long run findings. According to the estimates, a 1% increase in tourist arrivals leads tourism private investment in Egypt to increase by 0.065 %, which is less than its value in the long-run, indicating that tourist arrivals growth has a stronger impact on private tourism in the long run. Similarly, tourism revenues (TR) growth rate has a positive and significant coefficient. According to the estimates, if tourism revenues grow by 1%, tourism private investment would increase by 0.1212%, which is also less than its value in the long-run.

Real exchange rate (RER) coefficient is positive and significant, consistent with the long-run findings. If the real exchange rate in Egypt rises (currency depreciated) by 1%, tourism private investment would increase by 0.28%, which is less than the same value in the long-run, implying that exchange rate has stronger impact on tourism private investment in Egypt in the long run.

Real lending rate (RLR) coefficient is negative and significant, consistent with the long-run findings. If real lending rate increases by 1%, tourism private investment would fall by 0.116 %, which is higher than the value in the long-run, indicating a strong impact of real lending rate on tourism private investment in Egypt in the short run.

Real GDP (RGDP) coefficient is positive but insignificant at any of the conventional significance levels, confirming the long-run results of real GDP growth rate for tourism private investment in Egypt.

Finally, it is clear from the estimates that the dummy D, which represents political instability, has a significant and negative impact on tourism private investment in the short run, which implies that January revolution has negatively affected tourism private investment in Egypt in the short run.

Autocorrelation Tests Results

As a final step, Q and Durbin Watson (DW) (1971) statistics are employed to ensure that the model captures data dynamics properly and that the residuals are free of serial autocorrelation. From tables (7) and (8) it is clear that there is no serial correlation as the value of Durbin Watson is over 2. Also, from Q-statistic probabilities, it is clear that there is no serial correlation as the p-value is greater than 0.05. This is also supported by figure (2) as the residuals are randomly scattered, and the fitted values are almost the same as the actual values. We can infer that the series is “white noise” with no significant autocorrelation.

Table 7

Model Criteria/Goodness of Fit

R-squared	0.542116	Mean dependent var	0.003677
Adjusted R-squared	0.447084	S.D. dependent var	0.003553
S.E. of regression	0.002642	Akaike info criterion	-8.869581
Sum squared resid	0.000370	Schwarz criterion	-8.468156
Log likelihood	300.2614	Hannan-Quinn criter.	-8.711193
F-statistic	5.704532	Durbin-Watson stat	2.016918
Prob(F-statistic)	0.000006		

Table 8

Q-statistic Probabilities

	AC	PAC	Q-Stat	Prob*
1	-0.040	-0.040	0.1063	0.744
2	0.064	0.063	0.3934	0.821
3	-0.029	-0.025	0.4543	0.929
4	0.158	0.153	2.2332	0.693
5	-0.134	-0.123	3.5306	0.619
6	-0.099	-0.129	4.2537	0.642
7	-0.072	-0.059	4.6428	0.703
8	0.023	0.005	4.6848	0.791
9	-0.064	-0.021	5.0055	0.834
10	-0.085	-0.077	5.5830	0.849
11	-0.030	-0.043	5.6575	0.895
12	0.008	-0.021	5.6629	0.932

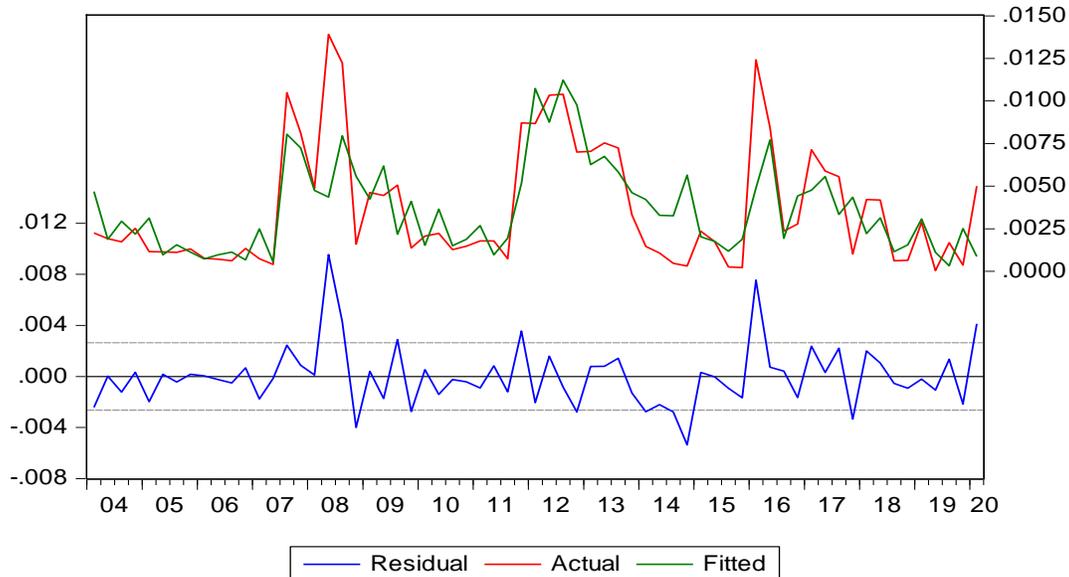


Fig.2. Actual, fitted, residual plot.

Discussion and Conclusion

Based on theoretical analysis and empirical research, this paper attempts to examine the macroeconomic determinants of tourism private investment in Egypt over the period from 2002-2019 using econometric time series models within the ARDL technique. The main aim of the study is to provide a comprehensive and clear model for tourism private investment in Egypt that helps policy makers develop effective policies to boost investment in the tourism sector in Egypt and further enhance its contribution to the GDP and foreign earnings.

The estimates of the long run ARDL model confirm that tourist arrivals and tourism revenues have positive effect on tourism private investment in Egypt. These findings support the accelerator theory of investment behavior and provide empirical proof of the findings of Newell and Seabrook (2006), Snyman and Saayman (2009), and Nansongole (2011) that the market size, market growth and return are key determinants of tourism private investment. The real GDP coefficient is positive, but statistically insignificant at any level indicating a weak accelerator. This result is consistent with the findings of Khan and Khan (2007) and Ajaz and Ellahi (2012). Tourism public investment has a positive and statistically significant coefficient, providing evidence of the crowd-in effect of tourism public investment in Egypt over the study period. Tourism public investment as defined by the Ministry of Planning includes investment spending by the Ministry of Tourism and projects subject to Law No. 203/1991 of public business sector, which are intended to complement private investment. Therefore, this finding supports the claim that public investment could have a complementary relation with private investment.

Real exchange rate coefficient is positive and significant, which indicates that the currency depreciation coupled with the devaluation at some points over the study period has positively affected tourism private investment in Egypt. This finding supports the argument that currency devaluation enhances exports and stimulates investment in the export sectors (Afzal, 2011). Tourism is one of the export sectors that economists call it 'invisible export'. Real currency depreciation can have a positive impact on tourism investment as it increases the competitiveness of destinations and the profitability of firms, and therefore promotes investment in the sector.

Negative and significant coefficient of lending rate supports the neoclassical investment behavior model. It also supports Newell and Seabrook (2006) findings on the impact of interest rate on hotel investments in Australia.

Negative and significant coefficient of the dummy D for political instability supports the claim that tourism industry is highly sensitive to political instability (Hall, 1994; Soemodinoto et al., 2001). It also supports the findings of Bayar and Yener (2019) that political stability has a positive impact on the development of tourism sector in the long run. Political instability particularly increases uncertainty. Thus, a politically stable environment in a destination would positively affect tourism private investment.

Short run estimates for the tested variables maintain their long run results, but with varying effect values, indicating the varying impact of the variables between long run and short run.

At the policy level, as the findings confirm exchange rate effects on tourism private investment in Egypt, both in the short and long run, it is essential for the Egyptian authorities to follow monetary policy that maintains exchange rates at a level that stimulates private investment in the tourism sector. The negative effect of the lending rate on tourism private investment in Egypt underlines the need to hold interest rates at levels that ensure the maximization of profits and minimization of risk for tourism private investment. Applying some type of debt relief also seems necessary to motivate investors in the tourism sector in Egypt. It is also important to promote public investment in the tourism sector, in particular investment in infrastructure and human capital, in order to ensure the long-term growth of the tourism sector in Egypt. Furthermore, maintaining an institutional and legal system to foster political stability and address security issues would lead to sustaining the growth of tourism investment in Egypt.

Finally, given the apparent lack of empirical research on tourism investment, it is highly recommended that future researchers expand their areas of interest and explore the macro and micro economic determinants of investment in the tourism sector employing econometric models to provide empirical evidence that would enable policymakers to enact effective policies to boost private tourism investment.

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المحددات الاقتصادية الكلية للاستثمار السياحي الخاص في مصر: دراسة قياسية باستخدام نموذج ARDL

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المخلص

في ظل التزايد المستمر في أعداد السائحين الوافدين وتغيير أنماط وتفضيلات السفر والسياحة، أصبح زيادة وتحفيز الاستثمار السياحي في مصر أمراً ضرورياً. وتهدف هذه الورقة البحثية إلى اختبار متغيرات الاقتصاد الكلي التي تؤثر على الاستثمار السياحي الخاص في مصر خلال الفترة الزمنية من 2002 إلى 2019. وقد استخدمت الدراسة سبعة متغيرات للاقتصاد الكلي لنمذجة الاستثمار السياحي الخاص في مصر استناداً لمنهجية الانحدار الذاتي لفترات الإبطاء الموزعة (ARDL). وتوصلت الدراسة إلى وجود أثر معنوي وموجب لكل من الاستثمار السياحي العام، وسعر الصرف الحقيقي، وأعداد السائحين الوافدين، والإيرادات السياحية على الاستثمار الخاص في قطاع السياحة في مصر في الأجلين القصير والطويل، كما توصلت الدراسة لوجود أثر معنوي وسالب لكل من معدل الإقراض الحقيقي وعدم الاستقرار السياسي على الاستثمار الخاص في قطاع السياحة في مصر، وتمثل هذه النتائج أهمية كبيرة لصانعي السياسات في مصر في إطار صياغة السياسات الفعالة لتحفيز الاستثمار الخاص في قطاع السياحة ودعم دوره في دفع معدلات النمو الاقتصادي والاجتماعي.

معلومات المقالة

الكلمات المفتاحية

الاستثمار الخاص؛
السياحة؛ محددات
الاقتصاد الكلي؛
مصر؛ نموذج ARDL.

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