The Effect of Foreign Capital Inflows on Economic Growth in Egypt

تأثير التدفقات الرأسمالية الأجنبية على النمو الاقتصادي في مصر

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Abstract[1]

This research is designed to investigate the effects that sources of foreign capital inflows (FCI) have on economic growth in Egypt. Concentration is given to the two significant sources of FCIs in Egypt, migrant remittances (REM) and Net Official Development Aids and Assistance received (ODA) inflows.

The study applies the Auto Regressive Distributed Lag (ARDL) Bounds testing method to examine cointegration based on annual time series data for Egypt from 1990 to 2020. Data for analysis are mainly collected from the World Bank development indicators data set (WBI).

Results of the study indicate that REM and ODA, as the two significant sources of FCIs, have a positive and significant impact on economic growth in the long term. Indications imply that a 1% increase in REM causes GDP to grow by 0.134 %, while a 1% increase in ODA fosters economic growth by 0.109 %. Furthermore, short-term estimation indicates that the error correction form (ECM) coefficient is (-0.47), implying that GDP adjusts by 47% yearly to return to its equilibrium status.

The study also confirms that remittances are the essential source of FCIs that stably grows and swells, especially since 2016 after the economic reforms in Egypt, including exchange rate devaluation and the period of (COVID-19) pandemics. This fact reflects the importance of remittances in smoothing consumption and fostering growth in origin countries, especially during economic crises.

Keywords: Foreign Capital Inflows (FCIs) - Economic Growth – Remittances (REM) - Net Official Development Assistance and Aid received (ODA) - Egypt.

المستخلص:

تم تصميم البحث لدراسة تأثير مصادر التدفقات الرأسمالية الأجنبية (FCIs) على النمو الاقتصادي في مصر. بالتركيز على مصدرين هامين هما تدفقات تحويلات المصريين بالخارج (REM) وتدفقات صافي المساعدات الإنمائية والمساعدات المحصلة (ODA).

تطبق الدراسة طريقة اختبار حدود الانحدار الموزع التلقائي (ARDL) لفحص التكامل المشترك بناءً على بيانات السلاسل الزمنية السنوية لمصر من عام 1990 إلى 2020. المصدر الرئيس للبيانات هي قاعدة بيانات مؤشرات البنك الدولي (WBI).

تشير نتائج الدراسة إلى أن تدفقات تحويلات المصرين بالخارج (REM) وتدفقات المساعدة الإنمائية الرسمية والمساعدات المحصلة (ODA)، باعتبارهما مصدرين هامين للتدفقات الرأسمالية الأجنبية (FCIs)، ألهما تأثير معنوي وإيجابي على النمو الاقتصادي على المدى الطويل في مصر. وتشير الدلائل إلى أن زيادة بنسبة 1٪ في تدفقات (REM) تؤدي إلى نمو الناتج المحلي الإجمالي بنسبة 0.134٪، في حين أن زيادة بنسبة 1٪ في تدفقات (ODA) تعزز النمو الاقتصادي بنسبة 0.109٪. بالإضافة إلى ذلك، يشير التقدير قصير الأجل إلى أن معامل نموذج تصحيح الخطأ (ECM) هو (-0.47)، مما يعني أن الناتج المحلي الإجمالي يعدل بنسبة 47٪ سنويًا للعودة إلى حالة توازنه.

وتؤكد الدراسة أيضًا أن تدفقات (REM) تمثل أهم مصدر للتدفقات الرأسمالية الأجنبية في مصر، التي تنمو وتتضخم بشكل مطرد، خاصة بعد الإصلاحات الاقتصادية التي شهدتها مصر في عام 2016، بما في ذلك خفض سعر الصرف وفترة انتشار وباء (كوفيد -19). كما تعكس حقيقة أهمية التحويلات (REM) في تيسير الاستهلاك وتعزيز النمو في البلد الأم، لا سيما في وقت الأزمات الاقتصادية.

الكلمات المفتاحية: التدفقات الرأسمالية الأجنبية ـ النمو الاقتصادي ـ تحويلات المصريين بالخارج ـ المساعدات الإنمائية الرسمية والمساعدات المحصلة ـ مصر.

Introduction

Factors affecting economic growth are various and intercorrelated. The major deriving forces are labor, capital, and technology. Some other determinants such as the degree of trade openness, investment in human capital, training, and development, and attracting capital inflows appear to be significant in fostering economic growth and minimizing the gap between developed and developing countries.

Developing countries lack the finance sources as well as the novel technologies required for industrial development. Additionally, national savings and investments are insufficient for the desirable development process. Thus, governments need to fill their financial gaps from external sources to foster growth. Furthermore, finance gaps in some developing countries are obstacles to sustaining targeted growth rates, especially within the high population growth rates. Therefore, attracting capital inflows to support labor productivity is a critical challenge.

Countries strive to fill this gap through external debts or by encouraging different sources of foreign capital inflows (FCIs) such as foreign capital investment FDI, worker's remittances (REM), and Net Official Development Aids and Assistance received (ODA). In other words, due to the obligations and restrictions related to external debt, the only effective way available for governments to obtain capital is the other sources of FCIs. Such forms of capital inflows can efficiently promote growth through importing technology from developed countries and offset the lack of capital until the efficient allocation of economic resources is reached.

Economic literature proves a significant direct impact on financial variables and economic growth. However, the effects of fiscal and financial variables on economic growth differ from one country to another and from one region to another as well. Economic stability and government capacity determine such an effect (Nwaogu and Ryan 2015).

In this context, this research focuses on examining the effect of FCI sources on economic growth in Egypt as a developing country. The research concerns

the neo-classical growth approach and builds an empirical analysis. Concentration is devoted to REM and ODA as they are the significant leading sources of capital inflows in Egypt. Further, the top record that Egypt has in terms of remittances internationally.

Thus, the main objective of the research is to investigate the effect of major sources of FCI (REM and ODA) on economic growth in Egypt. As well as examining the relative importance of each in its impact on GDP growth rate.

For this reason, Besides the descriptive analysis approach, the study uses an econometrics model by applying the Auto Regressive Distributed Lag (ARDL) Bounds testing method to examine cointegration based on annual time series data for Egypt from 1990 to 2020. The method is selected due to its superior effectiveness in examining the short and long-term relationship between FCIs and Economic growth.

The importance of this study is represented in the followed approach. Most literature applied a panel data method although their contributions are high the finding differ, and they neglect the country's variations in stimulating growth plans. In addition, this study focuses on the leading sources of FCIs in Egypt and reflects their nature and structure. Further, the study is highly crucial for the government in Egypt to help assess economic growth and its available alternative foreign finance and promote development plans. The study identifies the exact effect of FCIs on economic growth and shows the evolution of significant sources over time.

After reviewing the literature, this research is designed in two parts. The first part concerns the theoretical framework including illustrating trends FCIs and REM. The second part deals with the econometrics Model and empirical study to investigate the effect of REM and ODA on economic growth. The research concludes with findings and recommendations.

Literature review

The impact of financial inflows on economic growth is conditioned by many analytical circumstances and the country's capacity as well. Most studies implemented a regional examination of various panel data methods to clarify the relationship between financial inflows- commonly proxied by remittances, foreign aid, and foreign direct investment on growth. It is critical to mention that the accuracy of the empirical results depends on the optimal specification of the examined variables. (Twerefou, Turkson et al. 2020) investigated the impact of financial inflows on growth in terms of remittances, FDI, and official development assistance ODA using the GMM technique for a panel of 48 countries in Sub-Saharan Africa. The study indicated a positive impact of both remittances and FDI on economic growth and a negative impact on the ODA. The study reasoned the negative impact of ODA on poor institutional quality. It's also crucial to show up the relative importance of positively affecting variables of economic growth.

The quality of institutions is worth to be considered whenever talking about economic growth. Institutional quality is one of the controlling variables that heavily determine the level of growth. Institutional quality in the nexus of financial inflows and growth is discussed intensively by (Duodu and Baidoo 2020) as they examined the conditioned effects of capital inflows on economic growth given the level of institutional quality. They used the same proxies for international capital inflows including remittances, FDI, and foreign aids adding the stock of external debt. The study proposed that -considering the case of Ghana- the quality of an institution is a growth-enhancing technique through increasing the added-value effect of financial inflows on growth, especially the remittances. (Adusah-Poku and Bekoe 2018) also examined the same subject in Ghana using the ARDL model emphasizing the same results. That is financial inflows positively affect economic growth.

Furthermore, some studies examined the short-term and long-term effects of financial inflows on growth from the perspective of the process itself. (Sobiech 2019) for example, discussed the importance of financial development in promoting the positive effect of remittances on economic

growth using an index to measure the level of financial development. He concluded that the process of financial development promotes the positive effect of remittances only in the short term. In the long term, the effect of remittances and financial development is substitutional. The same idea was emphasized by (Oluwaseyi, Abdullah et al. 2017).

Another idea arises from the regional variation of the results in the topic. This observation emphasizes the fact that the macroeconomic and financial circumstances of the country play a pivotal role in the discussion. In many African countries, for instance, there is a relative consensus that financial inflows significantly and positively affect economic growth in the short term. Relative variations exist in the long term effect. (Oluwaseyi, Abdullah et al. 2017), (Mowlaei 2018), (Joshua, Bekun et al. 2020), and (Ahortor and Adenutsi 2008) The studies also improved the accuracy of the ARDL method in clarifying the short and long-term effect of foreign inflows on economic growth.

The degree of economic openness determines the role of financial inflows in the growth process. Hence, many debates included some open aspects in the empirical methods. In open economies, remittances tend to be the major deriving force of growth from the financial inflow components (Govori and Fejzullahu 2020) and (Kumar 2013) The size of the Economy also makes difference. Financial inflows tend to have positive effects on growth in small economies, especially in the short-term(Kumar 2013). (Ahortor and Adenutsi 2008) confirmed the role of remittances on economic growth in small economies using a panel of 31 small open economies in Africa, Latin America, and the Caribbean.

 The following table shows some other literature, and their results are varied.

The effect of REM on economic growth				
Study	Period	Methodology	Sample	Findings
(Mowlaei 2018)	1967-2005	ARDL	Bangladesh	Positive
(Chami, Fullenkamp et al. 2005)	1970-1998	Panel method	113 Developing countries	Negative
(Adusah-Poku 2016)	1990–2010	PMG	45 Sub-Saharan African countries	Positive
(Nwosa and Akinbobola 2016)	1970–2013	ARDL	Nigeria	Positive
(Jongwanich 2007)	1993-2003	GMM	17 developing Asia & Pacific countries	Marginal effect
Ahamada and Coulibaly (2013)	1980–2007	Panel Casuality testing	20 Sub-Saharan African countries	No casuality
(Pradhan, Upadhyay et al. 2008)	1980-2004	FEM & REM model	39 Developing countries	Positive
(Chambers, Maclean et al. 2012)	1967-2005	PMG	India	Negative
(Vargas-Silva, Jha et al. 2009)	1988-2008	Panel data	20 Asian countries	Positive
(Barajas, Chami et al. 2009)	1970 - 2004	OLS & FEM IV	84 emerging countries	Insignificant
(Mundaca 2009)	1970 - 2002	GMM	25 Latin Amierca & Caribbean countries	Positive
(Bettin and Zazzaro 2012)	1970 - 2005	OLS & SGMM	66 Developing countries	Significant nonlinear effect
The effect of ODA on economic growth				
(Tang and Bundhoo 2017)	1990–2012	Pooled OLS	10 largest recipient of aid in Sub-Saharan countries	Positive
(Adedokun 2017)	1996–2012	GMM	20 Sub-Saharan African countries	Insignificant
(Baller, Dutta et al. 2016)	1992–2014	GMM	64 Sub-Saharan & Mena countries	Negative
(Beckfield, Olafsdottir et al. 2013)	1991–2010	Panel data	25 developing countries	Positive
Source: Author's research				

In Egypt, there is a lack in modern studies focusing on the role of financial inflows collectively on economic growth. Some exogenous variables are also neglected in most research (Qutb 2021). used the Johansen co-integration technique and VECM, this study found there is a significant negative impact of remittances on economic growth in Egypt and justified those remittances go to consumption and raise inflation rates.(Metwally and NourElDine 2019). Also (Metwally and NourElDine 2019) used the Cointegration test and found that remittances have a negative impact on the growth of the GDP per capita of Egypt.

As well as some other studies investigated the role of foreign remittances on economic growth and concluded the positive effect of remittances on growth in Egypt. for instance (Naga 2015) investigated the role of foreign remittances on economic growth. concluded the positive effect of remittances on growth in Egypt.

The study of (Majed 2020) is based on the hypothesis of a bi-directional relationship between external remittances and economic growth, that is, remittances cause economic growth, and economic growth causes

remittances. But the result of the study concluded that the causal relationship between real GDP and remittances is one-way in the long run, going from remittances to real GDP, while in the short term there is no causal relationship between net external transfers and economic growth in Egypt.

1. Theoretical Background and Descriptive Framework

1.1 Remittances and Economic Growth

For long decades, various debates evolved around the driving forces of economic growth, especially in developing economies. (Lewis 1954), (Solow 1956, Myrdal 1968), (Harris and Todaro 1970), (Fields 1980), (Romer 1986, Lucas Jr 1988, Barro 1991) (Easterly and Levine 2001).

The major driving forces are focused on labor productivity, physical capital surplus and technological advances. Other financial aspects were attached including ODA, FDI, investment in human capital and patents. Institutional aspects were then discussed to affect growth (Sen 1990, Kaufmann, Kraay et al. 2006) including political freedom, political instability, voice, and accountability.

Remittances from a microeconomic perspective maximize the welfare of the individual or the receiving family, and according to the neo-classical school, remittances contribute to the optimal allocation of the factors of production, which brings benefits to all.

On the other hand, Todaro believes that the movement of workers is one of the basics of achieving economic growth, on the same criterion as the movement of workers from rural to urban and the movement of workers from agricultural activity to industrial activity (Todaro 1969).

Another side, the studies of the new economics of labour migration (NELM) in the 80s and 90s showed a different opinion. NELM scholars argue that migration can represent a potential source of investment capital, especially under imperfect capital and risk markets that control most developing countries (Stark and Taylor 1991, Taylor, Arango et al. 1996), where these

markets are usually weakly developed and unavailable to non-elite groups. Therefore, migration can be assumed to be a livelihood strategy to overcome varied market constraints, that may enable households to invest in productive activities and improve their livelihoods.

furthermore, recent research based on the macroeconomic base reinforces the thought that labour migration, rather than a response to poverty or absolute poverty (Hampshire 2002) (Hampshire 2002), is a living strategy followed by social groups in response to deprivation (Thomas and Quinn 2006).

From another perspective, remittances are supposed to positively affect the rate of economic growth. The mechanism of affecting economic growth is described through the effect of remittances on the major hypothetical drivers of growth,(Barajas, Chami et al. 2009) discussed the factors that can affect remittances on economic growth, and they concluded that there are three channels through which remittances can affect economic growth, namely, capital accumulation, labor force growth, and total factor productivity, which they discuss at next.

1. Remittances and Capital Accumulation:

The mechanism through which remittances affect capital accumulation is obviously significant. Worker's remittances provide an external source of finance to increase the rate of capital accumulation. This mechanism is very fruitful for economies in which there is a lack of domestic sources of financing investment and then enhancing physical and human capital. Remittances in this context would lower the cost of domestic investment allowing more debt to appear relying on expected future remittances inflow.

Moreover, remittances affect the rate of capital accumulation through their effect on the overall macroeconomic level. Adding stability to the domestic market motivates domestic investment and raises market feasibility (Chami, Hakura et al. 2009).

However, the positive effect of remittances on capital accumulation is conditional in some situations. The income level of receiving families is

critical. As the family member may spend the received amount of remittances with a high marginal propensity to consumption rate. Thus, there is no residual amount available for domestic investment. Furthermore, the fixed received amounts of remittances encourage consumption expenditure at the expense of investment expenditure. Although this case raises the living standards, it does not necessarily foster economic growth. In addition to the fact that high international cointegrated stable economic systems don't rely heavily on remittances to clear financial constraints. Generally, remittance receipts empower human capital either directly through enabling domestic investment in capacity building or indirectly by enhancing the leveling standards of receiving families managing them to invest in their education level. The level of economic growth is conditional on the participation of family members in labor productivity.

2. Remittances and Labor Force:

Remaining human capital level constant, remittances have the power to foster economic growth through the effect of labor input in the production process. Remittances enhance labor inputs by increasing the rate of labor participation. However, it appears in some situations that it may lower the labor participation rate if there is a high degree of simplicity and easiness in relying on remittance transfers instead of earned income.

Additionally, remittances experienced many "moral hazard" issues. As explained by (Chami, Jahjah et al. 2003), the cost of remittance transfers as well as the monitoring difficulties may push recipients to shift remittance inflows to consumption purposes and lower their willingness to exert efforts in the labor market. (Acosta, Lartey et al. 2009) developed a model of dynamic general equilibrium improving that high remittance inflows reduce labor supply and shift consumption to non-trade goods. (Shapiro and Mandelman 2016)then extended the model to examine the pattern of employment during the business cycle. They concluded that remittances' effects on consumption and investment are powerful after a downturn. They also indicated that remittances practices pressures pushing up wages resulted from low labor supply during the recessions. Further empirical approaches were followed

emphasizing the positive effects of remittances on investment and productivity, especially in the short term.

3. Remittances and Total Factor Productivity:

Remittance inflows promote total productivity through their effect on domestic investment and empowering productive sectors. The effect is however conditional on the level of skills and capacity of the family member receiving the remittance inflow. If the family member is investing the amount efficiently in productive domestic investments, total productivity is enhanced.

Remittances could also enable economies to empower their financial systems. Remittances flowing through formal channels encourage the development of financial infrastructure to facilitate the transferring process. Financial development effectively promotes economic growth either through positive economies of scale in financial institutions or through the effect of political economy. As high rates of foreign inflows push governments to apply major financial reforms. Yet, the resulted effect depends on the level of resource distribution among financial institutions.

High remittance inflows may unexpectedly worsen the level of governance in the recipient country. Affecting promote the quality of the business environment in the country. (Abdih, Dagher et al. 2008) proved that remittance inflows negatively affect the level of domestic institutional quality. As remittances widen the tax base, governments.

From this, it becomes clear that the scientific research shows that there are many potential effects of remittances on economic growth, but these effects are uncertain in terms of size and type and do not have a consensus, the majority refer to the positive impact and some focus on the negative impact. This analysis leads us to conclude that the effect of remittance flows on the economic growth of the receiving economy are theoretically ambiguous. So, the case needs to be researched empirically.

1.2   Remittance channel and Policies

Remittances are Characterized as the only stable source of foreign finance. Although the decline of FDI and ODA during the COVID-19 pandemics, remittances keep stable patterns. It was predicted that remittance inflows would decrease by 20%, however, they declined by only 1.2% during the crisis (Dilip Ratha, Eung Ju Kim et al. 2021).

Remittances can be remitted through several channels. First, the fixed remittance amount should be identified. This could be through identifying main factors such as the family size and contract agreements with the family either implicitly or explicitly and either via the formal or informal channels. (Wahba 1991)

The preferred channel for workers depends on the differences in the Exchange rate from one channel to another as well as the cost of transfers. The cost of transfers pushes the worker to think of the risk of following informal channels. If the difference between formal and informal channels is higher than the risk of adopting an informal channel, the worker has no incentive to follow a formal method (Hassan and Holmes 2013).

On the other hand, planned remittance inflows are determined based on the difference between national and foreign real interest rates. To motivate workers to transfer additional amounts, the real interest rate in the origin country should be higher than the real interest rate in the hosted country or other foreign countries.

Former conditions are critical to pushing remittances through formal channels. In current circumstances, registered remittances could decline despite the rise in actual remittances if there is a high difference in exchange rates. This situation motivates workers to move from formal to informal channels.(Van Dalen, Groenewold et al. 2005).

Actual remittances could increase for many reasons including the rise in gross savings because of the increased number of workers, interest rate differences in the favor of the national market and the rise in the stock of remittances assured previously.

Theoretically, registered remittances could increase while the decline of actual remittances. This situation is significant if the changes in policy lead to shifting from informal to formal transferring channels. As a result, the registered remittances inevitably increase. On the other side, actual remittances could decline if there is a decrease in gross savings because of a declined number of workers. This may be the situation during 1986 and 1989 when the registered remittances increased while actually received remittances were declining (Wahba 1991).

Policies: When there is a wide informal economy, the government could devaluate its currency to raise remittance inflows. Currency devaluation will lower the difference between exchange rates from formal to informal channels. Hence, workers will be attracted to follow formal channels. However, this increase does not necessarily raise formal remittances if there are other strong incentives for workers to follow informal channels.

Strict policies and strong legal actions against those who practice informal methods could prevent some workers from engaging in informal channels. This will not affect planned remittances. however, it will affect only registered fixed remittances. Political instability tends to have no effect on fixed remittances although it would affect planned remittance inflows. The government could also attract savings reserved outside by increasing local interest rates to exceed those in hosted economies.

1.3 Foreign Capital Inflows (FCIs)

Forms of FCIs include foreign direct investment FDI, worker's Remittances REM, net official aids, and assistance received ODA and portfolio equities. The first three forms are considered the major sources of foreign finance in host countries.

FDI is an investment by an investment company in which the foreign investing company has the main authority over the project.

OECD defines " authority" as owning a minimum of 10% of the implemented project, and FDI could be a direct source of finance for developing countries to support sustainable development. FDI also provides many advantages for

multinational companies such as accessing foreign markets and natural resources. It also lowers the cost of production(OECD 2006).

ODA refers to the transfer of financial assets from donor governments and organizations to developing countries. ODA aims mainly to stimulate sustainable development and living standards in developing countries (OECD 2006).

Workers' remittances represent foreign migrant transfers to their family members in their origin countries (Barajas, Chami et al. 2009), remittances mainly appear in the transfer of foreign workers in the hosted country to their home country. REM is one of the major sources of finance for developing countries supporting national income for many poor families worldwide. Remittances follow four main forms:

1. Potential transfers which represent the maximum amount that a foreign worker would transfer after deducting his expenditures in the hosted country.

2. Fixed remittances represent the minimum amount that a foreign worker regularly transfers to his home family. Either through a formal channel (post, Banks, cheques, etc..) in this case, the amount is reflected in the balance of payment national account. Or via other informal channels representing unregistered transfers.

3. Planned remittances which represent the amount that a worker sends in addition to a fixed regular transfer either through formal or informal channels.

4. Reserved remittances representing savings in the hosted country that has not been transferred. It is calculated as the difference between total savings and real remittances. Although remittances secured is a "flow", it is also a "stock" available for the worker to transfer anytime.

For analysis purposes, sorting remittances based on their type helps assess appropriate economic policies. Remittance cost also differs based on the channel of transfer. Digital transfers tend to be less costly than cash transfers.

1.4 IFCs Trend in Region

The period of COVID-19 and post crises witnessed a remarkable decline in the number of remittances as many migrant workers returned to their home countries. Especially in the GCC region which represents the top major destination of migrant workers and the main source of REM inflows. Many developing regions faced a crisis in the workers deployed from their jobs in the world crisis of COVID-19. The problem was mainly fixed through the economic activity stimulation policies. At the same time, many major migrant destinations regions welcomed the deployed employees and empowered their productivity.

According to the data of the World Bank, remittances achieved a recovery in 2021 after the decrease they witnessed due to COVID 19 during the year 2020. Where remittances registered a slight decrease of 2.3 % to reach 549 US$ billion, REM exceeded ODA by more than three times, and except for China, it exceeded by more than 50 % FDI. That underlines the importance of remittance flows in facilitating consumption in recipient countries during periods of economic hardship. The major sources of REM are the United States, UAE, Saudi Arabia, and Switzerland.

Figure (1-1) highlights the flows of REM, FDI, and ODA for in low-and-middle income countries (LMICs), as it obviously shows that the REM has exceeded FDI since 2014, and the sharp upward trend of the REM and the downward trend of FDI. It shows also that REM and FDI flows have exceeded ODA since 1995. Reflecting a weak gradual increase in aid.

Figure (1-1) show REM, ODA, and FDI in LMICs. 1990-2020.
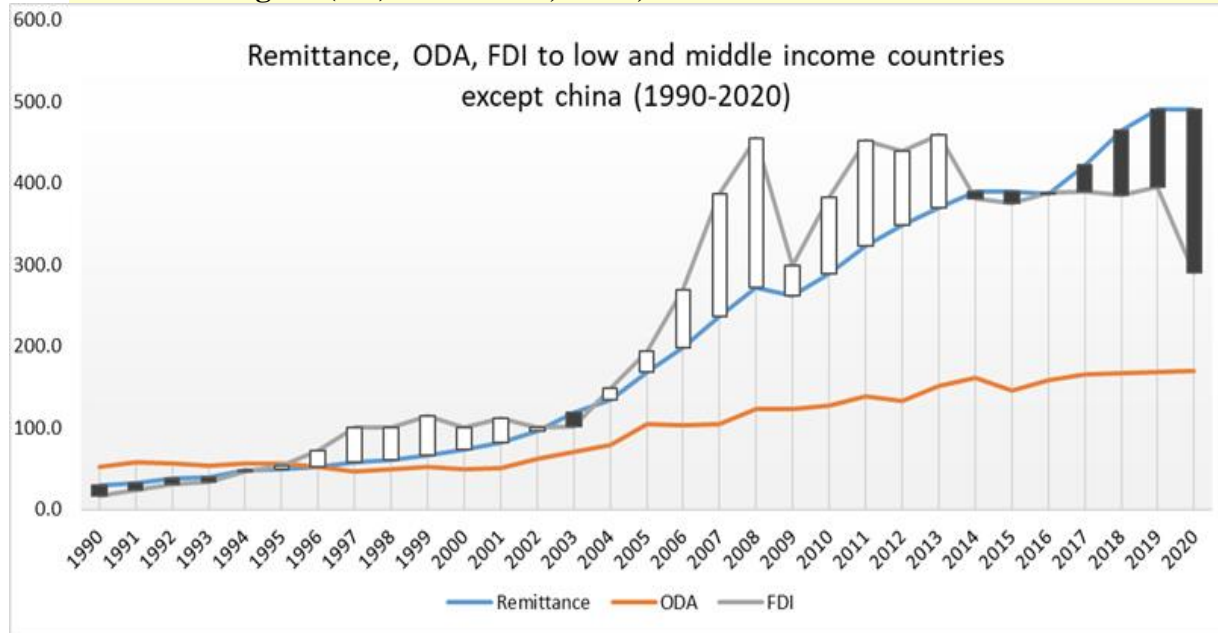
Source: Author's, using WDI.

The World Bank data for REM movement regionally from 2009 to 2022 illustrate many observations, (table 1-1) and (Figure 1-2) for instance:

• More than 80 % of remittances are remitted to LMICs countries except for China.

• In the 2020 pandemic (COVID 19), REM recorded an increase in Latin America and the Caribbean, the Middle East and North Africa, and South Asia while recording a decrease in other regions, the worst region was Sub-Saharan Africa which recorded a drop of 14 %.

• All regions of the world recovered in the year 2021 and the rate of change REM raised, except for East Asia and the Pacific region.

• The number of REM inflows increased sharply in Latin America and many other regions.

• In the MENA region, Europe, Asia, and Sub-Saharan Africa, the rate has a stable and high increase, from 5 to 10% in 2020, 5.3% in Europe and Central Asia, and 1.4% in East Asia and the Pacific, excluding China.

| Table (1-1) shows the REM for FY 2021, World & Regions																	
$ billion	2009	%	2015	%	2016	%	2017	%	2018	%	2019	%	2020e	%	2021f	%	2022f	%
Low and Middle Income	303	-5.1	453	0.5	447	-1.2	485	8.4	532	9.7	559	5	549	-1.7	589	7.3	605	2.6
East Asia and Pacific	80	-4.8	128	3.7	128	-0.5	134	5.1	143	6.8	148	3.2	136	-7.8	131	-4	131	-0.3
excluding China	39	5.8	64	4.8	67	3.5	70	5.4	76	8	79	4.8	77	-3.3	78	1.4	81	3.3
Europe and Central Asia	34	-13.5	48	-13.3	49	3	59	19.8	66	12.2	70	5.9	64	-8.6	67	5.3	70	3.8
Latin America and the Caribbean	55	-12.3	69	6.6	74	7.2	82	11.2	90	9.8	97	8.3	103	6.2	126	21.6	131	4.4
Middle-East and North Africa	31	-6	50	-6.4	49	-1.2	52	5.3	53	2.3	55	3.9	56	2.8	62	9.7	64	3.6
South Asia	75	4.5	118	1.6	111	-5.9	117	6	132	12.3	140	6.1	147	5.2	159	8	162	1.8
Sub-Saharan Africa	28	-2.1	41	6.3	37	-8.4	42	10.9	49	17.4	49	1.1	42	-14.1	45	6.2	48	5.5
World	433	-5	602	-1.3	597	-0.8	640	7.2	695	8.5	722	3.9	706	-2.3	751	6.5	774	3.1

Source: Author's, using WDI

Egypt is in the region of Arab countries and the Middle East, thus, this study focusses on both. according to the data from the World Bank, in 2019 received Arab countries about 61.7 billion dollars as remittance transfers representing 2.2% of GDP. While FDI recorded 33.5 billion dollars formulating 2.1% of GDP and ODA was 31.6 billion dollars consisting of 1.1% of GDP. In 2020 also, remittances in Arab countries registered 58 billion dollars representing 10.7% of total remittances.

The main driving forces behind such an increase are the insistence of migrant workers to support their families. In addition to the fiscal and social insurance programs provided by many destination countries to their workers. This empowers workers to send higher amounts to their home countries. Furthermore, countries with oil supply support their migrant workers with many fiscal benefits (Gonzalez-Perez, Mohieldin et al. 2021). Predictions on migrant workers after 2021 is a bit confusing. Data from United Nations Department of Economic and Social Affairs (UN DESA 2020) indicates that number of migrants declined during 2020 by 2 million people. In OECD countries, the number of permanent migrants also diminished by 30% reaching the lowest number since 2003. (OECD, 2021)

Egypt recorded the top fifth recipient country of remittances in an absolute amount in 2021 after India, China, Mexico, and the Philippines. Figure (3) indicated Egypt's rank among countries in the absolute number of Remittances. Figure (1-2): Top 10 Remittances recipients of the world in
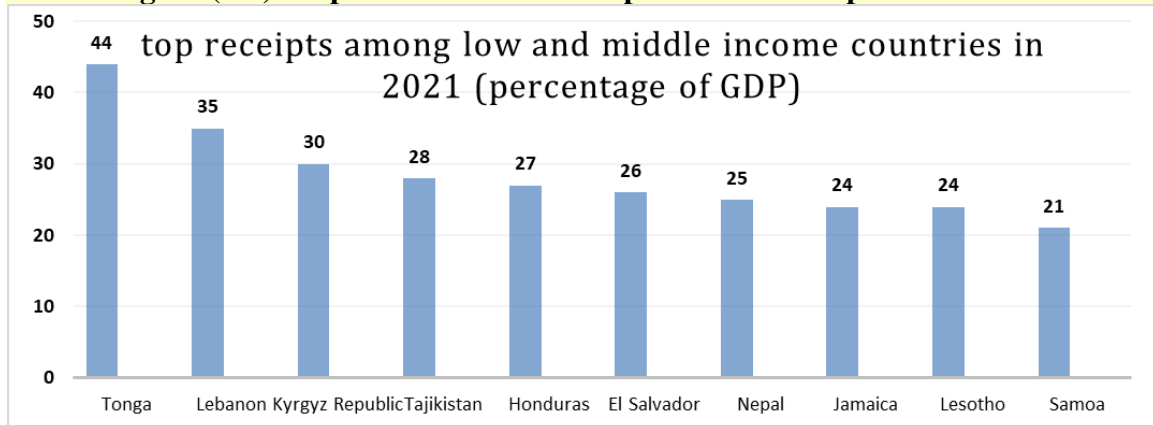
2021. However, as a percentage of GDP, the top five recipients are smaller economies such as Tonga, Lebanon, the Kyrgyz Republic, Tajikistan, and Honduras (Figure 1-3).

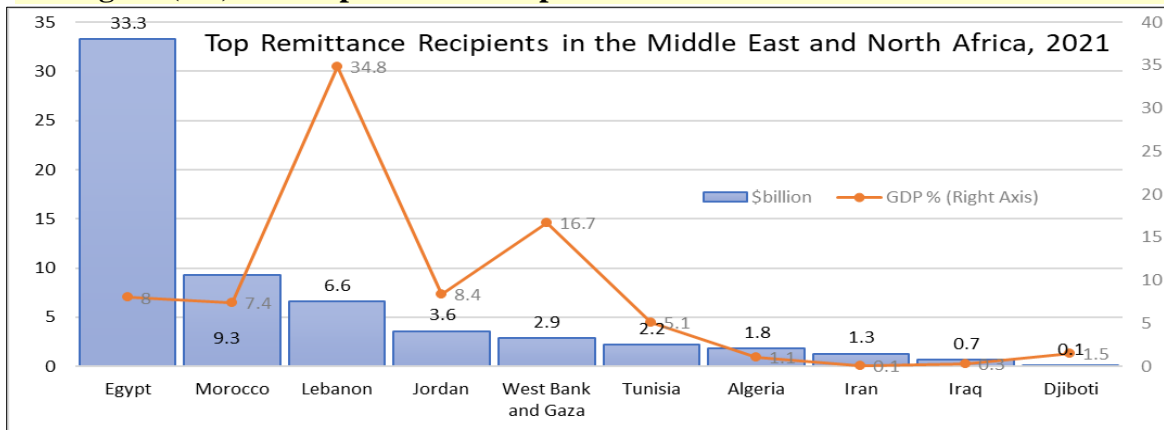**Figure (1-2): Top 10 REM recipients in US$ billions, 2021.**
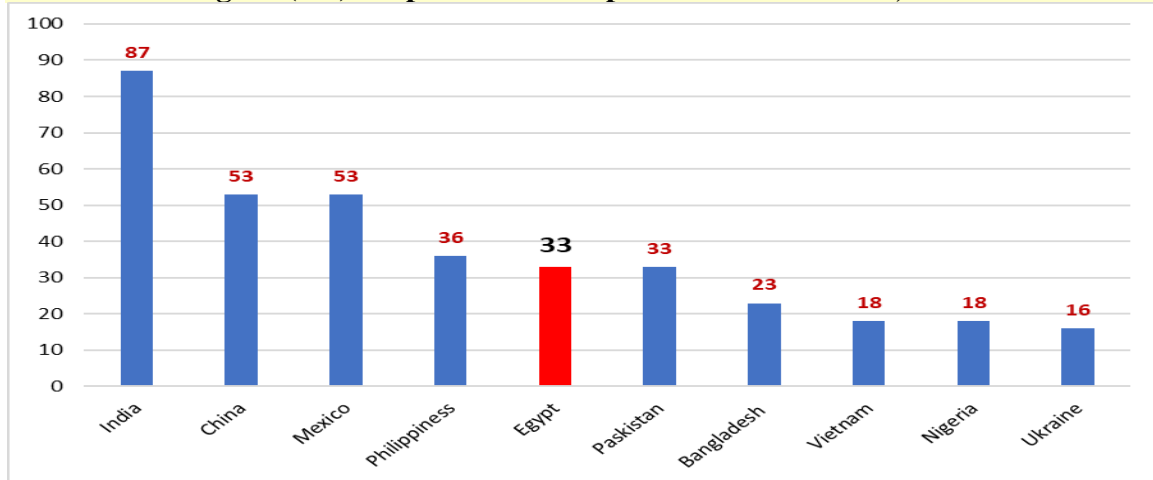
Source: Author's, using WDI

Figure (1-3): Top 10 Remittances recipients 2021 as a percent of GDP

Source: Author's, using WDI

Figure (1-4): The top 10 REM recipients in 2021 in MENA and North Africa.

Top Remittance Recipients in the Middle East and North Africa, 2021

Source: Author's, using WDI

The low-and-middle income countries in MENA region received total of 62 billion dollars as remittances inflows during 2021. Developing countries in the region record remittances as the major highest source of FCIs above ODA, FDI, foreign debt and portfolio equities.

Remittances exceed other FCI sources by 13 billion dollars in 2020. Especially within the sharp decline in FDI and portfolio inflows. This fact raises again the massive importance of remittances to the governments. Most MENA countries register remittances and ODA as the two major leading sources of foreign inflows. Countries with high received amounts of REM as a percentage of GDP benefit from these funds in promoting consumption, stabilizing external positions, and balancing their external debt amounts.

The average cost of online transfer from Arab countries or GCC to other recipient countries is 4%. Therefore, online transfers are highly recommended to lower remittance costs (Gonzalez-Perez, Mohieldin et al. 2021).

Egypt ranks first as the highest recipient of the REM in the Arab countries, the Middle East, and North Africa. Figure (1-4) illustrates the top ten regions. As an absolute value in US$ billions and as a % of GDP.

1.5 Foreign Capital Inflows (FCIs) Trend in Egypt

Forms of IFCs in Egypt represent many variations over time. Generally, the amount of IFCs received reflects the capacity of the government to be credibly considered economically stable.

Figure (1-5) represents the pattern of each source of foreign capital inflows from 1990 to 2020. Based on the World Bank estimations, Remittances are the major deriving source of foreign inflows.

The figure (1-5) shows REM, ODA, and FDI. In past 30 years, where followed different patterns. The weight of each variable is obviously a change over time. Moreover, REM exceed ODA and FDI in their absolute amount as well as percent of GDP sharply after 2099, despite the high value of foreign aid at the beginning of the 1990s. following in the 2000s to the recent years, Remittances is the leading source of the foreign inflows. Yet, their effect on economic growth is conditioned by the sectors in which they are invested. The increase is reasoned by the improved stability of the Egyptian economic system in cooperation with the reforming economic policies adopted by the government which raised the confidence of foreign entities in the Egyptian economy. although, FDI appears to have the lowest weight in IFCs, as it is lower than aid and transfers, except for the period from 2005 to 2009. The high weight of remittance encourages our thought to expect it to be the main variable of foreign inflow that promote economic growth. ODA witnessed remarkable dynamics in the last 10 years after the revolution of 25th January.

Figure (1-5) FCIs

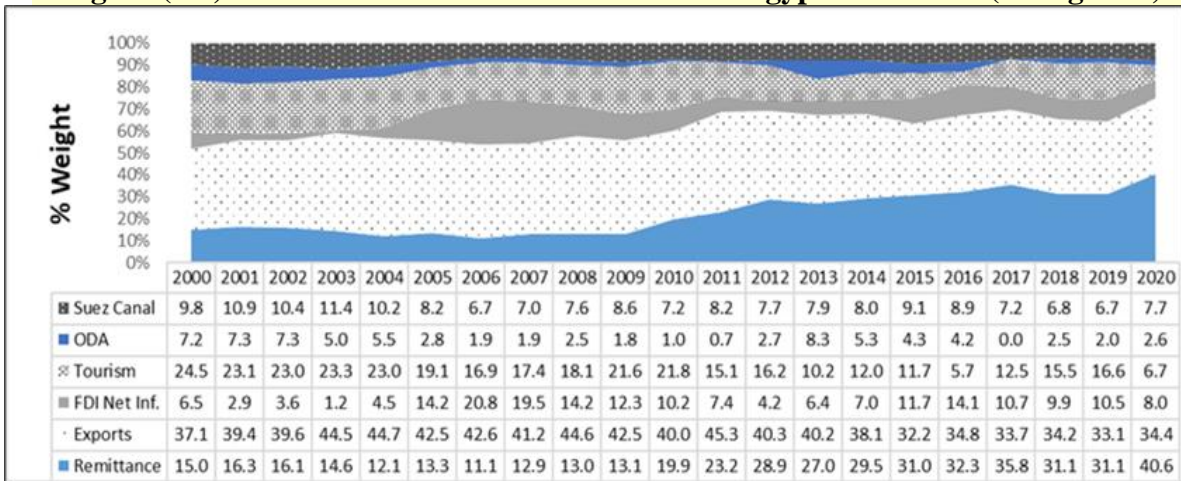Evolution of FCI sources (Billion US $) 1980-2020 in Egypt
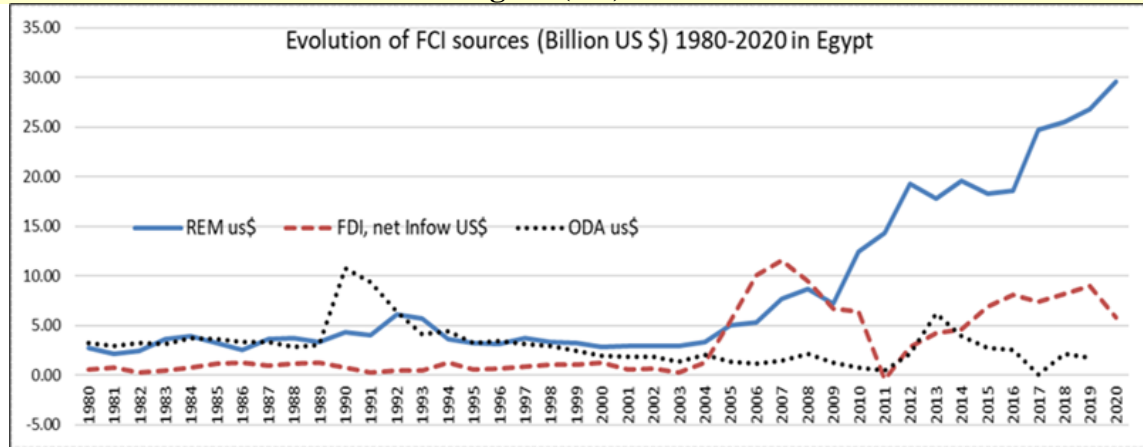
Source: Author's, using WDI

Remittances (REM)   1.5.1

Remittances are the highest source of FCI in Egypt. It is considered as the result of investment in labor in terms of education, development, health, and training that formulate the labor aspect to be highly competitive in the outside labor market. The role of remittances in Egypt raised historically starting from the 1970s when skilled regular migrants shifted outside (Wahba 1991). Since that time, Egypt started to be one of the major remittance recipients in the region.

Egypt relied heavily on remittances in line with Suez Canal revenues, tourism, and exports as main sources of foreign currency. The main advantage of remittances is the stability of their flowing helping to support growth and lowering poverty. It also enables enhancing health, education, housing, and support woman's labor participation. Thus, it can be considered a vital channel to achieving sustainable development Figure (1-6).

Figure (1-6) shows the six main FCIs resources in Egypt. 2000-2020 (as wight %)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Suez Canal	9.8	10.9	10.4	11.4	10.2	8.2	6.7	7.0	7.6	8.6	7.2	8.2	7.7	7.9	8.0	9.1	8.9	7.2	6.8	6.7	7.7
ODA	7.2	7.3	7.3	5.0	5.5	2.8	1.9	1.9	2.5	1.8	1.0	0.7	2.7	8.3	5.3	4.3	4.2	0.0	2.5	2.0	2.6
Tourism	24.5	23.1	23.0	23.3	23.0	19.1	16.9	17.4	18.1	21.6	21.8	15.1	16.2	10.2	12.0	11.7	5.7	12.5	15.5	16.6	6.7
FDI Net Inf.	6.5	2.9	3.6	1.2	4.5	14.2	20.8	19.5	14.2	12.3	10.2	7.4	4.2	6.4	7.0	11.7	14.1	10.7	9.9	10.5	8.0
Exports	37.1	39.4	39.6	44.5	44.7	42.5	42.6	41.2	44.6	42.5	40.0	45.3	40.3	40.2	38.1	32.2	34.8	33.7	34.2	33.1	34.4
Remittance	15.0	16.3	16.1	14.6	12.1	13.3	11.1	12.9	13.0	13.1	19.9	23.2	28.9	27.0	29.5	31.0	32.3	35.8	31.1	31.1	40.6

Source: Author's, using CBE

The figure (1-6) shows the six main resources that constitute most of the FCIs in Egypt, and the weight of each of them in relation to the total resources. the figure shows obviously that the REM began to exceed the inflows from goods exports, and both represent the most relative weight to total resources. It also shows that the tourism revenues are greatly affected by internal and external factors and are characterized by uncertainty, as it shows that the FDI net inflow is very modest and cannot be relied upon in providing the necessary inflows. It highlights the weak impact of aid and its reaction to external factors and highlights the stability and distinctiveness of the flows of Suez Canal revenues and relative stability despite its limited weight. SDGs. The main challenge in this context is to increase the amount of remittances to GDP and minimize the cost of the remittance.

About 6 million Egyptians work abroad and their geographical distribution corresponds to the value of remittances, and 65% of them work in Arab countries, where Egypt receives 76% of total remittances from only five Arab countries (CAPMAS 2020).

Remittances of workers in Saudi Arabia represent the highest amount for Egypt with a total amount of 9.6 billion dollars in the FY 2019/2020 compared to 12.4 billion dollars in the FY 2018/2019 with an increasing rate of 12.4%. while remittances of Saudi workers in Egypt recorded 17.6 million dollars in

FY 2019/2020 compared to 21.4 million dollars in FY 2018/2019 with a decline rate of 17.6% (CAPMAS Diverse years).

Egypt, as the first top recipient of REM in the region, acquires 33 billion dollars in 2021 (figure 1-4). Reserving strong linkages in terms of migrant workers to GCC member countries and other Arab countries. Remittances contribute to GDP by 8.4%, representing an effective stable source of foreign finance. Data from the Central Bank of Egypt (CBE) also clarify the increase of Egyptian workers' remittances in the first quarter of 2022 by 8% relative to Q4 in the previous year. As remittances registered 3.3 billion dollars in Marsh 2022 relative to 2.9 billion dollars in Marsh 2021 and 2.3 billion dollars in February 2022 (CEB 2022 Q2) .

Remittances of Egyptian workers have witnessed critical turning points, Remittances of Egyptian workers have witnessed critical turning points affected by economic stability and economic performance at the global, regional, and internal levels, and affected by the migration conditions, international crises, and world prices. for instance:

The oil crisis in 1973 caused workers to migrate from many countries in the region and from south and east Asia to oil exporting countries. For instance, the number of Pakistan migrants jumped sharply from 500 thousand in 1975 to 1.25 million in 1979. Within this sharp increase in migrants, origin countries receive huge amounts of workers remittance constituting one of the major sources of foreign inflows to origin countries. As a result, remittances represented 5.9% of GDP in Pakistan while 17% of GDP in Egypt in the year 1989 (Wahba 1991). Beyond that, the rise in oil prices permanently affects the increase in remittances as it obviously shown in Figure (1-7).

The sudden implications of the Gulf War led to the sharp decline in worker's remittance from Iraq and Kuwait. The implications of such incident caused many economic crises in the region and even outside. The crisis emphasized the role of remittances in supporting economies (SAYED 2014).

Many of the Egyptian workers in Iraq and Kuwait reserve huge savings in their hosted countries. These amounts were not transferred to Egypt which

affected dramatically on the Egyptian economy. Estimations refer that there was around 2 billion dollars loss in remittances to Egypt during the 1990s. Savings in Kuwait were estimated to record 46% of total registered remittances to Egypt which confirms that the high interest rates in Kuwait affected keeping high amounts of workers savings in their host country(Sharaf 2014).

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Exchange rate is also indicated to has a huge effect on worker's remittances. Remittances are also very sensitive to variations in exchange rates in the formal and informal sector. It was indicated that a 10% devaluation in the informal exchange rates causes remittances to increase by 9 to 11.8%. When the Egyptian pound was devaluated in 1987 by 37%, remittances increased from 2.52 billion dollars in 1986 to 3.604 billion dollars in 1987 with an increase rate of 43.3%. Furthermore, registered cash transfer jumped from 464 million dollars to 1.446 billion dollars which confirms the vulnerability of remittances to exchange rate variations. Similarly, in 2003, when the Egyptian pound was devaluated by almost 50%, remittances increased sharply during this period. The same result was noticed in November 2016 when Egypt devaluated the currency by 48% despite the decline in oil prices during this period (Brahim, Nefzi et al. 2017).

Interest rates also tend to have a remarkable effect on remittances. When Kuwait government announced the existence of huge amounts of foreign workers savings in the Kuwait banks. The situation confirms the role of interest rate dominant outside on worker's decisions (Naga 2015).

Figure (1-7) highlights the impact of Oil prices on REM in Egypt. 1990-2020

Higher Oil Prices Boosted Outward Remittances

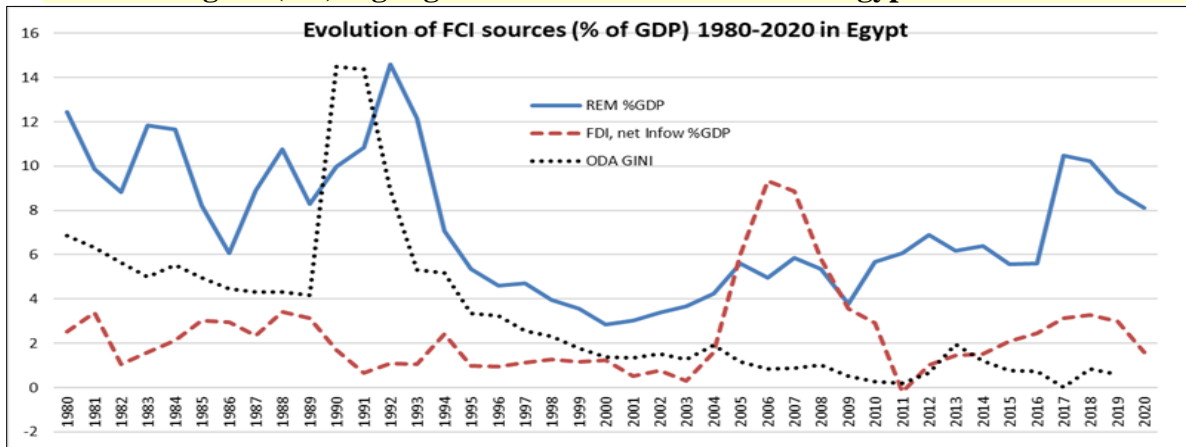remittance (world US$) — Crude oil prices Brent (US$)
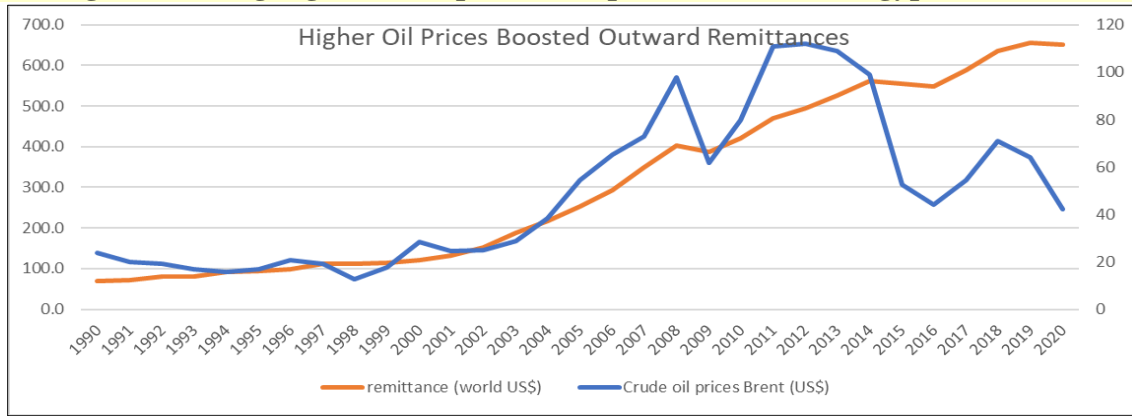
Source: Author's, using CBE & Ministry of petroleum

The figure (1-7) shows the correlation of the volume of REM with oil prices. In the circumstance of an increase in prices, remittances increase significantly, but they do not respond to the decrease in prices.

1.5.2 Official Development Assistance and Aid received (ODA)

Although the relative weight of ODA exceeds the FDI is considered very limited, as it does not exceed one percent of the GDP (Figure1-8). Except in specific periods that coincided with the presence of external factors.

Figure (1-8) highlights the FCIs as % of GDP in Egypt. 1990-2020

Evolution of FCI sources (% of GDP) 1980-2020 in Egypt

REM %GDP — FDI, net Infow %GDP · · · ODA GINI

Source: Author's, using CBE & Ministry of petroleum

Once during the war of 1973 and when the Arab countries supported Egypt during this period, which was canceled after Egypt signed the Camp David treaty. The second one in which Egypt received the largest amount of aid in

its history, as the aid was linked to Egypt's entry into the war to liberate Kuwait, in addition to that part of it met the Egyptians' compensation and their savings in Kuwait. It is noted that the bulk of this aid was It is a cancellation of part of the external debt. And finally, the Arab aid during the period of 25 January 2011 and the subsequent economic crisis because of the suspension of production.

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The U.S. is the main donor to Egypt. Egypt is the 3rd to the recipient of U.S assistance in 2020 after Israel and Jordan. Around 81 billion USD are received from the U.S government in terms of bilateral assistance from 1946 to 2020.

In 2020, Egypt received 1.43 billion USD as assistance to help cope with the pandemics of COVID-19 from the U.S. Agency for International Development (USAID). Other types of assistance are received from the Department of Agriculture and the U.S. Trade and Development Agency (USTDA). In 2021, the U.S government devoted a total of 1.38 billion USD as foreign assistance to Egypt in terms of Foreign Military Financing (FMF). In 2022, the U.S government plans to provide Egypt with 1.43 billion USD as foreign aid to Egypt. Table (1-2) shows the summary of this aid.

Table (1-2)U.S. Assistance to Egypt (USD million)

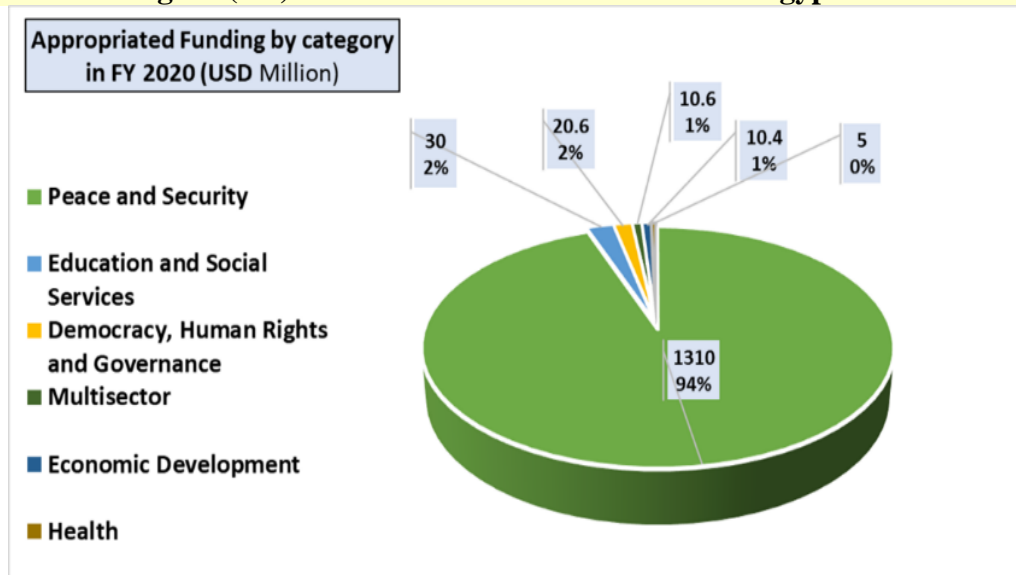|	FY 2017a	FY 2018a	FY 2019a	FY 2020a	FY 2021 Requested
FMF	1,234.3	1,300.0	1,300.0	1,300.0	1,300.0
ESF	112.5	106.9	112.5	125	75
NADR	3	3	3	3.5	3.5
INCLE	2	2	2	2	1.6
IMET	1.7	1.8	1.8	1.8	1.8
Total	1,353.5	1,413.7	1,419.3	1,432.3	1,381.9

Source: Author's, using CBE & Ministry of International Cooperation

Over the past 20 years, U.S. Economic Support Fund (ESF) assistance to Egypt shrank sharply by 85%, from 833 million USD in 1998 to 125 million USD in 2020.

The sharp decline is reasoned by the non-utilization of a huge sum of previously received assistance. U.S assistance to Egypt has various forms including Nonproliferation, Anti-Terrorism, Demining, and Related (NADR) programs, International Military Education and Training (IMET), and International Narcotics Control and Law Enforcement (INCLE) programs.

In 2020, the amount of International Humanitarian Assistance received from the Department of State and USAID did not exceed 6 billion USD as an emergency response to COVID-19. Figure (1-9) shows The relative distribution of this aid.

Figure (1-9) shows distribution of USA Aid in Egypt 2020

Appropriated Funding by category
in FY 2020 (USD Million)

- ■ Peace and Security
- ■ Education and Social Services
- ■ Democracy, Human Rights and Governance
- ■ Multisector
- ■ Economic Development
- ■ Health

30
2%

20.6
2%

10.6
1%

10.4
1%

5
0%

1310
94%

Source: Author's, using AmCham & CBE

One of the remarkable observations is the unstable pattern of foreign aid during the examined period. Decisions about ODA and other related inflows are highly affected by macroeconomic stability, government capacity as well as the level of uncertainty.

Still, it is highly important to clarify the general structure of the aid received in terms of the donors as well as the targeted economic sectors as well. Sectors receiving high amounts of assistance are expected to highly promote economic growth.

2. Methodology

2.1 Analytical Framework:

Following (Solow 1956), (Kumar 2013), (Adusah-Poku and Bekoe 2018), and (Mowlaei 2018), the study uses the Cobb-Douglas production function which captures ODA, and REM in the equation. The Cobb-Douglas form is defined as:

$$GDP(t) = K(t)^\alpha L(t)^\beta A(t)$$
$$(1)$$

Where GDP is total output measured by gross domestic product, K is physical capital, L represents total labor force, and A represents the level of technology of the country. We assume that financial capital inflows (FCI) measured by net official development aids and official assistance ODA and foreign remittances REM are components of A. Thus, A is a function of ODA and REM.

$$A = F(ODA, REM)$$
$$(2)$$

We can rewrite equation (2) as:

$$GDP(t) = K(t)^\alpha L(t)^\beta ODA(t)^\theta REM(t)^\mu$$
$$(3)$$

Where α, β, θ, and μ express the coefficients of K, L, ODA, and REM, respectively, which are their proportional share of total output.

Taking the natural log of equation (3):

$$LogGDP(t) = \alpha \log K(t) + \beta \log L(t) + \theta \log ODA(t) + \mu \log REM(t) + \epsilon(t) \qquad (4)$$

For estimation purposes, equation (4) can be written as:

$$LogGDP(t) = \psi + \alpha \log K(t) + \beta \log L(t) + \theta \log ODA(t) + \mu \log REM(t) + \epsilon(t) \qquad (5)$$

where GDP is gross domestic product, K is gross capital formation, L is labor force, ODA is net official development assistance, REM is personal foreign remittance, ψ is constant, and ϵ is the error term.

2.2 Data

The study uses secondary annual data during the period (1990-2020). The choice of the period depends on the availability of data. The data are collected from world Bank development indicators data set. Variables are described and specified according to table (2-1) in the appendix.

GDP is used in current US dollars, capital (K) is expressed in terms of physical capital as gross capital formation in US dollars, labor (L) is measured by total labor force, (REM) is expresses in terms of personal remittance received by

residents in US dollars and (ODA) is measured by net official development assistance as a percentage of gross capital formation.

To perfectly ensure the suitability of data for measurement, and for testing the accuracy of the time series data set, table (2-1) represents the major statistical aspects of the data. Providing a general overlook on the nature of the used data.

Table (2-1) Descriptive statistics

Variables	Mean	Median	Maximum	minimum	Standard Deviation	Obs.
Log GDP	25.54	25.32	26.62	24.34	.719	31
Log K	23.84	23.69	24.73	22.82	.611	31
Log L	16.93	16.95	17.19	16.55	.212	31
Log ODA	1.95	1.99	4.11	-2.38	1.24	31
Log REM	22.70	22.45	24.11	21.77	.82	31

Source: Author's estimation

From the previous table, the descriptive statistics of the explained and explanatory variables are worth. The mean value of Log GDP is 25.54$. the value is consistent with other explanatory variables observations. Similarly, the mean value of Log K, Log L, Log ODA, and Log REM are 23.84$, 16.93, 1.95%, and 22.70$, respectively.

The study uses the Auto Regressive Distributed Lag (ARDL) bounds test developed by (Pesaran and Shin 1995) to investigate the impact of foreign capital inflow on economic growth in Egypt over the period (1990-2020). The estimation method provides many supporting advantages, as it examines the short and long-term relationship between the regressand and the regressors. In addition, this estimation technique is suitable when variables are I (1) or I (0) or jointly cointegrated. ARDL also can capture the problems of endogeneity and serial correlation. Thus, it gives unbiased estimates (Adusah-Poku and Bekoe 2018).

2.3 Estimation Results

Various tests are implemented to specify the adequacy of the data used. Tests reflects the well specification of the method. The analysis targets the examination of the nature of the relationship between variables in the short-

term as well as the long-term. The results of the empirical analysis emphasize the theoretical evidence.

Results of unit root test:

The study run a unit root test for the used time series to understand if the data are mostly integrated of first order I (1). we use the Augmented Dickey-Fuller (ADF) test (Dickey and Fuller 1979) and Philips-Perron test (Phillips and Perron 1988) to examine whether the data are stationary. The null hypothesis of the test assumes that there is a unit root. Thus, we reject the null hypothesis when the P-value is less than .05 which means the data is stationary.

Table (2-2) reports the results of the (ADF) and Philips-Perron tests at the natural level and first difference. At level Log ODA is stationary at 5% with intercept only and with trend. while other variables are stationary at the first difference with intercept and trend.

Table (2-2): Unit Root and Philips-Perron Test

Variable	At Level				At First difference			
	With intercept		With intercept and trend		With intercept		With intercept and trend	
	ADF	PP	ADF	PP	ADF	PP	ADF	PP
Log GDP	-1.14 (.86)	-.39 (.89)	-2.85 (.19)	-2.15 (.49)	-3.67 (.010)	-3.74 (.00)	-3.63 (.04)	-3.70 (.03)
Log K	-.45 (.88)	-.458 (.88)	-2.65 (.25)	-2.81 (.20)	-4.54 (.002)	-4.54 (.00)	-4.36 (.008)	-4.35 (.00)
Log L	-1.87 (.33)	-2.06 (.26)	.613 (.99)	.25 (.99)	-3.10 (.03)	-3.10 (.03)	-3.69 (.038)	-3.69 (.03)
Log ODA	-3.007 (.045)	-3.007 (.04)	-4.52 (.005)	-4.45 (.00)	-4.63 (.001)	-15.41 (.00)	-5.15 (.001)	-24.68 (.00)
Log REM	.53 (.98)	.55 (.98)	-.1.88 (.639)	-.1.86 (.64)	-5.69 (.000)	-5.69 (.000)	-5.99 (.000)	-5.96 (.000)

Source: Author's estimation

2.4 Cointegration test:

To investigate the long run cointegration relationship between GDP and explanatory variables, the study applies the bounds test.

The null hypothesis of the test means that there is no cointegration:

$$H0: \beta1 = \beta2 = \beta3 = \beta4 = 0$$

Against the alternative hypotheis: $\quad\quad\quad$ H1: $\beta1 \neq \beta2 \neq \beta3 \neq \beta4 \neq 0$

The results of bounds test results are represented in table (2) in the appendix, we can note that the value of the F-statistic is (32.29) which is above the lower and upper critical values at 5%, 10%, and 1%. Thus, we reject the null hypothesis and confirm that there is a long-run cointegration between the regressand and the regressors.

The absolute value of the t-statistic is (9.69) which is greater than the absolute value of both the lower and upper critical values at 5%, 10%, and 1%. Thus the null hypothesis is rejected which confirms that cointegration is sensical (McNown, Sam et al. 2018).

To describe the nature of the cointegrating relationship, we test whether the sensical cointegrating relationship is usual or valid but degenerate. So, figure (2-1) shows the relationship between the long-run equilibrium equation and the GDP. From the figure, we can conclude that the relationship between the equilibrium equation and GDP is usual.

Figure (2-1): the relationship between long-term equilibrium equation and GDP
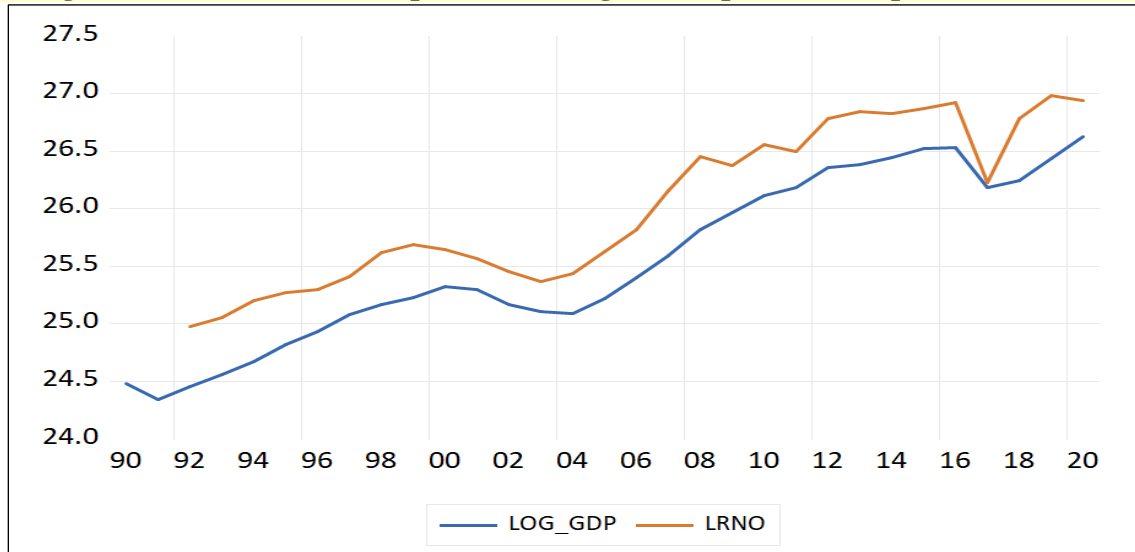
Source: Author's estimation

2.5 Long-Term Relationship:

$$\text{Log GDPt} = \alpha_0 + \sum_{i=1}^{p}(\beta_1 \text{LogGDP}_{t-i}) + \sum_{i=0}^{p}(\beta_2 \text{Log K}_{t-i}) + \sum_{i=0}^{p}(\beta_3 \text{ Log L}_{t-i}) + \sum_{i=0}^{p}(\beta_4 \text{Log ODA}_{t-i}) + \sum_{i=0}^{p}(\beta_5 \text{Log REM}_{t-i}) + u_t$$
$$(6)$$

Where (t) refers to years. β1, β2, β3, β4, and β5 refer to the long-term coefficients. GDP is the Explained variable. K, L, ODA, and REM are the explanatory variables and (u_t) is the error term.

Table (2-3): Long-Term Results			
Variables	**Coefficient**	**T-Statistic**	**Probability**
Log K	0.878	9.73	0.00
Log L	0.635	2.34	0.02
Log ODA	0.109	3.80	0.00
Log REM	0.134	2.51	0.01

Source: Author's estimation

Table (2-3) shows that the estimated coefficient of Log foreign aids (ODA) is .109 which is positively correlated with GDP (significant at 5%). This reveals that 1% increase in Log ODA raise GDP by 0.109%

Remittances significantly and positively affect GDP (significant at 5%). A 1% increase in Log REM causes economic growth to increase by 0.13%.

In addition, capital formation and total labor force have a significant positive impact on GDP (both significant at 5%). GDP increases by 0.87% and 0.63 as a result of 1% increases in Log K and Log L respectively.

2.6 Standardized Coefficients:

To estimate the relative importance of the explanatory variables in their impact on GDP in the long-term, we transform the estimated coefficients into standardized coefficients. Results in the table (3-4) indicate that almost ODA and REM are almost equivalent in their effect on GDP. ODA causes economic growth to rise by (0.187) while REM causes GDP to grow by (0.152).

Table (2-4) Standardized coefficients

Variables	Coefficient
Log ODA	0.187
Log REM	0.152

Source: Author's estimation

2.7 Short-Term Relationship:

$$\Delta \text{Log GDPt} = \alpha_0 + \sum_{i=1}^{p-1}(\beta_1 \, \Delta \text{Log GDP}_{t-i}) +$$
$$\sum_{i=0}^{Q-1}(\beta_2 \, \Delta \text{Log K}_{t-i}) + \sum_{i=0}^{M-1}(\beta_3 \, \Delta \text{Log L}_{t-i}) + \sum_{i=0}^{N-1}(\beta_4 \Delta \text{Log ODA}_{t-i}) +$$
$$+ \psi \text{ECT}_{t-1} + U_t \sum_{i=0}^{X-1}(\beta_5 \Delta \text{Log REM}_{t-i})$$
$$(7)$$

Where Δ represents the first differences, β's refers to short-run coefficients, and ψ is the speed of adjustments to the long-run equilibrium.

Table (2-5): Short-Term Results:

Variables	Coefficient	t-statistic	Probability
D (Log K)	0.414	6.90	0.000
D (Log L)	0.299	1.88	0.072
D (Log ODA)	0.051	5.45	0.000
D (Log REM)	0.063	2.45	0.022
ECT_{t-1}	-0.47	-13.81	0.000

Source: Author's estimation

Table (2-5) shows that the coefficients in the short run carry the same signs of coefficients in the long run. Foreign aid (ODA) and personal remittance (REM) have a positive and significant impact on GDP. Physical capital and total labor force affect positively and significantly on GDP.

The coefficient of error correction form has a negative sign and is significant as well. This confirms that there is cointegration between the variables in the long-term. The coefficient of the error correction form (0.47) denotes that GDP adjusts by 47% yearly to return to the equilibrium level. Thus, Log GDP needs about 2 years to return to equilibrium.

2.8 Findings of The ARDL model:

Table (2-6): The ARDL model results

Variable	Coefficient	Std. Error	t-statistic	Probability
Log GDP (-1)	.688	.106	6.44	.000
Log GDP (-2)	-.160	.072	-2.22	.036
Log K	.414	.062	6.67	.000
Log L	.299	.132	2.25	.034
Log ODA	.051	.011	4.69	.000
Log REM	.063	.022	2.80	.010
R-squared				.997
Adjusted R-squared				.996
Durban – Watson Stat				1.84

Source: Author's estimation

Note that R-square is 0.99 which means that 99% of the total variation in the GDP is explained by variations in the explanatory variables. Also, the value of Durban Watson indicates that there is no autocorrelation in residuals (Table 2-6).

3.9 Diagnostic Tests:

After confirming the long-term relationship between the regress and and the regressors, diagnostic tests are critical to be implemented.

These tests include Breusch-Godfrey serial correlation LM test. The test provides a conclusion on the existence of serial correlation in the residuals, Breusch- Pagan-Godfrey test for heteroscedasticity in the model, Jarque-Bera test for normality (Thadewald and Büning 2007) , and Ramsey reset test to confirm the well-specification of the model (Lee, White et al. 1993).

According to the results in Table (2-7), the value of F-statistic in the Breusch-Godfrey serial correlation LM test is 2.189 with a probability of 0.138. In addition, the R-squared of the test is 5.20 and the probability is 0.073. Thus, the p-value of F-statistic and R-squared in the Breusch-Godfrey serial correlation LM test is greater than 5% which confirms that there is no serial correlation in residuals.

Table (2-7) Breusch-Godfrey serial correlation LM test

Breusch-Godfrey serial correlation LM test			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	2.189	Prob. F(2.20)	.138
Obs* R-squared	5.20	Prob. Chi-square (2)	.073

Source: Author's estimation

The p-value of Chi-square is above 5% which approves no serial correlation in the residuals and homoscedasticity exists. Values are represented in table (2-8).

Table (2-8): Breusch- Pagan-Godfrey

		Breusch- Pagan-Godfrey	
		Null hypothesis: Homoskedasticity	
F-statistic	1.41	Prob. F(6.22)	.252
Obs.* R-squared	8.08	Prob. Chi-square (6)	.232
Scaled explained SS	2.89	Prob. Chi-square (6)	.822

Source: Author's estimation

The normality test is represented in figure (A-1) in the appendix. The P-value of Jarque-Bera is above 0.05 which means that residuals follow the normal distribution.

Finally, The P-values of the t-statistic, F-statistic, and likelihood ration of the Ramsey reset test are more than0 .05 which means that there is a correct functional form. Test results are shown in table (2-9)

Table (2-9): Results of diagnostic tests

	Ramsey Reset Test
t-statistic	.735
F-statistic	.735
Likelihood ratio	.687
Ramsey Reset Test	Figure A2 & A3

Source: Author's estimation

Furthermore, we test the stability of the coefficients by drawing the CUSUM and CUSUM of square graphs. According to figures (A-2) and (A-3) in the appendix, coefficients are within the critical bounds which reflects the stability of variables over time.

Conclusion and Recommendation:

This study investigated the impact of FCIs on economic growth in Egypt. It focused on Remittances (REM) and Aid (ODA), where REM is recording a noticeable rising at the level of Egypt and the region. Using two analytical approaches, descriptive analysis, and econometrics model. to estimate the effect of REM and ODA on economic growth. By using Auto-Regressive Distributed Lag (ARDL) Bounds testing method.

The study revealed several results, the most important of which are: Firstly, this study revealed that the estimated coefficient of Log foreign aid (ODA) is 0.109, positively correlated with GDP (significant at 5%). It indicates that a 1% increase in Log ODA raises GDP by 0.109%. Remittances significantly and positively affect GDP (significant at 5%). A 1% increase in Log REM causes economic growth to increase by 0.134%. In addition, capital formation and total labor force significantly positively impact GDP (both significant at 5%).

GDP increases by 0.878% and 0.635 due to 1% increases in Log K and Log L, respectively. And confirm that the coefficients in the short run carry the same signs of coefficients in the long run.

(ODA) and (REM) has a positive and significant impact on GDP. Physical capital and total labor force affect positively and significantly on GDP. The coefficient of error correction form has a negative and significant sign. It confirms that there is cointegration between the variables in the long term. The coefficient of the error correction form (0.47) denotes that GDP adjusts by 47% yearly to return to the equilibrium level. Thus, GDP needs about two years to return to equilibrium.

Secondly, the study concluded that the growth of remittances increased significantly at the level of Egypt and the regional level, where it exceeded both FDI and Aid, and the sector was slightly affected by the Corona pandemic (COVID-19). In Egypt, remittances exceeded both FDI and the REM as a percentage of GDP. And exceeded the value of goods exports, tourism, FDI, aid, and the Suez Canal as a percentage of these inflows, and exports came in second place, then tourism, the Suez Canal, FDI, and ODA. This study found that remittances are sensitive to the host country's exchange rate, interest rate, or other available alternatives. And that remittances are heading in the opposite direction of the business cycle.

Economic theories have not decided whether the impact of REM on growth is positive or negative. Still, REM affects economic growth through capital accumulation, labor force growth, and total factor productivity.

The value of FDI in Egypt is not proportional to the size of the enormous capabilities, opportunities, and efforts undertaken by the government. ODA in Egypt is affected by internal and external political factors.

It found from previous studies that most studies involved examining the impact of REM on economic growth through a sample and used the panel data, neglecting the difference and nature of the countries, the size, and the quality of remittances. In contrast, the results of these studies split to conclude the positive effect of REM or the negative on economic growth.

The study recommends the following:

Since REM has become the essential resource for IFCs, the decision-maker must consider the importance of this necessary resource's continuity and its positive linkage with the rise of oil prices, the reduction of the exchange rate, and the increase in the interest rate.

After Egypt has made progress in terms of infrastructure for investors, including infrastructure, ports, energy security, industrial zones, and others, Egypt must focus on announcing investors and offering incentives for some desirable economic activities.

Family connections and the net potential income for migrant workers strongly affect remittance inflows to origin countries. Due to the impact of remittances on family intentions to work outside, remittance inflows could stimulate new planned remittances.

It should Apply mass campaigns to migrant Egyptian workers about available investment opportunities in Egypt, establish novel financial products for migrants, lowering administrative obstacles to investment in Egypt, and provide incentives for investment in productive sectors.

The study suggests rephrasing government policies to encourage Egypt's migrant workers to invest their savings in the Egyptian market instead of foreign markets. Additionally, it is critical to push remittances through formal channels and utilize remittances in a manner that maximizes growth benefits.

It recommends attention to the development of the human capital in terms of education, training, and qualifications to support increased REM. in addition

to providing comprehensive care for Egyptians working abroad, such as health insurance, life insurance, and providing administrative facilities, financial development, and reducing transfer costs and protecting their rights and interests abroad, and at the same time, considering the commitment of Egyptian workers to the laws, rules, and procedures of the host country. Finally, increasing cooperation with Arab countries would increase REM, ODA, and FDI.

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Appendix

Table (A-1). Description and Sources of Data Used in the Study

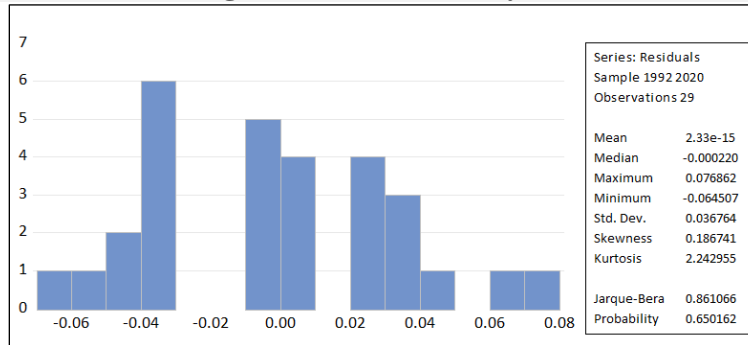| Variable	Description	Source	Equation Symbol
GDP	Gross Domestic Product (current US$)	World Bank- World Development Indicators	GDP
Physical Capital	Gross capital formation (current US$)	World Bank- World Development Indicators	K
Labor	Total labor force	World Bank- World Development Indicators	L
Personal Remittance	Personal remittance received by residents (current US$)	World Bank- World Development Indicators	REM
Official Development Assistance	Net official development assistance & Aid as a % of gross capital formation	World Bank- World Development indicators	ODA

Source: Author's research

Table (A-2): Bounds Testing Results

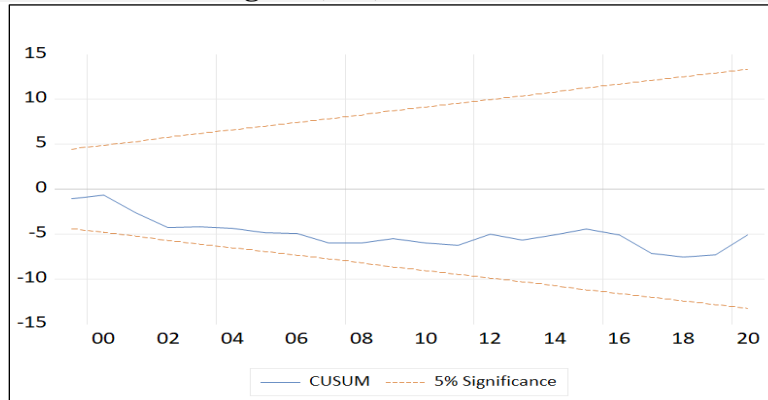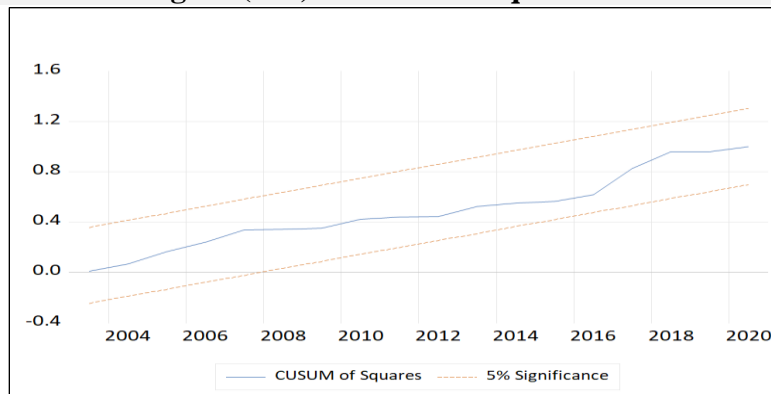| ARDL F-Statistic (32.29)	(- ARDL t-statistic 9.69)
o **Critical value at 5%** Lower bound: 2.86 Upper bound: 4.01 o **Critical value at 10%** Lower bound: 2.45 Upper bound: 3.52 o **Critical value at 1%** Lower bound: 3.74 Upper bound: 5.06	o **Critical value at 5%** Lower bound: -2.86 Upper bound: -3.99 o **Critical value at 10%** Lower bound: -2.57 Upper bound: -3.66 o **Critical value at 1%** Lower bound: -3.43 Upper bound: -4.6
K=4, where K denotes the number of explanatory variables.	

Source: Author's estimation

Figure (A-1): Normality test

Series: Residuals	
Sample 1992 2020	
Observations 29	
Mean	2.33e-15
Median	-0.000220
Maximum	0.076862
Minimum	-0.064507
Std. Dev.	0.036764
Skewness	0.186741
Kurtosis	2.242955
Jarque-Bera	0.861066
Probability	0.650162

Source: Author's estimation

Figure (A-2): CUSUM test

Source: Author's estimation

Figure (A-3): CUSUM of squares test

Source: Author's estimation