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The Impact of Foreign Direct Investment on Real Wages in Egypt: A Sectoral Empirical Analysis

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Abstract

This research seeks to empirically examine the impact of Foreign Direct Investment (FDI) on real wages in Egypt. First, we test the effect of FDI on real wages on the whole economy, and then special attention is given to the basic sectors in the economy. For this purpose, we make use of time-series Autoregressive Distributed Lag (ARDL) models utilizing annual data covering the period 1985-2014. Our results reveal that FDI positively affects the average wages in the long-run in almost all conducted models. According to the sectoral models, the highest long-run effect of FDI on wages is detected in the manufacturing sector, while it is insignificant in the tourism sector. Attracting more FDI in general and manufacturing FDI in particular is recommended as this will have a positive effect on average wages and consequently raise the economy's output and overall income.

JEL Codes:E22, E24, F21

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1. Introduction

Foreign direct investment (FDI) has gained considerable attention as a source of accelerated growth in the economic literature where the impact of FDI on host economies has been of interest for many years. Several empirical studies analyzed the impact of FDI on economic growth and productivity, while there was limited exploration of the impact of FDI on wage rate across countries.

Multi-National Enterprises (MNEs) have often been accused of taking advantage of low wages in developing countries; however, there is no consensus concerning the effect of FDI on wages whether in theories or in empirical studies. Alternative theories explain the effect of FDI on wages; some of which suggest a positive relation while others suggest a negative one. Empirical studies lack consistent findings concerning the wage effect of FDI whether in developed or developing countries. Several studies are cross-sectional that either studied a number of countries in the same region or a heterogeneous group of countries. Another group of studies concentrated on the manufacturing sector whether using aggregated or disaggregated data, ignoring FDI inflows directed to other sectors. A third group of studies depends in their modeling process on firm-level data which cannot give results that can be generalized. Only a few studies (Ramasamy and Yeung, 2005; Ge, 2006) concentrated on the dynamics of the relationship between wages and FDI inflows.

Egypt lacks studies assessing the impact of FDI on the wage rate especially concerning the sectoral level. Therefore, the objective of this research is to provide an empirical investigation of the impact of FDI on overall average wages and on sectoral wages in Egypt during the period 1985-2014. The empirical analysis will be conducted in three stages; first, we will examine the effect of inward FDI coming into Egypt on overall average wages. To get a more clear interpretation of the results, we will conduct the second stage; a time series analysis which handles basic sectors in the Egyptian economy. These sectors were selected according to their share in GDP and they include the financial, manufacturing, agricultural, service, construction and tourism sectors; they collectively represent about 70% of GDP during the period 1985-2014.

This research will test two basic hypotheses: first, whether inward FDI has a positive effect on overall average wages, second, whether FDI affects the average wages differently across sectors. This paper will utilize the Auto-Regressive

Distributed Lag (ARDL) model in order explore the studied relation both in the short and long-run.

The findings of this research will provide the Egyptian policymakers with better guidelines on how FDI affects wages, and will recommend encouraging FDI to sectors with highly positive effect on wages as this is expected to have a positive spillover effect on the whole economy. This paper is structured as follows: the following section will give a theoretical background of the relationship between FDI and wage rates. An overview of previous empirical studies is given in the third section and in the fourth section we will establish the empirical study, discussing the model specification, methodology and the empirical results. Finally, the fifth section summarizes the study results and suggests some policy recommendations.

2. Theoretical Background

There is a great debate regarding the effect of FDI on host country's average wage rate; those in favor of globalization tend to emphasize the positive effect of FDI on wages. In contrast, those against multinationals argue that FDI depress wages in the host countries by exploiting unskilled workers in addition to displacing local firms. There are several ways in which the entrance or existence of foreign firms might affect wages in the host countries where they operate; theoretical arguments that justify different views are presented below.

2.1.   Productivity and Spillover Effect of FDI

According to the neoclassical literature; the effect of FDI on wages can be divided into direct and indirect effects. The standard neoclassical theories suggest that increasing capital lead to increasing labor productivity and in turn leads to increasing wages. And, since real wages are equal to the marginal productivity of labor, consequently, any increase in the real wage stems from an increase in the marginal product of labor (Tintin, 2012).

However, FDI could have indirect effects on wages through technological spillover. This can be explained by the fact that along with foreign capital, multinationals bring many intangible assets such as knowledge and organizational skills. If foreign firms introduce new products and/or processes in their plants in a host country, domestic firms may benefit from accelerated diffusion of new technology. The spillovers from inward foreign investment may be intra-industry (horizontal) or inter-industry (vertical) spillovers (Smarzynska 2004). When workers move from foreign to local firms they take this acquired technology to

local companies and consequently, they become more productive. Thus, FDI will have an additional positive impact on wages through technological spillovers (Vahter, 2004).

It is important to note that, negative effects can exist particularly in the short run when the entering foreign enterprises producing for the local market draw the sales and the demand away from domestic firms; thus, making them cut production and further crowd-out domestic firms. We have to note that the spillover effects still depend largely on the type of activities transferred and the competitive advantages of the host country (Banga, 2005).

2.2.   Labor Market Effects of FDI

FDI can impact the labor market in host country and subsequently wages through a number of channels (Driffield & Girma, 2003):

One of those channels appears when foreign green-field investment expands the overall market size, this would generate increased competition for the limited pool of labor resources resulting in increase in labor demand. Consequently, wages rise; also, this can arise via technology spillover as stated earlier. However, overall wages are expected to rise if and only if the demand creation generated by the entry of foreign firms dominates the demand destruction that follows as some local firms are displaced due to foreign competition.

Another channel is based on the argument that foreign firms tend to provide better pay to workers than their domestic counterparts, particularly in developing countries. Higher wages in foreign firms arise either through organizational restructuring that may increase labor productivity by exploiting the parent firm's intangible assets such as branding, know-how, and marketing or by the transfer of physical assets from the parent firm that may increase capital intensity at the affiliate, boosting the marginal product of workers. Even if capital intensity is unchanged, workers can become more productive when the multinational parent firm simply replaces existing capital with imported and better quality equipment (Bircan, 2013). As foreign firms pay higher wages than domestic firms especially for high skilled workers which possess an inelastic supply curve, the inherent wage differential may act to reduce the supply of labor for the local firms thus triggering increase in wage rates (Arnal & Hijzen, 2008).

Note that, foreign firms may pay more to their labor as compared to domestic firms in developing countries for reasons unrelated to productivity of

labor. Several explanations have been rendered for the wage differential between multinational and domestic firms. Møller, et al. (2013) groups these explanations into three general theories;

Firstly, the "theory of heterogeneous-workers" reflects a pure selection bias whereby the foreign firm ex-ante select better quality of workers. The reason behind the selection bias is the complementariy between technology (capital) and worker skills (Ekholm & Midelfart, 2005), between skilled managers and skilled workers, or among skilled workers themselves.

Secondly, the "theory of heterogeneous-learning" states that foreign firms offer more learning opportunities to their workers than domestic firms, so, workers become more productive in foreign firms through better training or more useful experiences even if the initial expertise and capability of workers employed in foreign and local firms are similar. Recognizing the attractiveness of its workers to the host firms, those foreign firms pay higher wages to discourage host firms from hiring away some of its workers so as to limit technology transfer to the host firm.

Thirdly, the "theory of heterogeneous-firms" implies that the premium could reflect compensation for different work conditions as there is a higher perceived demand volatility in foreign firms, higher closure rates for foreign firms (Meriküll & Rõõm, 2014) and worker preferences for local firms (Lipsey & Sjoholm, 2001), triggers foreign firms to pay more.

2.3. Wage Bargaining Approach

According to political economists, prevailing neoclassical theories omit social, cultural and institutional variables that are behind the actual process of capital movements. While working hours are specified in working contracts, these do not contain the actual level of work and effort that is put during these hours (Bowles and Gintis 1990). According to the wage bargaining approach, reduced transportation costs across countries, technological improvements, and the globally declining trend of labor unions, put multinational companies in a better position - if not superior - in wage bargaining. Multinational companies are partially or fully able to shift their production and services across different host countries (the mobility advantage). Relative to capital, labor is subject to more political restrictions and to explicit and implicit barriers including home bias (e.g. culture, language, and working environment), boundaries between countries, limited skills

of labor, and uncertainty in other markets (Tintin, 2012). There are three factors that appear to pressure the bargaining power of labor down:

Firstly, since wages can be affected by firms' threats to relocate production, Seguino (2007) suggested that this mechanism was behind a low-wage-low productivity trap. The decline in productivity takes place for two reasons; either because firms face less pressure to make investments that raise productivity, or because deregulation of FDI permits companies to outsource their production.

Secondly, with the shift in the relative importance of domestic to international markets, foreign firms view wages as a cost item not as a source of demand. This means that capital owners uphold increasing power when entering a market and FDI inflows have negative effects on wages in all countries (Vijaya and Kaltani (2007).

Thirdly, Rodrik (1997) argued that an economy that is open to foreign investment is characterized by higher labor-demand elasticity resulting in an inferior bargaining position of labor vis-à-vis capital.

3. Empirical Literature Review

The findings of economic literature concerning the effect of FDI on the wage rate remain indecisive; some studies suggest positive effects, others concluded negative effects, while a third group of studies has found no long-run relation. The following subsections give a summarized review of those studies.

3.1. Studies Revealing the Positive Effect of FDI on Wage Rate

Several studies conducted in different countries concluded a positive effect of FDI on wages. Ramasamy and Yeung (2005) evaluated the relationship between FDI and wage rates with a panel data setting for 27 Chinese provinces over the period 1985–2000, after distinguishing between the coastal and inland provinces. Results indicated that FDI had a positive impact on wage levels in China especially in the coastal provinces, but no significant relationships were found for the inland provinces. Those results have an important implication for developing countries; relatively lower labor costs cannot solely be used as an attracting incentive for FDI, especially in the long term. There are other important determinants of FDI: infrastructure, market potential and transportation cost. Another study that also concerns China was conducted by Ge (2006) who suggested that the existence of FDI had a significant and positive effect on the average wage level of Chinese

cities (during the period 1990-1998), this effect remains significant after controlling for the city capital labor ratio, industrial structure and human capital.

The only study that was conducted in this regard for a group of countries including Egypt was held in 2012 by Asli and Noormohamadi, investigating the effect of FDI on average wage level in the MENA countries during the period 1980-2008. They concluded a positive effect that was explained by the increase in productivity brought by FDI. However, when human capital was added into the determinants of the wage rate, the effect of FDI turned to be negative; this was attributed to the low bargaining power of labor force.

3.2.   Studies Revealing the Negative Effect of FDI on Rage Rate

Majid (2004) examined the effect of FDI on wages in developing and developed economies separately. In developed economies, FDI had a small negative effect on wages that became negligible over time. In developing countries, similar effects were detected where the labor market initially bear the negative adjustment from increasing FDI but that negative effect was temporary. Since developing countries differ greatly in terms of institutional and structural conditions, Majid examined specific sub-groups within developing economies, three groups were selected; the first developing country group classification was the "High Traders", including a group of countries that have experienced the greatest increases in trade-GDP ratios. For this group, the FDI effects were initially negative and gradually improved over time to become positive. The second classification was the "High Tariff Reducers", capturing developing countries that reduced tariffs most in the post-1980s' globalization period, these countries experienced a small positive trend in the FDI effect on wages after two years. The third group included those developing countries that not only reduced tariffs most but maximized the increase of imports as well; in those countries, increased FDI had a negative effect that did not get offset. This classification has an important implication that even the studies examining developing countries give contradicting results depending on country characteristics.

Three more studies provided support for the hypothesis that FDI could have a negative impact on overall wages in the manufacturing sector; Vijaya and Kaltani (2007), Onaran and Stockhammer (2008) and Waldkirch (2010).

3.3.　Studies Revealing No Relation between FDI and Wage Rate

Two studies concerned with the manufacturing sector, one empirically examined the case of Tunisia while the other concentrated on the Irish Republic, and both found no effect of FDI on wages. Salha (2012) empirically tested the impact of FDI on the level of real wages in Tunisia during the period 1970-2009. This analysis was conducted on the average economy-wide wages and then was conducted again at the disaggregated industry-level in the manufacturing sector. This paper had two main findings: first, FDI flows did not have a long-run relationship with the annual average wage (it had a negative but insignificant effect on wages). The second finding was that FDI positively impacts real wages only in the more exportable sectors in the country, i.e. the textile, clothing and leather industry. The same results were reached by Ruane & Uğur (2004), using plant level panel data set for Irish manufacturing industry during the nineties; they examined how foreign plants impact the average wages paid by domestic plants within a host economy. Although, they found that differences between domestic plants' average wages across sectors are positively and significantly related to differences in foreign presence across sectors, this relationship disappears once sector and plant characteristics are taken into account.

4. Empirical Analysis

In this section, we will analyze the effect of FDI on overall average wages in Egypt, in addition to its effect on wages in the basic economic sectors. The first novelty of this research is that we will examine the dynamic effect of FDI on overall average wages in the Egyptian economy. The second novelty is introducing sector-specific effects of FDI on wages; we will concentrate on highly important sectors in the Egyptian economy that represent 76% of GDP during the period 1985-2014. The concerned sectors include; financial, manufacturing, agricultural, service, construction and tourism sectors.

4.1.　Model Specification

The theoretical analysis of the effects of FDI on wages included three approaches presented earlier two of which suggested that as FDI increases, wages will increase (productivity and spill-over effect of FDI and the Labor market effect of FDI). As the data availability constrains us from analyzing the wage differential between multinational and domestic firms, we will not be able to use the Labor market approach. Therefore, we will follow the productivity approach of FDI as

we expect FDI to exert a positive effect on productivity either directly or indirectly and in turn exert a positive effect on wages.

According to different wage determination theories, the evolution of wages is not only influenced by productivity but also influenced by other factors. Much of the literature on empirical research of wage formation stems from the work of Phillips (1958). Based on the proposition that the price of any product changes in response to excess demand, the Phillips curve relates wage growth to the level of unemployment. When the demand for labor is high and there are very few unemployed, employers are expected to bid wage rates up rapidly and vice versa. Another route in literature has been followed (Oswald, 1982; Graafland, 1992) in which the wage equation is derived from microeconomic theory of wage bargaining. The bargaining model implies that unemployment will have a negative influence on the wage level, not on wage growth. This contrasts with the Phillips curve and implies that there will be a stable relation between the wage level and the unemployment rate. This is called the wage curve (Blanchflower and Oswald, 1989).

Regarding sectoral differences, labor's bargaining power is expected to vary positively with capital intensity and the use of skilled labor, and negatively with labor intensity and the use of unskilled labor. This can be explained by the fact that labor costs are relatively less important in capital-intensive industries, and employers can be readier to accommodate demands for higher wages. Similarly, the more an industry relies on skilled labor, the more likely that firms will pay higher wages to increase their workers' loyalty. The differences in bargaining power affects how much of the productivity gains are reflected in wages and how flexible wages are with respect to unemployment (Bohle and Greskovits, 2006).

Onaran and Stockhammer (2008) incorporated the effect of FDI and trade to the wage model utilizing sectoral data, their model included FDI and trade in addition to labor productivity and unemployment rate in determining wages. We modified their model by adding some variables that are considered important in determining wages according to literature as inflation rate and gross secondary school enrollment ratio, and we dropped trade from the model.

Time series models that will be conducted in this research include average real annual wage as dependent variable (lnWAGE), real FDI stock (lnrFDI), labor productivity calculated by the output labor ratio (lnLProd), unemployment rate (UNEMP), and gross enrolment rate (GENROL) as independent variables. In

addition, a set of other variables are utilized according to the nature of each sector. Those variables were chosen based on empirical literature and the functional form can be given as:

$$\ln WAGE = f(\ln rFDI, \ \ln LProd \ , GENROL \ , UNEMP) \qquad (1)$$

The increase in productivity is expected to have a positive effect on wages while higher unemployment is expected to lead to a lower bargaining power of workers and consequently lower real wages. Concerning gross enrollment, it is anticipated that one's knowledge enhances future earnings. FDI is expected to have a positive effect on wages as most foreign investments are capital intensive and most likely need skilled labor.

4.2. Methodology

We will perform the empirical analysis in two stages; first, an aggregate analysis, investigating the effect of total FDI stock on overall average annual wages both in the short and long-run using the time-series ARDL model. In order to get more clear interpretation of the results, we conducted the second stage which analyzes the major sectors in the Egyptian economy selected according to their share in GDP using time-series ARDL model for each sector.

One of the advantages of the ARDL model is that it allows us to estimate short and long-run coefficients. Also, Pesaran et al. (1997), and Pesaran and Shin (1999) showed that the traditional ARDL approach is valid regardless of whether the regressors are exogenous or endogenous and irrespective of whether the underlying variables are stationary at level or at first difference.

As a preliminary stage, we conduct unit root test for the time-series data using Augmented Dickey-Fuller (ADF) and Zivot and Andrews (Z&A) unit-root tests. The time-series ARDL framework include: first,testing for the existence of any long-run relation among the variables using the bound test of cointegration; second, if we find cointegration among variables, we estimate the long-run and the short run coefficients (Pesaran et al., 2001). After that, we test for serial correlation by Breusch-Godfrey serial correlation LM test and finally, we examine the stability of the model by CUSUM test.

4.3. Data

Egypt attracted low levels of inward FDI since early 1990s either because of domestic policies or global shocks in world economy. Starting from 2004, efforts to improve the investment climate and encourage domestic and foreign investment enhanced the attractiveness of Egypt as a business location. The ascent of FDI to Egypt started in 2004, and continued uninterruptedly until reaching its peak in 2007. As 2009 figures show, real FDI inflows dropped, this was highly attributed to the global financial crises. In 2011, there was a massive decline in real FDI inflows to Egypt following the Egyptian revolution. The situation improved since 2012 but it never reached its preceding levels of the previous years.

Sectoral FDI data is brought from the Egyptian "General Authority for Investment and Free Zones" GAFI. We utilized real FDI stock which is defined as the amount of cumulative real FDI flows from 1985 until the end of the respective year. FDI data was converted to the Egyptian pound based on the official exchange rate to be compatible with wage data. The utilized data for sectoral wages and output is obtained from the Egyptian "Central Agency for Public Mobilization and Statistics" and the Egyptian "Ministry of Planning", we converted wages to annual wages. The rest of the variables utilized are obtained from the World Bank's World Development Indicators' database. All nominal variables are converted to real ones using GDP deflator.

4.4. Empirical Results

4.4.1. The First Stage: The Effect of FDI on Average Real Wages (Aggregate Analysis)

Before running our time-series ARDL model, we tested for multi-collinearity between independent variables by examining the correlation; a rule of thumb is that multicollinearity can be a problem if the correlation coefficient exceeds 0.8 (Gujarati, 2003). As there was high correlation between lnrFDI and lnLProd (correlation coefficient was 0.87), lnLProd was dropped from this model. Note that in this model labor productivity is calculated as the ratio of real GDP to labor. The results of ADF unit-root tests given in Table (1) reveal that all variables are stationary either at level or first difference. As lnrfdi is stationary without trend and intercept (none option), so we conducted the Z&A unit-root test to make sure whether this variable is stationary with a structural break or not. After ensuring the presence of a break in the year 2005, a dummy variable was added to account for

the break; the dummy variable takes the value one only for one observation in the year of the structural break.

Table (1): Augmented Dickey-Fuller Test (P-value between brackets):

	ADF (constant)	**ADF (Trend)**	**ADF (None)**
lnWAGE	-0.68 (0.83)	-2.7 (0.22)	0.63 (0.84)
D(lnWAGE)	-5.427 (0.0002)	-5.7 (0.0005)	-5.347 (0.000)
lnrFDI	-0.947013 (0.7570)	-3.12 (0.12)	1.8 (0.98)
D(lnrFDI)	-2.576* (0.1099)	-2.58 (0.28)	-2.58 (0.0117)
GENROL	-1.99 (0.28)	-3.801 (0.033)	1.22 (0.93)
D(GENROL)	-4.437 (0.0016)	-4.35 (0.009)	-4.3 (0.0001)
UNEMP	-2.7337 (0.08)	-4.01 (0.02)	0.8 (0.8812)
D(UNEMP)	-3.399 (0.02)	-4.8 (0.003)	-4.8 (0.000)
INF	-2.15 (0.22)	-2.47 (0.33)	-1.09 (0.24)
D(INF)	-8.78 (0.000)	-8.81 (0.000)	-8.85 (0.000)

Source: Author's own calculations using eviews.
D(x) means the first difference of x

Then, we conducted the ARDL model, the optimum lagged orders of the model based on Akaike information criterion is ARDL (3, 3, 1, 3) for the variables lnWAGE, lnrFDI, UNEMP and GENROL in addition to the dummy variable that was set as a fixed regressor. The results of the bound test for the existence of a long-run relationship reveal that the F-statistics is above the 10 % critical bounds, thus the null hypothesis of no cointegration can be rejected, i.e., there exists a long-run relationship among the variables of our model. Now, we can interpret the error correction model and the long-run coefficients as illustrated in Table (2). It is apparent that the error correction term is negative and statistically significant at the 1 % level, ensuring that long-run equilibrium can be attained; deviations from the long-term equilibrium are corrected every 1.3 years.

Table (2):ARDL Cointegrating and Long-run Form – The Aggregate Model (lnWAGE is the dependept variable):

	ARDL(3, 3, 1 , 3)
Long-run Coefficients	
lnrFDI	0.219***
UNEMP	-0.009
GENROL	0.027***
Constant Term	
C	-1.55**
R^2	92%
Speed of Adjustment	
φ	-0.75***
Short-run Coefficients	
ΔlnWAGE$_{t-1}$	-0.087
ΔlnWAGE$_{t-2}$	-0.5***
ΔlnrFDI$_t$	0.19
ΔlnrFDI$_{t-1}$	0.17
ΔlnrFDI$_{t-2}$	1.38***
Δ UNEMP	0.033**
Δ GENROL	0.018***
Δ GENROL$_{t-1}$	-0.00125
Δ GENROL$_{t-2}$	0.014***

*Source: Author's own calculations using eviews. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively.*

In this estimation, the effect of FDI on overall average wages was positive in the short-run (1% increase in FDI led to 1.38% increase in wages); this effect continues to be positive in the long-run but with smaller magnitude as a 1% increase in FDI led to 0.2% increase in average wages. The effect of the unemployment rate and the gross enrollment ratio were positive in the short-run; in the long-run, the coefficient of the UNEMP became insignificant, while that of GENROL continues to be positive (but the value of the coefficient is small at 0.027). Note that the estimated model is stable as the CUSUM test reveal. Also, it is free from serial correlation (as the probability of chi-square of Breusch-Godfrey serial correlation LM test is 0.088).

4.4.2. The Second Stage: The Effect of FDI on Sectoral Real Wage (Individual- sector Analysis)

After ensuring that all variables are stationary either at level or first difference[3] using ADF test, we conducted the time series ARDL model for each sector separately. In all sectors, we used lnWAGE as the dependent variable, natural log of labor productivity in each sector (lnLProd) and GENROL were used as independent variables except for the construction sector where lnLProd was dropped because of multicollinearity between lnrFDI and lnLProd (as the correlation between them was -0.919). In addition, a set of sector specific variables were added based on each sector characteristics.

The long-run results of the six models are presented in Table (3), FDI had a positive effect in all sectors in the long-run except in the tourism sector where it had an insignificant effect. The highest effect was detected in the manufacturing sector (a 1% increase in FDI caused 0.63 % increase in real wages) followed by the financial sector (a 1% increase in FDI caused 0.35 % increase in real wages). In the short-run, FDI had a negative effect on real wages in the financial, construction and service sectors, a positive effect in the manufacturing, and tourism sectors, an insignificant effect in the agricultural sector[4].

Concerning other variables, the labor productivity effect turned from negative in the short-run to a positive effect in the long-run only in the manufacturing and service sectors. For other sectors, it had either an insignificant or a negative (specially in the tourism sector) effect in the long-run, this may be attributed to the fact that the tourism sector is highly sensitive to economic and socio-political events (either domestic or global).

In the six models, we ensured the existence of cointegration among variables through the bound test. Also, all of them are stable according to CUSUM test and they are free from serial correlation as the probability of chi-square of Breusch-Godfrey serial correlation LM test exceeded 5%.

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[3] The results of the unit root tests of sectoral models' variables are available upon request.

[4] The short-run results of the of ARDL sectoral models are available upon request.

Table (3): Effect of FDI on Sectoral Wages in the Long-run (Dependent Variable: Sectoral WAGE (lnWAGE):

	Fina-ncial	Const-ruction	Services	Manuf-acturing	Agricult-ure	Tourism
lnrFDI_st	0.35***	0.2***	0.213***	0.63***	0.232***	Insig.
Lnrgdp_L	Insig.		0.77*	3.7**	Insig.	-0.25**
Genrol	Insig.	Insig.	-0.01**	-0.04***	Insig.	Insig.
INF						0.02***
EXPR					Insig.	
GOVCR		Insig.				
Dum 2008					-0.44	
Dum_ 2000		0.38*				
Speed of adjustment	-0.3	-0.6	-1.4	-1.03	-1.3	-1.5
R2	98%	91.6%	98%	90%	73%	84.8%

*Source: Author's own calculations using eviews. ***, **, * indicate significance at the 1%, 5% and 10% levels respectively.*
The two dummy variables were chosen according to the unit root Z&A test that shows structural break in lnLProd and lnWAGE in both the Construction and Agricultural sectors respectively.
"Insig." denotes insignificant variables

5. Conclusion

In this research, we tried to assess the dynamic impact of FDI on average wages in Egypt during the period 1985-2014, implementing a number of ARDL models in two stages; first, we used aggregate data, then, a set of time-series models were conducted for a number of basic economic sectors that were selected according to their high share in GDP.

The novelty of this research resides in several aspects; to the best of our knowledge, this is the first study to examine the impact of FDI on wages in Egypt taking into consideration the differentiation between basic sectors in the economy. In addition, we conducted our analysis utilizing the ARDL model that allows us to explore both the short and long-run impacts. Moreover, we tried to incorporate to our analysis some factors affecting wages other than FDI to get more precise empirical results.

The empirical analysis reveals that FDI has a positive long-run effect on wages on the aggregate level, also, the individual-sector models ensure the positive effect in all sectors except the tourism sector, the manufacturing sector has the highest impact of FDI among other sectors followed by the financial sector, this

may be attributed to the fact that those sectors have the lion's share of FDI (57% collectively) coming to the six studied sectors, while the tourism sector has one of the smallest shares of FDI coming to the six sectors (only 9%).

This positive effect of FDI on wages can be explained either by productivity spillover effect (as labor productivity has positive effect on wages especially in the manufacturing sector) or by the fact that local and foreign firms compete for the limited supply of skilled labor in Egypt, thus, enhancing increase in wage rates. Our findings are of a significant importance to policy makers as attracting more FDI in general and manufacturing FDI in particular will have positive effect on average wages of workers, consequently, increasing their spending power and raising the economy's output and overall income.

As panel data models give more variability, less collinearity among the variables, more degrees of freedom and more efficiency (Baltagi, 2001), we will conduct a panel ARDL model, in addition to cross-sectionally augmented ARDL models for the basic economic sectors in the upcoming research.

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