The Determinants of Private Sector Demand for Employment in Egypt: 1990-2007

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Abstract

This study empirically estimates the critical parameters of private sector demand determinants for employment in Egypt by using annual time series-cross section data (1990-2007) and by applying a fixed effects panel Seemingly Unrelated Regression (SUR) model. The empirical results confirm that, in both long run and short run, there are positive and significant relationship between the private demand for employment and real private domestic product and real private investment. On the other hand, there is unexpected positive and significant relationship between the private demand for employment and the real wages in the long run, and negative and insignificant relationship in the short run. The study also confirm that, if private demand for employment is one percent out of equilibrium, a 44 percent adjustment towards equilibrium will take place within the first year.

1 Introduction

In recent years although the high growth rate of the Egyptian economy, the unemployment rate remains high. The unemployment rate in Egypt ranged between 8.6 and 9 percent at the period 2007-2010 [23].The persistence of unemployment

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during a long period has caused many problems. Job creation is one of the most important problems facing Egypt in this concern. That is because Egypt has a young population and a large number of young people are entering the job market each year searching for new jobs. This puts us in the face of very important questions: Is the job content of economic growth hasn't been strong enough to absorb the new entrants to the labor market? Is the amount of private sector investment in Egypt enough to solve this problem, in any economic activities should be? Do wage rates in Egypt play a pivotal role in this regard?

From this view, the factors that influence employment and its growth are currently an important concern of the Egyptian economic policy. Since the Egyptian economy has shifted from a centrally planned economy with a relatively small private sector to a decentralized, market based and outward oriented economy, private sector has received more attention and support. So, this study attempts to answer the question of how the contribution of the private sector in increasing the rate of employment and thus contribute to solving the unemployment problem.

There is a huge literature about the employment or labor demand and its determinants. In Egypt, there are many papers provide both theoretical and empirical investigation and explanation of either the employment, unemployment and labor levels and its determinants [4]; [5]; [6]; [15]; [16]; [17]; [20]; [34] and [38]. In other countries, there are also many papers concentrated on demand for labor, employment or unemployment [2]; [9]; [13]; [18] and [33].

In this paper, I try to provide empirical evidence aimed at investigating the determinants of private sector employment demand in Egypt at the period 1990–2007. The paper is organized as follows. In the following section a description of the labor market developments in Egypt is presented. In Section 3 there is a literature review. In Section 4 there is a presentation of the econometric methodology and data. In Section 5, there is an empirical results and finally there is concluding remarks and policy implications.

2 The labor market developments in Egypt

In 1987, the government responded to the deteriorating situation with a series of economic reforms to reduce the budget and external account deficit. The reforms included steps to reduce barriers of trade and price distortions in the economy. The economic reform and structural adjustment Program (ERSAP), launched in 1991, entails a stronger shift from a centrally planned economy with a relatively small private sector to a decentralized, market based and outward oriented economy in which the private sector plays the leading role. The two main components of this Program are: the stabilization Program aiming at correcting the macro fiscal and monetary imbalances in the short and medium terms; and the structural adjustment Program with longer term reform [15].

The Egyptian economy is characterized by a large and growing informal sector that has been a major source of job creation for some time. However, the jobs created in this sector are not decent enough in terms of wage, sustainability and work conditions. Moreover, a lot of jobs in the formal sector lack stability due to the absence of social security coverage and work contracts, as employers refuse to enter into binding work contracts and complain about the high cost of the social security system [34].

With regard to labor market developments in the last years, as shown in table 1 and figure 1, we observe that, despite the fact that in some years during the period 1990-2007 the unemployment rate reached 12%, but since 2007 to 2010 it ranged between 8-9 percent. On the other hand, the number of total employees has increased from 13.032 million employees in 1990 to 20.12 million employees in 2007 with average growth rate about 2.59 percent [32].

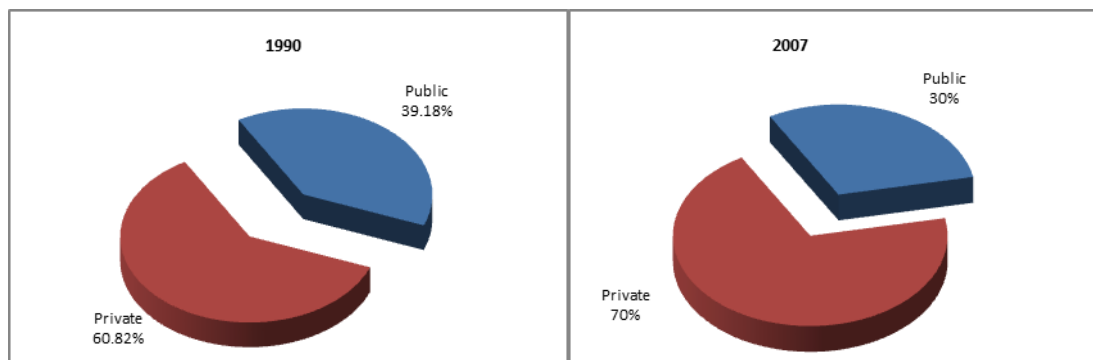Table 1: Unemployment Rates in Egypt

1990	2007	2010
8.6%	8.9%	9%

Source: Calculated by the author from: http://laborsta.ilo.org

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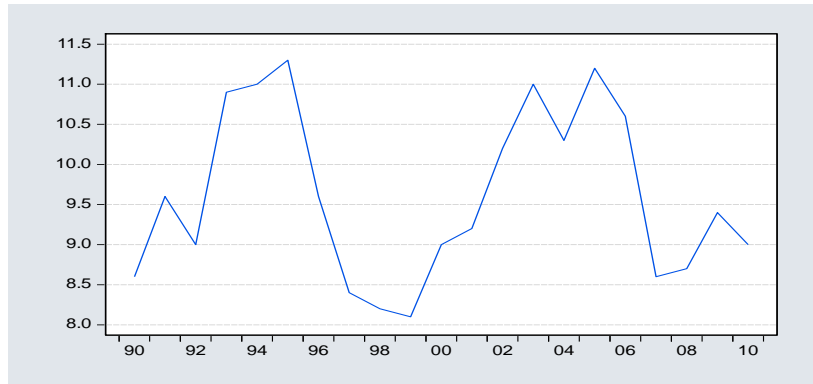
Figure 1: Unemployment rate in Egypt 1990-2010

As shown in Table 2, the labor force is heavily dominated by men (more than three-fourth of the total in 1990 increased to four-fifth of the total in 2010) because of low female participation rate. The lower female participation rate reflects cultural norms as well as the early exit of women from the labor force either to start a family, out of frustration after a long job search, or both. Most surveys suggest that female participation has been inching upward as women are becoming better educated, delay marriage, and seek to support family income [3].

Source: Drawn by the author according the data of [32]

Figure 2: Economic Sectors shares in total employment (1990-2007)

Table 2: Employment and unemployment ratios in Egypt by sex (%)

	1990		2007		2010	
	Employ ment	*Unemploy ment*	*Employ- ment*	*Unemploy ment*	*Employ ment*	*Unemploy ment*
Men	76.3	44.7	78.7	50.5	80.4	42
Women	23.7	55.3	21.3	49.5	19.6	58
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Calculated by the author from: [23]

Result of policies that have been followed for the transformation from a centrally planned economy to a market economy, which was most important to provide incentives and support to the private sector. As shown in Figure 2, the private sector increased from 60.82% in 1990 to 70% in 2007, and it is expected to increase this percentage larger in the coming years.

Table 3 illustrates also, the number of employees of eight economic activities Agriculture, Irrigation & Fishery; Manufacturing Industries & Mining; Petroleum & Products; Construction & Building; Transportation & Storage; Trade; Restaurants & Hotels and real estate ownership. The employment level increased from 8.53 million employees in 1990 to 13.63 million employees in 2007, with average growth rate during the period about 2.8 percent. The total sum of these eight economic activities has 65.4 percent of total employment in Egypt in 1990 and increased to 67.8 percent in 2007. During this period, the shares of all activities have increased with exception of Agriculture; Irrigation & Fishery activity witch witnessed a decrease from 34.3% in 1990 to 27% in 2007. The activities of Petroleum & Products, Real estate ownership, restaurants & hotels and construction achieved growth rate higher than 5 percent.

Table 3: Employment and its growth rates by economic activity (1990-2007)
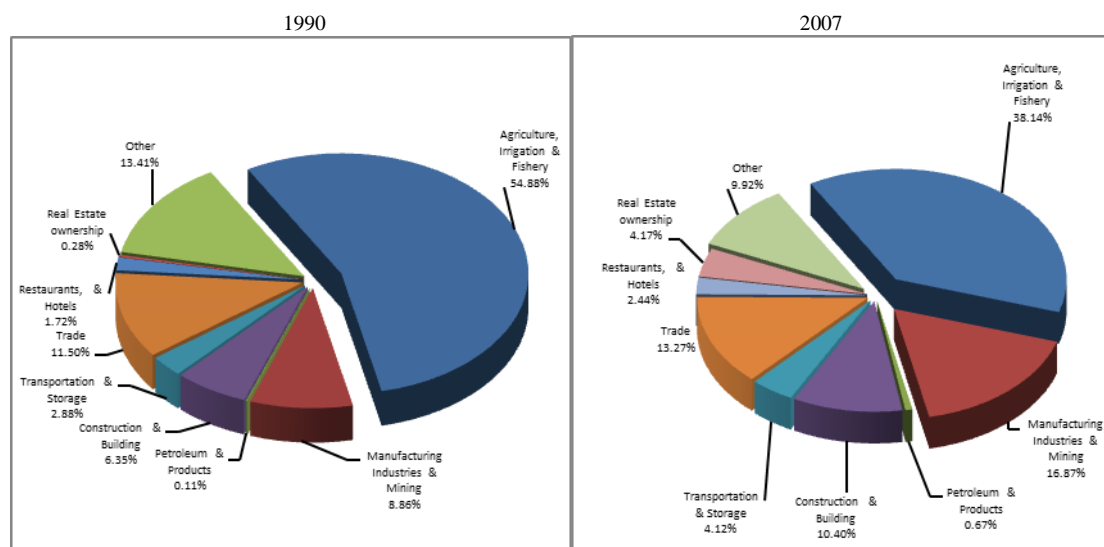in 2000 constant prices

Economic Activity	Employee (thousands)		Yearly Average Growth Rate (%)	Share[a] (%)	
	1990	2007	1990-2007	1990	2007
Agriculture, Irrigation & Fishery	4471	5427	1.15	34.3	27
Manufacturing Industries & Mining	1443	2642.5	3.62	11.1	13.1
Petroleum & Products	33	115.5	7.65	0.2	0.6
Construction & Building	675	1580	5.13	5.2	7.9
Transportation & Storage	465.1	811.8	3.33	3.6	4
Trade	1101	2047	3.72	8.4	10.2
Restaurants, & Hotels	143	345	5.32	1.1	1.7
Real Estate ownership	198	664	7.38	1.5	3.3
Study Group	8529.1	13632.8	2.8	65.4	67.8
Other[b]	4502.9	6487.2	2.17	34.6	32.2
Egypt (Total)	**13032**	**20120**	**2.59**	**100**	**100**

Source: [32]. The data converted to real terms by using consumer price index
(2000=100).
[a] calculated by the author.
[b] It includes economic activities of Electricity, Gas and Water;
Community, Social and Personal Services.

Table 4 and Figure 3 indicate that the employees of the private sectors' eight economic activities increased from 86.59 percent to 90.08 percent of the total private sector employment during the period 1990-2007. That is because; the total private investment of these eight activities increased as shown in Table 5 with average growth rate about 4.36 percent during the period 1990-2007. On the other hand, as shown in Table 5 also, the total private investment increased with an average growth rate about 5.03 percent during the period 1990-2007, of witch manufacturing industry and mining witnessed the higher growth rate among all economic activities with average growth rate 7.62 percent. Also it has the higher share in 2007 about 34.1 percent of total private investment in Egypt.

Source: Drawn from Table 4.

Figure 3: Economic Sectors shares in Private sector employment (1990-2007)

Table 4: The employment in economic Activities by sector (1990-2007) in 2000 constant prices

Economic Activity	1990			2007		
	Public	*Private*	*Total*	*Public*	*Private*	*Total*
Agriculture, Irrigation & Fishery	121	4350	4471	70	5357	5427
Manufacturing Industries & Mining	740.9	702.1	1443	272.7	2369.8	2642.5
Petroleum & Products	24.5	8.5	33	22	93.5	115.5
Construction & Building	171.5	503.5	1405	120	1460	1580
Transportation & Storage	236.9	228.2	465.1	232.8	579	811.8
Trade	189.4	911.6	1101	184	1863	2047
Restaurants, & Hotels	6.5	136.5	143	2.5	342.5	345
Real Estate ownership	175.5	22.5	198	78	586	664
Study Group	1666.2	6862.9	8529.1	982	12650.8	13632.8
Other	3439.9	1063	4502.9	5094	1393.2	6487.2
Egypt (Total)	**5106.1**	**7925.9**	**13032**	**6076**	**14044**	**20120**

Source: [32].

Table 5: Private investment, its growth rates and shares by economic activity
         (1990-2007) in 2000 constant prices

Economic Activity	Private Investment (Million Pound)		Yearly Average Growth Rate (%)	Share[a] (%)	
	1990	*2007*	*1990-2007*	*1990*	*2007*
Agriculture, Irrigation & Fishery	2606.25	4552.76	3.34	7.3	5.5
Manufacturing Industries & Mining	8087.21	28201.78	7.62	22.5	34.1
Petroleum & Products	8913.72	16576.89	3.72	24.8	20
Construction & Building	711.89	1699.58	5.25	2	2.1
Transportation & Storage	3073.80	4510.52	2.28	8.6	5.5
Trade	1571.59	4673.86	6.62	4.4	5.7
Restaurants, & Hotels	2554.97	2931.78	0.81	7.1	3.5
Real Estate ownership	7758.41	9772.61	1.34	21.6	11.8
Study Group	35277.84	72919.78	4.36	98.3	88.2
Other	621.39	9765.21	17.59	1.7	11.8
Egypt (Total)	**35899.23**	**82684.99**	**5.03**	**100**	**100**

Source: [32], The data converted to real terms by using consumer price index
         (2000=100).
         [a] calculated by the author.

In 1990, as can be shown in Table 6, the private employment share in Agriculture activity was 54.9 percent of the total private employment. Although in 2007, the private employment share in agriculture activity decreased to 38.1 percent, it remains quite high comparing with all other activities. In the period 1990–2007 the private employment in manufacturing activity increased either in absolute terms or as ratio of the total private employment. There was an increase of the private employment level in other activities such as trade and manufacturing by 13.3 per cent and 10.4 percent respectively.

Table 6: The economic activities shares and growth rates in private sector
         employment (1990-2007)

Economic Activity	Employee (thousands)		Yearly Average Growth Rate (%)	Share[a] (%)	
	1990	*2007*	*1990-2007*	*1990*	*2007*
Agriculture, Irrigation & Fishery	4350	5357	1.23	54.9	38.1

Manufacturing Industries & Mining	702.1	2369.8	7.42	8.9	16.9
Petroleum & Products	8.5	93.5	15.15	0.1	0.7
Construction & Building	503.5	1460	6.46	6.3	10.4
Transportation & Storage	228.2	579	5.63	2.9	4.1
Trade	911.6	1863	4.29	11.5	13.3
Restaurants, & Hotels	136.5	342.5	5.56	1.7	2.4
Real Estate ownership	22.5	586	21.14	0.3	4.2
Study Group	6862.9	12650.8	3.66	86.6	90.1
Other	1063	1393.2	1.6	13.4	9.9
Egypt (Total)	**7925.9**	**14044**	**3.42**	**100**	**100**

Source: [32] [a] calculated by the author

Table 7 indicates the real wage growth rate of economic activities during the period 1990-2007, agriculture real wages witnessed the higher growth rate among all other economic activities with average growth rate about 4.43 percent during the period 1990-2007. On the other hand the real estate ownership activity is the only sector that witnessed negative growth rate about -0.54 percent during the same period.

Table 7: The economic activities real wages and growth rates
(1990-2007) in 2000 constant prices

Economic Activity	Real wage (pound/year)		Yearly Average Growth Rate [a] (%)
	1990	*2007*	*1990-2007*
Agriculture, Irrigation & Fishery	5.333	11135.67	4.43
Manufacturing Industries & Mining	8470	9721.62	0.81
Petroleum & Products	17881.76	26204.2	2.27
Construction & Building	8627.16	12593.9	2.25
Transportation & Storage	8313.4	13300.94	2.8
Trade	7686	10737.97	2
Restaurants, & Hotels	7686	7865.67	0.14
Real Estate ownership	11921.16	10870.5	-0.54

Source: [23]. The data converted to real terms by using consumer price index
(2000=100).
[a] calculated by the author.

3 Literature review

A number of theoretical and empirical studies have analyzed the demand for labor or employment in Egypt [3]; [4], [5]; [6]; [14]; [15]; [16]; [20]; [34] and [38].

In other countries, there are also many papers concentrated on demand for labor, employment and unemployment [2]; [7]; [9]; [13]; [18] and [33]. The determinants of labor demand, employment and unemployment vary from model to model and from country to country.

Growth rate is considered as one of the determinants of labor demand [21] and [35]. Recent contributions in dynamic analysis of labor demand suggest that employment can be regarded as dependent on firms' output expectations, factor prices and the level of fixed factors, technical progress and the business conditions at large [12]; [30] and [37].

Labor productivity has also been used as an explanatory variable of the trends of employment level [1] and [12]. The influence of labor productivity on employment level is ambiguous. The static neo-classical model suggests that, on a short-run basis, labor productivity in an industry should be inversely related to its rate of output as well as to its employment level. Labor productivity increases as output expands and falls as production declines [42]. As far as the relationship between growth rate and employment is concerned, [41] found that a positive relationship existed between these two variables.

Labor costs directly affect the demand for labor. According to main stream economic theory wages are assumed to have a negative impact on the demand for labor since wage-costs affect entrepreneurial investment decisions. A number of papers use wage as explanatory variable in determining the employment level [13]; [18] and [21]. The effect of the wage rate on employment levels depends on the nature of the wage rate and on the structure of the wage-bargaining system. [8] and [19] have shown that both centralized and decentralized wage-bargaining systems can produce favorable employment outcomes. Reference [1] argued that the different sectoral patterns in employment trends could be explained by the institutional differences in wage bargaining which shape employment outcomes during periods of excess supply of labor.

Reference [39] using microdata for a panel of plants found that the output and wage elasticity estimates correspond to the employment response of individual producers.

Reference [40] used a unique and large firm-specific data set covering 31 two-digit German manufacturing industries with qualitative responses on employment plans and evaluations of demand, labor costs and technical progress. They found that changes of employment demand seem to be primarily caused by exogenous changes of demand, whereas technological advance and labor costs place second and third.

Reference [9] tried to find the labor demand socio-economic determinants in Greece by using annual data for a period 1980 – 2001. The empirical findings indicated that in long run period there is a significant positive relationship between

the growth rate and change in employment ratio and a significant negative relationship between the openness of the Greek economy. Reference [31] found that the existed inflexibility of the Greek labor market determines the employment level. He argued that, strike activity puts upward pressure on employment and wages. Reference [26] support that demand for labor is guided by real labor cost and the level of activity.

4 The econometric methodology and the data

According to the available data published on Egyptian Economy, the estimated private demand for employment in Egypt will involve the following variables;

$$\log LP_{i,t} = \alpha_i + \beta_1 \log RYP_{i,t} + \beta_2 \log RINVP_{i,t} + \beta_3 \log RW_{i,t} + \xi_{i,t} \qquad (1)$$

where $LP_{i,t}$ is the private sector employees in economic activity i during year t; $RINVP_{i,t}$ is the real private investment in economic activity i during year t; and $RW_{i,t}$ is the real wages in economic activity i during year t.

We expect β_1 and β_2 to be positive, only β_3 expected to be negative. The log linear form is chosen, since it is found to be the most appropriate function form for employment demand functions in many empirical studies [2]; [7]; [10] and [33]. It also has the added advantage of reducing hetroskedasticity [28].

This study will use the annual data from 1990 to 2007. The data of private sector employment in economic activities, private sector domestic product of economic activities and private investment in economic activities were obtained from Ministry of Economic Development [32]. The data of wages was obtained from International labor organization (ILO) [23]. All data has been converted to real values (2000 constant prices) by using consumer price index (2000=100).

5 Empirical results

5.1 Panel unit root tests

Recent advances in panel data analysis have focused attention on unit root and cointegration properties of variables observed over a relatively long span of time across a large number of cross-section units of countries. In this study, we adopt Im, Pesaran and Shin (1997), Levin, Lin, and Chu (2002) and Maddala and Wu (1999) panel unit root and stationarity tests. The null hypothesis of these tests is that the panel series has a unit root (non-stationary).

As shown in Table 8, the null hypothesis can't be rejected for levels of all variables in all tests (with the exception of RW_? According to Fisher-PP test), but the null hypothesis is rejected at all tests for the first differences of all variables. Thus, it can be said that all variables are integrated of the first order.

Table 8: Panel unit root tests

Series	K	LLC	IPS	ADF - Fisher Chi-square	PP - Fisher Chi-square
Log(LP_?)	Level	1.59581	4.08286	3.06733	6.98280
	First diff.	-2.48898[a]	-3.78188[a]	49.0489[a]	163.868[a]
Log(RYP_?)	Level	0.08321	2.93793	3.95800	5.03257
	First diff.	-3.31910[a]	-4.52104[a]	50.6165[a]	78.8946[a]
Log(RINVP_?)	Level	1.09730	-0.31081	16.8447	25.4821 [c]
	First diff.	-4.74206[a]	-5.83138[a]	67.1264[a]	215.315[a]
Log(RW_?)	Level	-0.99994	0.64130	12.0109	26.8579[c]
	First diff.	-8.64339[a]	-9.13901[a]	99.8742[a]	515.041[a]

Notes: LLC indicated Levin et al. (2002) panel unit root and stationary test. IPS denotes Im, Pesaran and Shin (1997) panel unit root and stationary test. Fisher-ADF and Fisher-PP tests denote Maddala and Wu (1999) panel unit root and stationary test. The LLC, Fisher-ADF and Fisher-PP examine the null hypothesis of non-stationary.
a,b and c denotes 1%, 5% and 10% significance levels respectively.

5.2 Panel cointegration test:

Having established that all variables are integrated of the first order, we proceed to test whether there is a long run relationship of the system in panel data. From the Pedroni panel cointegration test results in Table 9, we find evidence to reject the null hypothesis of no cointegration for 4 out of the seven statistics provided by Pedroni [36]. So, there was not a clear cointegration between series in the long run. Therefore, we've preferred executing another panel cointegration test to confirm the cointegration analysis. So, we've executed Kao's panel cointegration test [25]. As it shown in Table 10, the results indicate that the variables are in fact cointegrated at 1% significance level.

Table 9: Pedroni panel cointegration test results

	Statistic	Prob.
Panel v-Statistic	-1.254253	0.8951
Panel rho-Statistic	-0.783108	0.2168
Panel PP-Statistic	-7.792412	0.0000
Panel ADF-Statistic	-7.777701	0.0000
Alternative hypothesis: individual AR coefs. (between-dimension)		

Group rho-Statistic	1.159955	0.8770
Group PP-Statistic	-4.654761	0.0000
Group ADF-Statistic	-5.576673	0.0000

Source: The table has been extracted from Table (A-1) in the appendix

Table 10: Kao panel cointegration test results

ADF	t-Statistic	Prob.
	-6.587702	0.0000
Residual variance	0.073115	
HAC variance	0.034918	

Source: The table has been extracted from Table (A-2) in the appendix

5.3 Panel Cointegration Estimation

Having found that the existence of the cointegrating relationship is supported, we go on to estimate the private sector employment demand function in (1) by using E-views econometric software to obtain the panel estimates of the model by SUR Method.

In Table 11, we see the results with the fixed effects estimator. In the short run, the explanatory power is very high (Adjusted R^2=0.992). The explanatory variables are significant at 1% level with a positive expected sign (Log(RYP), Log(RINVP). With the exception of Log (RW) which had a positive unexpected sign, that may be because the very low wage rates in Egypt with comparison of many other developed or developing countries. That may be because the very low wage rates in Egypt comparing with many other developed or developing countries, which make the response of employment level to wage rates doesn't express the real relationship according to economic theory suggestions.

In the short run, we estimate (2). As can be shown in Table 11, the elasticity coefficients of real private domestic product and private investment are positive and significant, while real wages coefficient is negative but insignificant. The error correction is correctly negative signed, highly significant and has a high magnitude (-0.44) suggesting a short adjustment process, Which means that, if private demand for employment is one percent out of equilibrium, a 44 percent adjustment towards equilibrium will take place within the first year.

$$\log \Delta LP_{i,t} = \alpha_i + \beta_1 \, \Delta \log RYP_{i,t} + \beta_2 \, \Delta \log RINVP_{i,t}$$
$$+ \beta_3 \, \Delta \log RW_{i,t} + \beta_7 \, EC(-1) + \xi_{i,t} \tag{2}$$

Table 11: Estimation results for SUR model in the long run and short run (1990-2007)

Variable	Coefficient	
	Long Run	*Short Run*
LOG(RYP_?)	0.830[a]	0.269[a]
LOG(RINVP_?)	0.098[a]	0.029[a]
LOG(RW_?)	0.135[a]	-0.0095
EC(-1)	-	-0.44[a]
	$R^2 = 0.992$ Durbin-Watson: 1.44	$R^2 = 0.694$ Durbin-Watson: 1.71

Source: Table (A-3) and Table (A-4) in Appendix.
[a] denotes significance level at 1%.

6 Concluding remarks and policy implications

The primary objective of this study has been to estimate the critical parameters of the function of private demand for employment in Egypt. The empirical results obtained show that, in both long run and short run there are positive and significant relationship between the private demand for employment and both real private domestic product and real private investment. On the other hand, there are positive and significant relationships between the private demand for employment and the real wages in the long run, but negative and insignificant relationship in the short run. If private demand for employment is one percent out of equilibrium, a 44 percent adjustment towards equilibrium will take place within the first year.

Therefore we must focus economic policies in Egypt to provide more incentives for private sector investment, and we must re-consider the various legislation and regulations concerning the establishment of companies in order to simplify the requirements of the multiple and complex procedures, making the whole process less complicated.

On other side, the higher output of the domestic private sector may not necessarily will lead to an increase in the rate of employment and thus reduce the problem of unemployment, but it must be sustained and generated by sectors with high employment content, and is accompanied by structural changes in the labor market. Increasing the employment response to growth requires policies to promote activities and sectors which have large labor content such as Manufacturing Industries & Mining, Construction & Building, Transportation & Storage, Restaurants & Hotels and Trade.

The very low wage rates in Egypt comparing with many other developed or developing countries, make the response of employment level to wage rates doesn't express the real relationship according to economic theory suggestions.

The Analysis also suggests that, the adjustment to an economy led by private sector is gradually being made by male new entrants to the work force, but female new entrants are finding it difficult to adapt to the jobs available to them in the private sector. Most surveys suggest that female participation has been inching upward as women are becoming better educated, delay marriage, and seek to support family income.

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Appendix: Detailed Tables

Table (A-1): Pedroni panel cointegration test results (1990-2007)

Pedroni Residual Cointegration Test				
Series: LOG(LP_?) LOG(RYP_?) LOG(RINVP_?) LOG(RW_?)				
Date: 12/11/11 Time: 21:44				
Sample: 1990 2007				
Included observations: 18				
Cross-sections included: 8				
Null Hypothesis: No cointegration				
Trend assumption: No deterministic trend				
Automatic lag length selection based on SIC with a max lag of 2				
Newey-West automatic bandwidth selection and Bartlett kernel				
	Statistic	Prob.	Weighted statistic	Prob.
Panel v-Statistic	-1.254253	0.8951	-0.740047	0.7704
Panel rho-Statistic	-0.783108	0.2168	0.024964	0.5100
Panel PP-Statistic	-7.792412	0.0000	-3.715767	0.0001
Panel ADF-Statistic	-7.777701	0.0000	-4.390507	0.0000
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	1.159955	0.8770		
Group PP-Statistic	-4.654761	0.0000		
Group ADF-Statistic	-5.576673	0.0000		
Cross section specific results				
Phillips-Peron results (non-parametric)				
Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
AGRI	0.236	0.000192	0.000220	1.00	17
MANUF	0.768	0.002678	0.005010	2.00	17
PETROL	0.304	0.098631	0.081879	5.00	17
CONSTR	0.342	0.014593	0.010559	5.00	17
TRANS	0.099	0.004001	0.004116	1.00	17
TRADE	0.055	0.003039	0.002847	2.00	17
HOTELS	0.307	0.017705	0.017705	0.00	17
ESTATE	-0.045	0.066786	0.075512	1.00	17
Augmented Dickey-Fuller results (parametric)				
Cross ID	AR(1)	Variance	Lag	Max lag	Obs
AGRI	0.236	0.000192	0	2	17
MANUF	0.387	0.000992	2	2	15
PETROL	0.304	0.098631	0	2	17
CONSTR	0.342	0.014593	0	2	17
TRANS	0.099	0.004001	0	2	17
TRADE	0.055	0.003039	0	2	17
HOTELS	0.506	0.012502	1	2	16
ESTATE	-0.045	0.066786	0	2	17

Table (A-2): Kao panel cointegration test results (1990-2007)

Kao Residual Cointegration Test				
Series: LOG(LP_?) LOG(RYP_?) LOG(RINVP_?) LOG(RW_?)				
Date: 12/11/11 Time: 22:08				
Sample: 1990 2007				
Included observations: 18				
Null Hypothesis: No cointegration				
Trend assumption: No deterministic trend				
Automatic lag length selection based on SIC with a max lag of 3				
Newey-West automatic bandwidth selection and Bartlett kernel				
ADF.			t-statistic	Prob.
			-6.587702	0.0000
Residual variance			0.073115	
HAC variance			0.034918	
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(RESID01?)				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(RESID01?)				
Method: Panel Least Squares				
Date: 12/11/11 Time: 22:08				
Sample (adjusted): 1991 2007				
Included observations: 17 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01?(-1)	-0.645486	0.061817	-10.44187	0.0000
R-squared	0.441944		Mean dependent var	0.024857
Adjusted R-squared	0.441944		S.D. dependent var	0.266411
S.E. of regression	0.199017		Akaike info criterion	-0.383525
Sum squared resid	5.347062		Schwarz criterion	-0.362108
Log likelihood	27.07968		Hannan-Quinn criter.	-0.374822
Durbin-Watson stat	1.199604			

Table (A-3): The Determinants of Private Sector Demand for employment
regression results in the Long run 1990-2007

Dependent Variable: LOG(LP_?)				
Method: Pooled EGLS (Cross-section SUR)				
Date: 12/11/11 Time: 20:11				
Sample (adjusted): 1990 2007				
Included observations: 18 after adjustments				
Cross-sections included: 8				
Total pool (balanced) observations: 144				
Linear estimation after one-step weighting matrix				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LOG(RYP_?)	0.830727	0.024740	33.57892	0.0000
LOG(RINVP_?)	0.098104	0.009938	9.871307	0.0000
LOG((RW_?))	0.135050	0.032490	4.156702	0.0001
C	-4.008077	0.305410	-13.12359	0.0000
Fixed Effects (Cross)				
AGRI--C	1.270903			
MANUF--C	0.091133			
PETROL--C	-2.331460			
CONSTR--C	1.043077			
TRANS--C	-0.017463			
TRADE--C	0.127122			
HOTELS--C	0.002003			
ESTATE--C	-0.185314			
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0.992428	Mean dependent var		16.42664
Adjusted R-squared	0.991859	S.D. dependent var		102.1555
S.E. of regression	0.996939	Sum squared resid		132.1869
F-statistic	1743.276	Durbin-Watson stat		1.437916
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.970533	Mean dependent var		6.159665
Sum squared resid	11.10474	Durbin-Watson stat		0.876128

Table (A-4): The Determinants of Private Sector Demand for employment
regression results in the short run 1990-2007

Dependent Variable: D(LOG(LP_?))				
Method: Pooled EGLS (Cross-section SUR)				
Date: 12/11/11 Time: 18:45				
Sample (adjusted): 1991 2007				
Included observations: 17 after adjustments				
Cross-sections included: 8				
Total pool (balanced) observations: 136				
Linear estimation after one-step weighting matrix				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(LOG(RYP_?))	0.269010	0.030038	8.955527	0.0000
D(LOG(RINVP_?))	0.028767	0.004815	5.974452	0.0000
D(LOG(RW_?))	-0.009475	0.011969	-0.791655	0.4301
RESID?(-1)	-0.436882	0.032386	-13.48975	0.0000
C	0.061392	0.002566	23.92817	0.0000
Fixed Effects (Cross)				
AGRI—C	-0.052066			
MANUF—C	-0.010170			
PETROL—C	0.035930			
CONSTR—C	-0.009265			
TRANS—C	-0.021232			
TRADE--C	-0.028872			
HOTELS--C	-0.018712			
ESTATE--C	0.104388			
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
R-squared	0.694300	Mean dependent var		1.512532
Adjusted R-squared	0.667182	S.D. dependent var		2.006614
S.E. of regression	1.015488	Sum squared resid		127.8708
F-statistic	25.60245	Durbin-Watson stat		1.708771
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.436566	Mean dependent var		0.078771
Sum squared resid	3.428986	Durbin-Watson stat		1.111560