Exchange rate pass-through to inflation in Egypt: a structural VAR approach

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Abstract

Purpose – The theoretical and empirical literature stipulated that exchange rate shocks do influence the domestic price of imports. Hence, this paper aims to investigate the underlying relationship between the exchange rate and prices known as the exchange rate pass-through.

Design/methodology/approach – The paper uses a structural vector auto-regression (SVAR) model, drawing on Bernanke (1986) and Sims (1986), to empirically examine and analyze the pass-through of exchange rate fluctuations to domestic prices in Egypt.

Findings – The empirical results of the monthly data between 2003 and 2015 revealed that the exchange rate pass-through in Egypt is fairly substantial but incomplete and slow in the three price indices [IMP, producer price index and consumer price index (CPI)]. However, the impact is more prominent for consumer prices than for any other price index. This finding could be attributed to the fact that the CPI in Egypt is composed of a relatively large number of subsidized commodities and goods with administered prices as well as the authorities’ behavior in manipulating prices (i.e. export ban). This is expected to weaken the transmission of exchange rate shocks.

Practical implications – The result has interesting implications for Egypt’s ability to attain an effective inflation targeting regime.

Originality/value – The study contributes to the literature by assessing the effect of changes in the exchange rate (the Egyptian £ vis-à-vis the US$) on prices using an updated time series from 2003 to 2015. It addresses the limitations of the study of Nafie et al. (2004), which found no strong relationship between the exchange rate and inflation rate in the Egyptian context. One of these limitations was using the CPI, as the only price index.

Keywords Monetary policy, Inflation rate, Exchange rate pass-through, Structural vector auto-regression

Paper type Research paper

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1. Introduction

Egypt’s macroeconomic policies have significantly evolved since the 1990s. Its exchange rate regime varied over the past decades. In 2003, Egypt adopted a flexible exchange rate regime mainly because of the unavailability of dollars at official prices which led to the growth of black market transactions. This liberalization of the Egyptian £, led to a cumulative depreciation of 68 per cent against the US$ from 2000 to 2004. Meanwhile, Egypt witnessed high inflation rates according to the consumer price index. As exchange rate is one determinant of inflation, changes in exchange rates are considered important in the design of monetary policy, especially when a country has a flexible exchange rate policy as well as an open trade policy. It has thus been an ongoing challenge for economists to examine the exchange rate pass-through to domestic prices.

Exchange rate has been considered an important macroeconomic instrument that could help in ensuring low levels of inflation rate and a stable financial system. The literature has stipulated that exchange rate shock does influence domestic price of imports. This shock is transmitted to producer and then consumer prices. McCarthy (2000), Soto and Selaive (2003) and Takhtamanova (2008) identified the degree of openness as an influential factor in the exchange rate pass-through. They argued that the greater the degree of openness, the larger is the pass-through. Furthermore, Krugman (1989); Darvas (2001); Steel and King (2004); Beirne and Bijsterbosch (2009); and Razafimahefa (2012) argued that the exchange rate regime is another determinant that could affect the pass-through of exchange rate to the domestic prices. In fixed regimes, economic agents consider that a change in the exchange rate is permanent and will have a permanent impact on their production costs. Therefore, they adjust selling prices rapidly. In contrast, in flexible regimes, economic agents consider changes in the exchange rate as temporary. Hence, they do not adjust their selling prices immediately. Moreover, Taylor (2000) developed a theoretical model to examine the role of lower and more stable inflation in reducing the degree to which firms “pass-through”, to their domestic prices, the impact of the exchange rate movements. According to Taylor’s model, the pass-through and persistence of price changes are directly related. When firms decide how much to adjust their prices, they take into account expectations of future costs and price movements. Taylor’s study also presented econometric evidence of a reduction in the persistence of aggregate inflation as the inflation rate was reduced. Therefore, lower inflation is associated with lower persistence of cost changes (shocks) in the economy. Consequently, Taylor’s model demonstrated that experiencing a lower inflation environment (e.g. because of an inflation-targeting policy) may lead to a lower degree of persistence of price shocks, hence decreasing the degree of the exchange rate pass-through.

Two channels of exchange rate pass-through to domestic prices are distinguished in the literature: a direct and/or an indirect channel. Both become more important with an increase in the openness of an economy. The direct channel of transmission has two alternatives; the first is when the changes in exchange rate affect the import prices (IMPs) of production inputs (semi-finished goods and raw materials), which affect the producer price level, and finally, influence the consumer price level. The other alternative is when the changes in the exchange rate affect the IMPs of finished goods, and thus impact the level of domestic consumer prices. The indirect channel of exchange rate pass-through refers to the competitiveness of goods in international markets. Similarly, the indirect transmission channel has two alternatives; one alternative occurs if the locally produced goods are primarily inputs of production. In this case, producer price levels are expected to rise and consequently consumer price levels. The other alternative occurs if the locally produced goods are finished products. Accordingly, local producers and retailers may increase their selling prices in response to foreign competitor price increases to maintain their profit.
margins. Hence, the shock is transmitted to consumer prices (Hyder and Shah, 2004). The degree of pass-through, however, falls within a wide range, starting from zero to complete pass-through. The degree of pass-through is determined according to the firms’ behavior regarding the changes in exchange rate. Firms usually choose between keeping the markups unchanged and preserving the level of the sales price, otherwise balancing both alternatives (yang).

Many empirical studies, including Mwase (2006), Nafie et al. (2004) and Bwire et al. (2013), showed that incomplete pass-through is a common phenomenon. The findings of Goldfajn and Werlang (2000), McCarthy (2000) and Ca’Zorzi et al. (2007) concluded that the exchange rate pass-through effect estimates across countries were significantly different. Moreover, other studies, like McCarthy (2000), Bhundia (2002) and Ca’Zorzi et al. (2007), concluded that the exchange rate affects the prices, and that this impact declines along different stages of the distribution process. Belaisch (2003) indicated that shocks to exchange rate had little effect on the Brazilian consumer price index (CPI). However, prices of tradable goods were the most sensitive to these exchange rate shocks. Both Hyder and Shah (2004) and Rowland (2004) found that exchange rate pass-through is limited for consumer prices, compared to the producer prices in Pakistan and Colombia, respectively. Contrarily, Tandrayen-ragoobur and Chicooree (2013) and Uddin et al. (2014) found that the exchange rate pass-through to consumer prices is highest in Mauritius and Bangladesh, respectively.

The purpose of the study at hand is to estimate the impact of changes in exchange rate on domestic prices, in Egypt during the period 2003-2015. The study contributes to the literature by assessing the effect of changes in the exchange rate (the Egyptian £ vis-à-vis the US$) on prices using an updated time series from 2003 to 2015, right after the transition to a flexible exchange rate regime. The study also includes the period when the intention of adopting an inflation-targeting policy was formally announced by the CBE in June 2005. It addresses the limitations of the study of Nafie et al. (2004), which found no strong relationship between the exchange rate and inflation rate in the Egyptian context. One of these limitations was using the CPI, as the only price index.

Unlike most of the empirical studies that tackled the pass-through effect in Egypt using a VAR model, this study applies a structural vector auto-regression model (SVAR). Recent empirical studies preferred to use SVAR models as VAR models were criticized of being devoid of any economic content. The SVAR models are used to study the average response of the model variables to a given one-time structural shock. They provide historical decompositions that measure the cumulative contribution of each structural shock to the evolution of each variable over time. The data used are mainly obtained from the International Financial Statistics (IFS) of the International Monetary Fund (IMF), the Ministry of Planning and the Food and Agricultural Organization (FAO).

The rest of the study is arranged as follows: Section 2 presents an overview of the Egyptian macroeconomic environment, focusing specifically on the exchange rate, as well as the inflation rate developments, together with a preliminary correlation analysis of the variables of interest. Data and methodology of the baseline model are discussed in Section 3, besides the proposed extended experiments. These extended experiments are expected to test the robustness of the results and their sensitivity to different specifications. Finally, in Section 4, the study provides a discussion of the main results and highlights some policy implications.

2. An overview of the Egyptian context
Before estimating and analyzing the degree of exchange rate pass-through to domestic prices in Egypt, it is quite essential to understand and relate the country’s exchange rate
policies and its inflation rate trends. Accordingly, this section presents an overview of the Egyptian macroeconomic environment, to provide an adequate background for the investigation of exchange rate pass-through in Egypt.

Egypt began a transition to a flexible exchange rate regime in 2000, a first attempt to a floating regime in January 2003 and the successful transition to a unified flexible exchange rate regime in late-2004. From 2000 to 2004, the Egyptian £ experienced a cumulative depreciation of 68 per cent against the US$. The turbulence in the foreign exchange market, during this phase, was reflected in highly volatile domestic prices. The inflation rates accelerated to double digit levels to reach a peak of 12.6 per cent in October 2004. The persistently high price levels, prevailed during 2004, can be attributed to the lagged pass-through effects of the exchange rate changes. In December 2004, the Central Bank of Egypt (CBE) launched the interbank foreign exchange market and the pound appreciated by about 4 per cent within one quarter of this launch. During this period the preference of saving in local currency increased, which was attributed to the stability of the foreign exchange and the remarkable increase in the key CBE interest rates. The excess liquidity in the banking system prompted the CBE to recurrently intervene through open market operations to sterilize the effect of the increase in international reserves at the CBE. In doing so, the CBE either used its traditional instruments, such as the treasury bills, or created new instruments, like the CB notes with maturities over one to two years and the CBE certificates of deposits (CDs) with maturities spanning up to one year, which the CBE sells to banks through outright sales. The final two instruments were introduced to the market during 2005 and 2006. The monetary transmission mechanism, especially that related to the interest rate, improved as market interest rates on deposits and loans became more responsive to the CBE’s key policy rates. Furthermore, during this period, the monetary policy committee (MPC) announced the adoption of a new monetary policy framework, namely, inflation-targeting, as of June 2005, upon the fulfillment of certain prerequisites. As a result, the inflation rate eased and reached a single digit rate from the beginning of 2005 to October 2006 (Figure 1).

Inflation started to rise and spiked from October 2006 to April 2007 reaching 11.47 per cent. This shooting of inflation rate was driven largely by the impact of an Avian Flu outbreak and adjustments in administered prices in conjunction with some domestic demand pressures emanating from high economic growth. Once again, the inflation rate gradually increased reaching a peak of 23.62 per cent in August 2008, as depicted in Figure 1. This increase could be attributed to the rise in the international food prices and some oil products. The CBE cut policy rates six times between February and September 2009. Consistent with lower commodity prices and weaker demand, inflation declined rapidly from peaks in August 2008 to around 10.07 per cent by August 2009. Moreover, the CBE launched its core inflation index in October 2009 to supplement the CPI.

![Figure 1. Inflation rate and exchange rate movements, 2005-2010](image_url)

Source: Authors’ calculations based on IFS data
published by the statistical authorities. In the few months following the Lehman Brothers’ collapse in September 2008, the pound depreciated by about 6 per cent. However, in December 2009, the exchange rate appreciated almost to its precrisis level with resumed capital inflows and official reserves reaching their precrisis levels of US $34bn as well.

The year 2011, however, was considered a turning point at the level of political transition. It was characterized by political uncertainty and social unrest, which kept growth rates low, impacted policy performance and clouded the economic outlook. Financial fragilities have continued to build up with rising fiscal deficits, inflation and debt. In December 2012, the CBE introduced a new mechanism, namely, the Foreign Exchange Auctions (FX auctions), to run alongside the dollar interbank system. Following the introduction of the FX auctions, the pound depreciated by 13 per cent, the exchange rate increased from LE 5.80 in January 2011 to LE 7.26 in the corresponding months of 2015 as depicted in Figure 2. The significant decrease in foreign reserve during this period urged the reemergence of the parallel market. Nonetheless, the CBE announced a number of decisions and restrictions to combat the emergence of the parallel market. Inflation rates were highly volatile during the period 2011-2015. The high inflation rate during 2011 (11.4 per cent) to March 2012 (9.04 per cent) could be attributed to the appreciation of the US$ vis-à-vis the Egyptian £. Moreover, the political and security unrest in Egypt negatively affected commodity supply in local markets, especially fuel and butane gas cylinders that witnessed several supply bottlenecks. In November 2013, the inflation rate registered its highest level (12.94 per cent) in about three years (since January 2010). This was attributed to government’s decision of revising the prices of several regulated items within the CPI basket, which led to a pickup in the monthly share of most of the CPI subgroups, especially restaurants and hotels; healthcare; and food and nonalcoholic beverages.

At the beginning of 2014, inflation rate eased down and reached a single digit rate, mainly because of the lower contributions of some main commodity groups in the CPI. However, inflation rate picked up in the third quarter of 2014 because of fuel and tobacco price hikes in July 2014, reaching 10.13 per cent in December, while core inflation was 7.6 per cent. To control the inflationary pressure, the MPC decided to raise the key policy rate by 100 basis points in July 2014. However, the MPC decided in its meeting in January 2015 to cut the overnight deposit and lending rates, as well as the rate of the CBE’s main operation by 50 basis points. This decision came in response to the revisions in inflation rate and the MPC’s assessment of inflationary pressures. The headline inflation, as shown in Figure 2, reached 11.3 per cent in June 2015 and eased up afterward to reach 9.7 per cent in October 2015. In December 2015, the inflation rate increased again which led the MPC to raise the policy rates once again by 50 basis points[1].

![Figure 2. Inflation rate and exchange rate movements, 2012-2015](image)

**Source:** Authors’ calculations based on IFS data
3. The empirical analysis

3.1 Methodology

The analysis is conducted by using a Structural VAR model, drawing on Bernanke (1986) and Sims (1986) to analyze the interrelationships between economic activity, exchange rate and prices in Egypt during the period of 2003-2015. The structural VAR model depends on economic theory rather than Cholesky decomposition to recover structural innovations from residuals of a reduced-form VAR. Such VAR model has been criticized as devoid of any economic content.

The SVAR model is represented as follows:

\[
A_0X_t = A(L)X_{t-1} + \epsilon_t
\]

where \(X_t\) is a vector of \(n\) endogenous variables; the matrix \(A_0\) is of order \(n \times n\) and describes the contemporaneous relationships between the variables; \(A(L)\) is a nonsingular matrix of coefficients; \(L\) denotes the lag operator; and \(\epsilon_t\) is the (unobserved) vector of structural shocks of order \(N \times 1\). By multiplying equation (1) by an inverse matrix, \(A_o^{-1}\), we obtain the reduced form of the VAR model as in (2). It must be noted that this adjustment is necessary because the model given in equation (1) is not directly observable and structural shocks cannot be correctly identified.

\[
X_t = A_o^{-1}A(L)X_{t-1} + \epsilon_t
\]

where \(\epsilon_t\) is a \(nx1\) vector of serially uncorrelated structural disturbances of the model and is obtained as follows:

\[
A_0\epsilon_t = \epsilon_t \text{ or } \epsilon_t = A_o^{-1}\epsilon_t
\]

To estimate a SVAR model and obtain the impulse response functions (IRFs) and variance decompositions (VDs), it is necessary to use the structural shocks, \(\epsilon_t\), and not the forecast errors, \(\epsilon_t\). These innovations are a linear combination of serially independent structural shocks, \(\epsilon_t\). So, the idea of structural decomposition is to take the observed values of \(\epsilon_t\) from an empirical VAR and restrict the system so as to recover \(\epsilon_t\). Nonetheless, additional identifying assumptions are required. Blanchard and Quah (1989) introduced an identification method based on restrictions on the long-run properties of the IRFs. This identification requires imposing \(\frac{n^2-n}{2}\) elements of the long-run moving average coefficient matrix. Without additional identifying restrictions, the resulting IRFs and VDs of the SVAR model are economically meaningless.

3.2 The baseline model

3.2.1 Data description. The data used in the SVAR model consist of monthly observations, covering the period from August 2003 to October 2015[2]. The SVAR model includes six variables. The price indices and nominal exchange rate constitute the main variables of interest to estimate and analyze the responsiveness of Egypt prices to exchange rate shocks. The baseline model uses the nominal exchange rate (NEXR) following Sanusi (2010) and Bwire et al. (2013). The IMP is included to determine the main channel of exchange rate pass-through in Egypt[3]. Furthermore, inflation rate is proxied by two price indices, namely, the producer price index (PPI) and CPI. Other control variables are used, including the International Food Price Index (FPI) which is used as a proxy for supply shocks[4]. Industrial Production Index (IPI) is used as an indicator of economic activity that proxies demand shocks, as in Nafie et al. (2004) and Belaisch
The FPI is obtained from the FAO database; the IPI from the Egyptian Ministry of Planning, and the IMP is obtained from the CBE. The rest of the variables are obtained from the IFS database accessed from the IMF e-Library. To estimate the SVAR model, all-time series are used in their stationary state. The order of integration of the variables is investigated using the Augmented Dickey–Fuller unit root test (Dickey and Fuller, 1979). All variables were found first-order homogeneous except for IMP which was found stationary at level.

### 3.2.2 Identification procedures.

The SVAR model is represented as in equation (1), where $X_t$ is a vector of six endogenous variables (FPI, IPI, NEXR, IMP, PPI, CPI). The appropriate lag structure is found to be two according to Schwarz information criterion. To exactly identify the structural model, based on Blanchard and Quah (1989) identification method, it is necessary to impose $15 \left( \frac{n^2-n}{2} \right)$ elements of the long-run moving average coefficient matrix, $A(2)$, as the lag operator was determined to be two.

\[
A^{-1}(2) = \begin{bmatrix}
a_{11} & 0 & 0 & 0 & 0 & 0 \\
0 & a_{22} & 0 & 0 & 0 & 0 \\
0 & 0 & a_{33} & 0 & 0 & 0 \\
0 & 0 & 0 & a_{44} & 0 & 0 \\
0 & 0 & 0 & 0 & a_{55} & 0 \\
0 & 0 & 0 & 0 & 0 & a_{66} \\
\end{bmatrix}
\]  

(4)

Identification requires normalizing the shocks and assuming that the structural disturbances are mutually uncorrelated. According to Kilian (2011), normalizing the variance of the SVAR shocks means imposing identifying restrictions on $A_0^{-1}$ in $e_t = A_0^{-1} \epsilon_t$. Hence, structural impulse responses, based on $A_0^{-1}$, are responses to one standard deviation (SD) shocks. In other words, the impulse response of $x$ generated by setting $\epsilon$ to unity is the effect of a structural shock on $x$ of the size of one SD. The latter normalization does not involve a loss of generality, as long as the diagonal elements of $A_0^{-1}$ remain unrestricted. The zero restrictions expressed in equation (4) correspond to a lower triangular matrix in which the first variable reacts to its own lags and the first shock, the second variable to its own lags and the first two shocks and so on. This identification pattern means that this is a recursive simultaneous equations model, so the ordering of the variables is important in interpreting the results. The order used in this model is \{FPI, IPI, NEXR, IMP, PPI, CPI\}, where the contemporaneously exogenous variables are ordered first. Following McCarthy (2000), Bhundia (2002) and Belaisch (2003), the variables that account for supply and demand shocks, as well as the exchange rate, are always found to be the most exogenous variables and thus ordered before the price variables. Moreover, Sek and Kapsalyamova (2008) supported the assumption that the exchange rate is contemporaneously affected by supply and demand shocks but unlikely to be affected by domestic prices. Following Ca’ Zorzi et al. (2007), the price variables are contemporaneously affected by all of the above variables in the model. Following the pricing chain, IMPs precede producer prices, then comes consumer prices allowing for a contemporaneous impact of IMP shocks on producer prices and a contemporaneous impact of producer price shocks on consumer prices but not vice versa (McCarthy, 2000, Ca’ Zorzi et al.,2007; Bhundia, 2002). The SVAR is now exactly identified and hence can be estimated. IRFs and VDs of the model are used to assess the pass-through from exchange rate to inflation.

### 3.2.3 Empirical findings.

Figure 3 illustrates the IRFs for the baseline model. The exchange rate pass-through to price indices is noticeable in the corresponding IRFs. The one SD shock in the exchange rate (depreciation) is immediately transferred to IMPs. The pass-through is

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**REPS 3,2**

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Figure 3.
Impulse Responses of IMP, PPI and CPI

Note: Shock 3, 4 correspond to a one SD shock in NEXR and IMP.
evident and positive over the first three months. For the PPI and CPI, the Figure shows that the effect of an exchange rate shock on PPI and CPI is positive, fairly significant and persistent. Moreover, an IMP shock has a positive impact on both PPI and CPI that lasts for four months. For the CPI, its positive response to shocks in exchange rate is quite larger than its response to shocks in IMPs, implying that the indirect transmission channel of pass-through is stronger than the direct channel in Egypt. In light of the response functions, it can be concluded that the impact of the movements of exchange rate and IMPs on PPI and CPI are fairly substantial but incomplete. This could be attributed to the fact that the CPI in Egypt is composed of a relatively large number of subsidized commodities and goods with administered prices[6]. This is expected to weaken the transmission of exchange rate shocks. Moreover, it is shown that the pass-through is quite larger for the CPI than for the PPI, especially during the first six months. This is expected as PPI excludes imported goods. This result goes along the finding of Tandrayen-ragoobur and Chicooree (2013) and Uddin et al. (2014).

The pass-through can be calculated in a way close to the elasticity calculation[7]. For ease of interpretation, the dynamic elasticity of the pass-through is calculated based on the numerical values of the IRF, where the pass-through elasticity at time $t$ is given by:

$$\text{Passthrough}_t = \frac{\% \Delta P_t}{\% \Delta EX_0}$$

(5)

The numerator, per cent $\Delta P_t$, is the percentage change in the price level between time 0, when the initial exchange rate shock hits, and time $t$. The denominator, per cent $\Delta EX_0$, is the percentage change in the exchange rate at time 0. Table I shows the accumulated response of CPI and PPI to a structural one SD shock to exchange rate and their respective dynamic pass-through elasticities. Drawing on equation (5), the dynamic elasticities are obtained by dividing the numerical values of the IRF of prices by the coefficient of the structural shocks (i.e. $e_{REXR}$) derived from the SVAR estimates.

From Table I and Figure 4 above, it is clear that the impact of one SD shock (i.e. 0.108819) of exchange rate is incomplete in the three price indices. However, the behavior of the indices differs. In case of the IMPs, the initial pass-through elasticity is positive. However, the exchange rate pass-through elasticity falls to reach 0.15 over eight months till it reaches a negative value over two years, implying that there is no impact of an exchange rate change on IMPs in the long term. In case of the producer and consumer prices, the exchange rate pass-through to producer and consumer prices is positive, though not immediate, and reaches 0.34 and 0.72, respectively by the end of 24 months. Moreover, it is clear that the impact is more prominent for consumer prices than for any other price index. These results

<table>
<thead>
<tr>
<th>Period</th>
<th>% ΔIMP (C2)</th>
<th>% ΔPPI (C3)</th>
<th>% ΔCPI (C4)</th>
<th>the coefficient of $e_{REXR}$ (C5)</th>
<th>Pass-through to IMP C2/C5</th>
<th>Pass-through to PPI C3/C5</th>
<th>Pass-through to CPI C4/C5</th>
</tr>
</thead>
<tbody>
<tr>
<td>M01</td>
<td>0.2117</td>
<td>−0.5487</td>
<td>−0.08619</td>
<td>0.126304</td>
<td>1.67617</td>
<td>−4.34388</td>
<td>−0.68237</td>
</tr>
<tr>
<td>M08</td>
<td>0.01995</td>
<td>−0.3103</td>
<td>0.12310</td>
<td>0.126304</td>
<td>0.157913</td>
<td>−2.457</td>
<td>0.974609</td>
</tr>
<tr>
<td>M016</td>
<td>−0.03293</td>
<td>0.02479</td>
<td>0.12858</td>
<td>0.126304</td>
<td>−0.2907</td>
<td>0.196241</td>
<td>1.018028</td>
</tr>
<tr>
<td>M24</td>
<td>−0.06865</td>
<td>0.04371</td>
<td>0.09145</td>
<td>0.126304</td>
<td>−0.54355</td>
<td>0.346101</td>
<td>0.724063</td>
</tr>
</tbody>
</table>

Table I. Dynamics pass-through elasticity of exchange rate

Source: Authors’ calculations based on the outcomes of the SVAR model
suggest that exchange rate pass-through in Egypt is fairly substantial but incomplete and slow. These results appear to be consistent with the findings of the IRFs.

The VD results of the SVAR model are shown in Table II to further analyze the transmission channels of exchange rate pass-through in Egypt. Panel 1 reports the VD of IMPs. By the 24th month, exchange rate shocks explain 34.7 per cent of the variation in IMPs. However, 47.03 per cent of the variation in IMPs is explained by its own shock. Panel 2 and panel 3 demonstrate the VD of PPI and CPI. Exchange rate shocks account for 8.03 per cent of the variation in PPI. IMPs explain little of the variance of producer prices, only 3.37 per cent by the 24th month. These results support the findings of the IRFs that suggest that the indirect exchange rate pass-through channel (i.e. exchange rate changes to producer prices), is stronger than direct channel (i.e. IMP changes to producer prices) in Egypt. Moreover, the PPI shocks explains 64.9 per cent of its variation which indicates that the own price (PPI) shocks are the most important in explaining its variation. Regarding the variance of CPI, exchange rate shocks appear to be more prominent than IMP shocks in explaining the variation in CPI. The exchange rate shock accounts for 5.9 per cent of the variation in CPI against 2.08 per cent explained by IMPs by the 24th month. Furthermore, the PPI shock is the most important determinant in explaining the variation in CPI. By the 24th month, PPI explains 31.9 per cent of the variation in CPI. Hence, the results suggest that the indirect exchange rate pass-through channel of exchange rate changes to producer prices and then to consumer prices is more pronounced than other indirect channel of exchange rate changes to consumer prices in Egypt. This means that the changes in exchange rate affects the locally produced semi-finished goods, hence, the producer price levels are expected to rise and consequently consumer price levels. This is shown by the proportion of movements in consumer prices because of innovations in producer prices (31.9 per cent), IMPs (2.08 per cent) and the exchange rate (5.9 per cent) by the 24th month, respectively.

<table>
<thead>
<tr>
<th>Panel</th>
<th>Period</th>
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**Notes:** Panel 1: VD of IMP; Panel 2: VD of PPI; Panel 3: VD of CPI

**Source:** Adapted by the authors from the VDs of the SVAR model

**Figure 4.**
Dynamics of pass-through elasticity

**Table II.**
VD results
Figure 5. Impulse responses for IMP, PPI and CPI.

Note: Shocks 3 and 4 correspond to a one SD shock in NEER and IMP
3.3 Extended experiments

3.3.1 Nominal Effective Exchange Rate Shock. The nominal exchange rate is replaced by the nominal effective exchange rate (NEER), obtained from Bruegel Centre database, as its movements provide an indication of the evolution of a country’s aggregate external price competitiveness. This is to provide a better interpretation when determining the main transmission channel of exchange rate pass-through in Egypt. Furthermore, this approach goes along with a number of studies, namely, Sek and Kapsalyamova (2008), Sanusi (2010) and Tandrayen-Ragoobur and Chicooree (2013). The NEER measures the value of a currency against a basket of other currencies, which is trade-weighted (Durand, 1986). An increase in NEER implies that exports become more expensive and imports become cheaper. It is thus expected that a positive shock to NEER will lead to a fall in domestic prices. The same identification method of the baseline model is used. The order of the variables is the same, just replacing NEXR by NEER in its stationary form, i.e. first differenced, I (1).

The IRFs, reported in Figure 5, support the findings of the baseline model which is the existence of an incomplete exchange rate pass-through in Egypt. The figure shows that the initial impact of a positive shock to NEER on domestic prices is negative, as expected. The response of PPI and CPI appears to be immediate and fairly significant. However, the impact lasts for 10 months before it fades away. The VD results, as shown in Table III, confirm the expected indirect transmission channel of pass-through conveyed in the baseline model. The degree of variability explained by exchange rate and IMP is modest for both PPI and CPI. It is rather larger for CPI than for PPI. This is an expected result because PPI excludes imported goods. It is worth noting that Sek and Kapsalyamova (2008), Massoud (2014) and Uddin et al. (2014) reached the same conclusion in Singapore, Egypt and Bangladesh, respectively.

3.3.2 Monetary policy shock. A further proposed experiment is to examine the effect of a monetary policy shock on domestic prices. This is argued to eventually capture monetary policy effects on the price level[8]. This is done by adding the discount rate (DR), obtained from the CBE in its stationary form, i.e. level, I (0), to the model with the NEER. The corridor rate, which is the main policy instrument used by the CBE, was launched in 2005. Hence, no data are available prior to this year. The discount rate is thus considered appropriate to account for monetary policy in Egypt, as it is one of the instruments that the CBE relied on. Mwase (2006) and Tandrayen-Ragoobur and Chicooree (2013) assumed that prices have a contemporaneous effect on the variable accounting for monetary policy. Thus, this variable is ordered last, according to Ca’ Zorzi et al. (2007), to allow the money market, particularly monetary policy, to react contemporaneously to all variables in the model and, hence, influence the pass-through relationship. In line with the findings of the extended SVAR model, a positive exchange rate shock leads to a reduction in domestic prices only in the short-term. The impact of a positive shock to exchange rate on domestic prices mirrors that of the extended model in fading away after 10 months as shown in Figure 6. The findings of the VDs in Table IV were also found

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**Notes:** Panel 1: VD of IMP; Panel 2: VD of PPI; Panel 3: VD of CPI

**Source:** Adapted by the authors from the VDs of the SVAR model

**Table III.** VD results; extended experiment
Figure 6: Impulse responses for IMP, PPI, and CPI; extended experiment: monetary policy

Note: Shocks 3 and 4 correspond to a one SD shock in NEER and IMP.
consistent with that of the extended model. The consistency of the results implies the stability and robustness of the reported empirical results.

4. Conclusion and policy implications

Using an SVAR, this paper estimated the exchange rate pass-through to domestic prices for Egypt during 2003-2015. The IRFs for the baseline model show that the exchange rate pass-through to IMP is evident and positive over the first three months. The impact of the movements of exchange rate and IMPs on PPI and CPI are fairly substantial but incomplete and slow. This could be attributed to the fact that the CPI in Egypt is composed of a relatively large number of subsidized commodities and goods with administered prices. This is expected to weaken the transmission of exchange rate shocks. For the CPI, its positive response to shocks in exchange rate is quite larger than its response to shocks in IMPs, implying that the indirect transmission channel of pass-through (i.e., exchange rate changes to producer prices), is stronger than the direct channel (i.e., IMP changes to producer prices) in Egypt. The pass-through is quite larger for the CPI than for the PPI, especially during the first six months. This is expected as PPI excludes imported goods. The results of the dynamic elasticity of the pass-through appear to be consistent with the findings of the IRFs. The VD results of the SVAR baseline model suggest that the changes in exchange rate affect the locally produced semi-finished goods, hence, the producer price levels are expected to rise and consequently consumer price levels. These results support the findings of the IRFs.

To test the robustness of the results and their sensitivity to different specifications, our analysis was extended by using the NEER and the discount rate (DR) in the baseline model. A positive shock to NEER, implying that exports become more expensive and imports become cheaper, leads to a fall in domestic prices as expected. The response of PPI and CPI appears to be immediate and fairly significant. However, the impact lasts for 10 months before it fades away. These results support the finding of the baseline model. The VD results show that the degree of variability explained by exchange rate and IMP is modest for both PPI and CPI. It is rather larger for CPI than for PPI. These results confirm the expected indirect transmission channel of pass-through conveyed in the baseline model. Examining the effect of a monetary policy shock on domestic prices reveals that a positive change in the exchange rate shock leads to a reduction in domestic prices only in the short-term. The impact of a positive shock to exchange rate on domestic prices fades away after 10 months. The findings of the IRFs and VDs were found consistent with those of the baseline and NEER extended models. The consistency of the results implies the stability and robustness of the reported empirical results.

The result that the exchange rate pass-through in Egypt is fairly substantial but incomplete and slow in the three price indices (IMP, PPI, and CPI), and it has an interesting implication for Egypt’s economic ability to attain an effective inflation targeting regime. Effective implementation of this regime would limit the exchange rate pass-through phenomenon, but

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Notes: Panel 1: VD of IMP; Panel 2: VD of PPI; Panel 3: VD of CPI
Source: Adapted by the authors from the VDs of the SVAR model

Table IV. VD results; extended experiment: monetary policy shock
some of the challenges remain. First, the CBE not only has to deal with high levels of inflation but also with a surge in inflation expectations. Second, more frequent interventions in the foreign exchange market to decrease its fluctuations may be needed. Third, the exchange rate may become the main focus of the CBE, distorting expectations. Accordingly, transparent interventions in the foreign exchange market would allow the Egyptian £ to adjust to a new long-run equilibrium following a shock while attaining the inflation target.

Notes
1. On November 3, 2016, the CBE announced its decision to move, with immediate effect, to a liberalized exchange rate regime to quell any distortions in the domestic foreign currency market. Moreover, the CBE key policy rates have been raised by 300 basis points.

2. The announcement of the adoption of a new exchange rate policy under which the exchange rate was allowed to float was in January 2003. However, data availability was the reason behind starting from August 2003.

3. The model uses imports’ value as a proxy for the IMP because there are no available data on the imports’ prices for Egypt. The annual figures are obtained from the CBE and converted to monthly data using liner match list method by Eviews 8.1. The imports’ value is converted to Egyptian £ using the exchange rate of the Egyptian £ per US$. The percentage change of the natural logarithm import’s value is then used in the model.

4. International oil prices were usually used to account for supply shocks in many empirical studies, like Nafie et al. (2004), Belaisch (2003) in Brazil and Bhundia (2002) in South Africa. However, this proxy is most likely to be relevant for countries that are purely oil importers and none of their citizens’ work in purely exporting oil countries which is not the case for Egypt. In 2003/2004, the exported proceeds of crude oil and its products reached US$4.0bn accounting for 38.4 per cent of the total exports in Egypt. However, the exported proceeds of food (raw material) reached 6.4 per cent with a value of US$0.67bn. In 2012 and 2013, these percentages reached 46.8 per cent for oil and 5.2 per cent for food. On the other hand, the imports of oil amounted only US$1.5bn, constituting 8.3 per cent of the total imports of Egypt in 2003/2004, while the imports of food (non-durable consumer goods) reached 11.3 per cent with a value of US$2.0bn in the same year. In 2012 and 2013, the imports of oil and food increased and reached 16.5 and 16.9 per cent, respectively. Accordingly, FPI is a good proxy to account for supply shocks in Egypt.

5. In Egypt, industrial production measures the output of businesses integrated in the industrial sector of the economy, such as manufacturing, transportation, utilities, construction and tourism.

6. Roughly 70.8 per cent of the items in the CPI series that was used until December 2003 consist of goods with administered prices, including food items, utilities, transportation and rent. According to Central Agency for Public Mobilization and Statistics and the CBE calculations, this figure reached 63.9 per cent in 2013.


References


Further reading


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Strategic human resource management and public employee retention

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Abstract

Purpose – The purpose of this research is to explore the dynamics of using strategic human resource management (SHRM) practices in the public sector. More specifically, this paper tries to point out some main aspects of SHRM, which strongly influence the decision of employees to stay. The empirical study here tends to reveal greater insights into the SHRM-retention relationship and its validation at the National Bank of Egypt (NBE).

Design/methodology/approach – This research is co-relational in nature with cause and effect approach. The design of the study is both descriptive in the theoretical part and quantitative in the applied one. Theoretically, this paper adopted the analytical approach to define the main concepts, aside from an empirical study to investigate correlations in practice.

Findings – This paper concludes that the employment of best HRM practices is deemed a remarkable strategic tool in the retention of core public employees. Also, the results of analysis provide evidence that SHRM contributes to employee retention at NBE.

Practical implications – The findings and recommendations of this research can practically guide management to devise effective policies to improve employee retention using appropriate SHRM activities, particularly in the Egyptian public organizations.

Originality/value – This research has valuable implications for both theory and practice, as it offers several contributions to literature in the field of study, as well as the practical contribution.

Keywords Strategic human resource management, Human resource management practices, Employee retention, Public sector, National Bank of Egypt

Paper type Research paper

Introduction

There is no doubt that the way in which the human resource (HR) function was managed in organizations has altered dramatically over the past few decades (Lawler, 2005, p. 1). A significant trend today is for HR managers to adopt a strategic approach of their jobs and to recognize critical links between the organizational and HR management strategies. Basically, strategic human resource management (SHRM) highlights the growing change in the HRM function from being prescriptive, reactive and administrative to being descriptive, proactive and executive. Sahoo et al. (2011) noted that the concept of SHRM is related to the
appropriate integration of HRM activities with the business strategy of the company (Allui and Sahni, 2016, p. 363).

On the other hand, from a managerial point of view, the attraction of qualified employees is more urgent today than ever before. An array of evolutions, such as globalization, increasing knowledge work, accelerating technological advancement and rising competition, makes it vital that institutions acquire distinctive human capital for competitive advantage and organizational success (Holtom et al., 2008, p. 232). Also, the retention of those valuable employees becomes a paramount strategy for HR managers in this environment. There is a wealth of evidence that the retention of talented employees has been of serious concern to managers in face of the ever-increasing high rates and costs of employee turnover (Samuel and Chipunza, 2009). In response, managers worldwide have enforced HR policies to actively lessen employee turnover and promote retention (Hom et al., 2008).

Indeed, although retention and turnover research has experienced considerable theoretical expansion in the past few years (Holtom et al., 2008, p. 243), an overview of previous studies has indicated a lack of adequate research about the relationship between SHRM practices and employee retention, particularly in the public sector, as much of this discourse in literature is associated with business. Boxall and Purcell (2003) stated that the big question here maybe which HRM practices are more likely to contribute to sustainable competitive advantage, and specifically staff retention (Mbugua et al., 2015, pp. 54-55). At the same time, the reviewed literature has revealed mixed results regarding the effect of SHRM indicators on employee retention in organizations, which makes it hard to reach to a definite conclusion about this impact.

Second, the studies have been conducted mostly in the developed countries where the setup may not be the same as in the developing ones (Mbugua, 2015, p. 41), and mainly the Arab world, emphasizing the sensitivity toward cultural norms and the restricted participation in decision-making. So, the researcher here believes that this is a meaningful area that needs more study with specific reference to Egypt. Essentially, there is a need to study whether the move toward managerialism that has taken place within public sectors all over the world during the past few decades has brought with it some features/attributes of the relationship between HRM and employee engagement and retention experienced within the private sector. For that reason, this study was undertaken, as it adopted an analytical approach in its theoretical part and used an empirical study in the applied one.

Thereby, the main objective of this research is to add to the limited scientific body of literature related to SHRM in the public sector, especially in developing countries, and its actual role in the retention of skilled workforce. The most important SHRM activities here that have been identified with the help of literature are recruitment and selection, training and career development, performance appraisal, compensation and benefits. Eventually, the empirical study analyzes the SHRM–retention relationship at the National Bank of Egypt (NBE), and then it proposes some administrative and managerial reforms to boost the influence of HRM strategies and programs on employee retention. Hopefully, this paper can provide a stepping stone for further contribution in the domain; it may serve as a basis or an attempt in the direction of conducting comprehensive research to judge the managerial and organizational renovations adopted by the Egyptian public sector in this arena, putting into consideration the sustainable development strategy (Egypt’s Vision 2030) concerning the efficiency of governmental organizations in maximizing the usage of their resources, and in particular human resources.

**Problem statement**

This study investigates a main research question which is:
RQ. To what extent does SHRM contribute to the retention of employees in public sector organizations and what is the impact of SHRM practices on employee retention at NBE?

To answer this major question, the paper intends to find answers to the following questions:

Q1. What is the meaning of SHRM? What are its key activities and practices?

Q2. How do researchers define the concepts of retention versus turnover? What are the intrinsic and extrinsic motivational factors influencing employee retention?

Q3. How does SHRM affect the retention of employees in public sector organizations/state-owned enterprises?

Q4. How do SHRM practices applied at NBE affect employee satisfaction and retention there, considering the demographic and professional characteristics of respondents?

Subsequently, the research examines its principal variables, as illustrated in Figure 1.

Literature review: concepts and relationships

Strategic human resource management

HRM is identified as a strategic and coherent approach to the management of the organization’s most valuable asset; the people working there who contribute to the achievement of its objectives (Armstrong, 2006, p. 3). Lately, organizations have become increasingly fascinated by the concept of “strategic management.” Both scholars and practitioners in all business-related disciplines have tried to tie the methods and tools of their fields to the strategy of the firm (Embuhiria, 2011, p. 25). In this respect, Boxall and Purcell (2003) argued that SHRM is the interface between HRM and strategic management. It involves taking a wide and long-term view of where the business is going and ensuring that strategic direction is maintained. A prominent author described SHRM as “the means of aligning HRM with the strategic content of the business and the HR strategy, so that the latter supports the accomplishment of the former and indeed helps to determine it”. Other researchers defined SHRM as “a cumulative set of functions or behaviors associated with the management of human capital, where the HR professional serves as a strategic business partner with the other executive bodies of the organization”. Thus, SHRM includes “designing and implementing a comprehensive set of proactive HR policies/practices that assure the organization’s human assets contribute to the achievement of its corporate objectives” (Allui and Sahni, 2016, p. 363).

Therefore, SHRM is considered a new paradigm in managing the human factor at modern organizations (Waiganjo et al., 2012, p. 67). According to Armstrong (2006), SHRM
is based on three assumptions: first that human capital is a major source of competitive advantage, second that it is people who execute the strategic plan and third that a systematic method must be adopted to define where the organization wants to go and how it should reach there. In general, SHRM aims to attain strategic fit. Hence, SHRM is a process that involves the use of overarching approaches to the development of HR strategies, which are integrated vertically with the business strategy and horizontally with each other. These strategies identify the intentions and plans related to overall organizational considerations such as organizational effectiveness, and to more specific aspects of people management such as learning and development (Armstrong, 2006, pp. 29-30).

In other words, the strategic alignment of HRM simply means accepting HRM as a strategic partner in the formulation and implementation of the company’s strategies through HR activities, such as recruitment, selection, training and rewarding personnel (Allui and Sahni, 2016, p. 367). In this regard, De Cieri and Kramar (2008, p. 58) stated that the HRM function can be thought of as having six menus from which firms can pick out the most appropriate practices: job analysis/design, recruitment and selection, training and development, performance management, pay structure/incentives/benefits and labor relations. Besides, after studying more than 900 organizations in the USA, Huselid (1995) suggested that HRM practices can be classified into two broad categories: those that improve skills and those which enhance motivation. The study found that skill-enhancing activities including selection, training and development are associated with turnover and financial performance, and that motivation-enhancing activities including performance appraisal and compensation are associated with productivity (Alnaqbi, 2011, p. 32). In light of this, the SHRM function may involve a variety of practices and activities; key among them are (Allui and Sahni, 2016, pp. 363-364; Francis, 2014, pp. 1744-1746):

- **Recruitment and selection.** The overall purpose of recruitment is to obtain at minimum cost the quality of employees required to satisfy the strategic needs of the organization, whereas selection implies judging applicants on a variety of criteria, ranging from the objective and measurable ones (e.g. years of experience) to the subjective and personal ones (e.g. leadership potential).

- **Training and career development.** They are the formal activities undertaken by the company to assist employees acquire the knowledge, skills, abilities and experience needed to perform current or future jobs.

- **Performance appraisal.** It is the process of judging how well employees perform their tasks compared to a set of placed standards.

- **Compensation and benefits.** They are the cumulative monetary and non-monetary rewards paid to employees in return for their efforts.

Given the lack of integration across the various HRM activities, early attempts concentrated on linking each functional area to the organization’s strategy independently from other activities. This resulted in the development of things like “strategic selection,” “strategic development” “strategic appraisal” and “strategic rewards.” Although those endeavors broadened the perspective of HRM by recognizing the need for each individual function to be aligned with the organizational goals, there was still a relative neglect of the interaction between all of these functions (Embuhira, 2011, p. 25).

In conclusion, SHRM is an area that continues to evoke a lot of controversy as to what it actually embraces; there is no clear agreement concerning the design of this field, particularly with regard to its definition. Similarly, it is quite difficult to distinguish between HRM and SHRM. Until recently, there has been little in the way of formulating strong
theoretical paradigms to aid in understanding both the role of HRM in organizations and the determinants of various HR practices. Without this strong theoretical model, it is very hard to differentiate between HRM and SHRM (Embuhira, 2011, pp. 24-25). However, it is confirmed that external and internal environment scanning is a crucial element of SHRM particularly, in which the organization can realize the environmental opportunities and threats in light of its strengths and weaknesses (Fottler, 2011, p. 11).

Employee retention – a strategic tool

Scholars have considered employee retention management as a strategic and cohesive process that begins with examining the reasons why employees join an organization (Brown, 2009). Worldwide, retention of skilled employees has been of serious concern to managers in face of high rates of employee attrition (Samuel and Chipunza, 2009, p. 410). Attrition is a critical problem highlighted in all organizations these days; it is “the gradual reduction in the number of employees through retirement, resignation, or death.” It can also be known as “Employee Defection” or “Employee Turnover” (Latha, 2017, p. 1). As turnover is a symptom of a vital systemic problem like an ineffective retention management, companies ought to comprehend what makes people commit themselves to being loyal and productive (Embuhira, 2011, p. 5). Thereby, retention is viewed as a logical inverse of turnover, as it indicates the behavior to continue/stay rather than to quit/leave the organization (Muir and Li, 2014, p. 3).

In this context, retention is defined as “a voluntary move by the firm to create an environment which engages employees for the long term” (Chaminade, 2006, p. 1). It is the other side of the recruitment coin, as they are both hot issues. However, experts suggest that it is quite easy to recruit people, whereas it is much more difficult to retain them. Retention implies “the desire of organizations to keep and hold on to their competent employees and the measures of this.” It involves three basic elements: economics, supply chain and workforce (Hemalatha and Savarimuthu, 2013, p. 45). So, employee retention means “the various policies and practices that let employees stick to an organization for a longer period of time” (Francis, 2014, p. 1742).

Actually, when a well-trained employee leaves the firm, he/she creates a vacuum, so that it loses indispensable skills, knowledge and business relationships (Latha, 2017, p. 1), in addition to the financial cost that is buried in line items like temporary recruitment, selection and training (Holtom et al., 2008, p. 236). Especially, that good employees have more external employment offers compared to average ones, and hence they are more likely to quit. High rates of voluntary turnover of such employees are often harmful or disruptive to the organization’s performance. The problem is further compounded by the fact that most companies, particularly large entities, seem to reward and satisfy new hires more than their current loyal employees (Hemalatha and Savarimuthu, 2013, p. 45). Therefore, the easiest way to retain employees is to increase their satisfaction levels, but this will only be effective if performed correctly. The challenge here lies in tackling different employee needs, as they are varied (Alnaqbi, 2011, p. 47).

More specifically, when looking at the earliest models of turnover, the basic tenet was that job dissatisfaction often gives rise to turnover. Over time, researchers have looked at more predictors (e.g. job alternatives and organizational commitment). They have investigated the reasons of those predictors (moving horizontally to the left) and the consequences of turnover (moving horizontally to the right). They also have inserted predictors and criteria (vertical expansion), and have considered different levels (horizontal expansion), such as group and organizational variables (e.g. turnover climate and HRM practices) (Holtom et al., 2008, p. 234). Existing literature highlights the causes of employee
turnover, such as hiring practices, managerial style, lack of competitive compensation, lack of recognition and venomous workplace. Others include lack of job security, lack of interesting work, lack of promotion and inadequate training and advancement opportunities. When handled, these are regarded as intrinsic and extrinsic motivational factors, which may influence employee turnover and retention. The problem is that managers have failed in identifying and appropriately using those variables as retention strategies commensurate with the distinctive cultures and systems of their organizations (Samuel and Chipunza, 2009, p. 411).

In sum, successful employee retention should not rely on a single strategy. According to Hemalatha and Savarimuthu (2013, p. 45), retention strategies can generally fall into one of the following four categories: working conditions, salary, job enrichment and education. Whilst Embuhira (2011) asserted that retention tools are of only two classifications: HR factors that include person–organization fit, challenging job opportunities, training and career development, reward and recognition, and organizational factors that involve leadership behavior, teamwork relationship, communication, company’s policies and pleasant work environment (Mbugua, 2015, p. 4). On the other hand, Samuel and Chipunza (2009) concluded that challenging work, training and development, freedom of innovative thinking, affiliation and job security are found to have significant influence on employee retention in both public and private sector organizations. Whereas another study by Latha argued that salary, superior–subordinate relationship, co-workers’ relationship, growth opportunities, appreciation, suggestions, facilities and procedures are all substantial motivational variables that affect employee turnover and retention.

Finally, it is apparent that securing quality performers simply adds to increased productivity and morale, and reduces the associated costs of turnover. But why then do employees continue to leave? What is missing from today’s retention strategies? Despite the remarkable literature on SHRM best practices, there is little consensus concerning which HR activities should be included as the ideal HRM system that is universally effective to catalyze retention. Given these different approaches to SHRM, it is evident that a more consolidated field of investigation would be beneficial to the development of knowledge in this area (Embuhira, 2011, p. 8). Essentially, the need to address that situation is what has led to the purpose of the present study, and thereby this will be discussed and thoroughly clarified in the next part.

The relationship between strategic human resource management practices and employee retention in public organizations

Traditionally, within the employment relationship, employees exchanged their loyalty and hard work for the promise of job security, like what was existed in the public sector. In the contemporary environment, the trend toward more flexible organizational structures and the decline in job security have altered the psychological contract between the employer and the employee. The new form of psychological contract is expressed in placement practices, which see organizations focusing on part-time employees to gain flexibility at lower costs. Because of these organization-wide changes, the essence of attachment between employers and employees has differed (Embuhira, 2011, p. 1). Samuel and Chipunza (2009) highlighted that not only the private sector but also governments are facing problems in retaining their skilled employees (Haider et al., 2015, p. 64).

In fact, the main issue in HRM research is whether there is a cumulative set of policies that represent a unique approach to managing people, and which are associated with staff retention. There are many studies on employee retention in several industries and its causal relation with HRM practices. Researchers have established that SHRM results in human
capital with greater commitment and lower turnover, so that HRM practices can generally predict the voluntary turnover rates of employees (Allui and Sahni, 2016, pp. 362-365). According to Abeysekera (2007), employee turnover is a crucial challenge for organizations, but companies performing efficient HR activities can minimize its percentage and increase competitiveness (Mbugua, 2015, p. 26). Also, Branham (2005) argued that all the reasons of why employees quit are closely related to HR practices, and therefore an inclusive understanding of the relationship between HRM and employee retention will assist firms take correct decisions in achieving business results while guaranteeing an optimum level of resources (Francis, 2014, p. 1742). This recognition and extraordinary efforts some institutions make to attract and retain top talents represent fundamental shifts/ transformation in the employer–employee relationships. Essentially, more organizations are now realizing that retention is a strategic theme that provides sustainable competitive advantage. By adopting a total retention strategy with the support of relevant HRM programs, businesses may successfully keep skilled employees (Embuhiira, 2011, p. 2).

In this regard, there are numerous SHRM practices that can be used by the organization to maximize the retention level. Luthans and Sommer (2005) noted that SHRM practices for competitive advantage, and thereby staff retention are; job design activities, job analysis methods, participation programs, information sharing, grievance, staffing, training, performance appraisal, and incentive-based compensation (Mbugua, 2015, pp. 3-4). Porter (2008) highlighted that a set of intense HR activities, such as recruitment, training, job design, participation, teamwork, work-life balance and rewards, is thought as important aspect in the attainment of job fit, and this in the long term implies that people may experience better fit also with the organization (Mbugua et al., 2015, p. 54). In addition, Francis (2014) investigated the impact of four dimensions of HRM on employees’ intention to stay, which are training and development, career advancement, compensation and benefits and performance appraisal. Whereas Mbugua (2015) explained the effect of three SHRM practices on retention: strategic recruitment, strategic training and strategic performance management. Thus, organizations should develop SHRM policies and strategies that maintain acceptable relationship between the organization and its employees.

In a nutshell, the review of existing literature detects that HRM practices are positively linked to employee retention. Yet, it is worth to note that there are few experts who argued that perhaps there is no evident relationship between SHRM practices (or some of them) and retention. Hence, this view contradicts the historic debate in literature concerning the importance and the influence of aligning HRM activities with company strategy (Embuhiira, 2011, p. 40). For example (Haider et al., 2015; Francis, 2014), researches provided empirical implications on the relationship between HRM practices and employee retention, though they failed to substantiate the empirical link between some HR aspects and the intention to stay among employees.

Since past research has shown that SHRM practices are not standardized, as stated by Guest (2001), and as such researchers have focused on bundles of practices depending on the theoretical perspective. So, and as mentioned before, the group of SHRM practices and activities adopted in this study which may promote retention includes recruitment and selection, training and career development, performance appraisal and compensation and benefits. Furthermore, the current research uses Hertzberg’s “two-factor theory” as a theoretical background while clarifying the impact of SHRM on employee retention dimensions. This theory implies that a satisfied employee is motivated from within to work hard and to remain in the organization. It looks at two classes of factors associated with employee motivation: satisfiers which stimulate satisfaction and dissatisfiers which prevent dissatisfaction (Samuel and Chipunza, 2009, p. 412). Armstrong (2006) gave the satisfiers/
motivators as the work itself, achievement, recognition, responsibility, advancement and growth. Conversely, the dissatisfiers/hygiene factors are like company policy and administration, supervision, interpersonal relations, work conditions, salary, status and security (Mbugua, 2015, p. 14; Moldavanova, 2016, p. 7). These intrinsic variables (job related) and extrinsic variables (non-job related) have major contributions to employee retention in organizations (Mbugua et al., 2015, p. 55). Moreover, this study believes that the decision of employees to stay is also affected by a number of demographic and professional characteristics, such as age, family situation, job title and work duration (Yusoff et al., 2013; Sinnott et al., 2002).

Otherwise, in many countries, public organizations tend to be the biggest employer. Public sector employment is characterized as being labor-intensive. To a very large extent, the quality of the welfare state and the well-being of the nation depend on the performance of public employees. However, public sector organizations in different countries experience cut-backs in resources and increasing demands to demonstrate accountability and foster service quality. Indeed, public organizations are now under growing pressure for greater efficiency. The adoption of New Public Management (NPM) has resulted in a dramatic change in HRM within public sector organizations. The transforming structures and operations of governments, paralleled with the adoption of NPM, have replaced the classical Weberian model of centralized and bureaucratic practices with private sector HRM systems (Colley et al., 2012), which means that “HRM” has displaced this traditional model of “personnel administration” within public organizations, shifting the culture from “rule-bound” to “performance-based” (El-Ghalayini, 2017, pp. 66-67). Nevertheless, the previous period of public reforms has demonstrated that public sector performance cannot be improved by simply imitating the private sector (Pollitt and Bouckaert, 2004). For instance, because of its accountability to public purposes, HRM in public organizations is faced with several contradictions that must be resolved in providing democratic opportunity while obtaining competence, which is completely different from the case of private institutions.

Actually, the introduction of NPM has resulted in a strategic approach to HRM within the public sector. The fundamental idea of SHRM is that managing appropriate HR is strategic to the ability and success of the organization in achieving its mission. This abstract idea has been elaborated by a considerable number of studies in private organizations, which is gradually used in public organization studies as well (Groeneveld and Leisink, 2017). Though, most discussions that tied SHRM to strategic planning failed to define what the term “strategy” means in a public context. Because public agencies are embedded in authority networks rather than economic markets, what is meant by selecting a business strategy is much less clear. Strategies here are produced in response to a variety of competing signs that emanate not from markets but from complex economic, political, legal and organizational structures, processes and relationships (Manning, 2010, p. 157). Moreover, strategic planning is more difficult in the public sector because of the short-term considerations of politicians.

In this respect, empirical evidence shows that not all HRM practices are suitable for application in the public sector, given the nature of provided services, attributes of public employees, and the fact that public organizations are accountable for the ways in which they spend public funds. Here, empirical research suggests that many public sector organizations have adopted bundles of skill and opportunity-enhancing HRM activities, but far fewer motivation-enhancing ones (Kalleberg et al., 2006); HR practices that are compatible with the humanistic goals of state-owned enterprises, aimed at strengthening employees’ skills and opportunities to participate in decision-making, are more common, whereas financial incentives are used to a lesser extent in public sectors if compared to private sectors.
Therefore, it is possible that management broadly among public and private institutions is not similar, and that studies of business enterprises may have different results. So far, the highly committed HRM practices have been tested in private sector organizations, whereas little attention has been given to evaluate their effects on performance and engagement in public sector organizations (Alnaqbi, 2011, p. 32). Yet, initial findings based on public sector research propose that SHRM has positive impact on employee motivation and performance (Messersmith et al., 2011). For that reason, the present research intends to continually examine whether the positive effects of SHRM activities reported in the private sector are replicated in public organizations in Egypt, and in particular at NBE.

On the other hand, public sector cannot completely rely on the same boosts of motivation like private sector companies do. Review of literature reveals that work motivation among public sector employees is different from that of their private sector counterparts (Wright, 2001), although variations in hierarchical level and job nature are more important determinants of work motivation than sectoral divergences. For example, Rashid and Rashid (2012, p. 24) indicated that public sector employees are more motivated by work content and they experience greater balance between work and family life, whereas private sector employees are more motivated by financial rewards, career development opportunities and supportive environment. These findings strongly confirm previous research ensuring that public sector workers are less extrinsically motivated (Buelens and Broeck, 2007, p. 65). Research generally supports the view that public officials usually value the ethic of serving community more than financial compensation (Houston, 2000). Despite that, policies in public organizations still should incorporate many aspects of the private sector practices which spur retention and enhance productivity. Such practices include the introduction of a performance-based promotion system rather than promotion by seniority, because this can lead young and hard-working employees to leave for the private sector. Opportunity for public sector employees to earn performance bonuses should also be considered. This will reinforce productivity and increase retention rates in general (Samuel and Chipunza, 2009, p. 414).

In conclusion, public organizations need to develop a coherent set of employment policies to attract and retain qualified staff. However, the particularity of the public sector with a focus on public interest outcomes (ill-defined objectives), and the more open accountability (with politicians and taxpayers), all of that may add a level of complexity that does not easily fit with HRM as a strategic partner in achieving competitiveness and success.

**Application: empirical study**

*Research methodology*

*Research design.* This research is co-relational in nature with cause and effect approach. The design of the study is both descriptive in the theoretical part and quantitative in the applied one. Theoretically, the research adopted the analytical approach to define the main concepts and an empirical study to investigate the correlations in practice. Therefore, in addition to providing a brief overview of relevant literature, a field/sample survey was conducted to determine the extent to which SHRM practices are implemented at the NBE, and then to identify the attitudes of employees and the level of satisfaction that may indicate the current retention status there, and how it is influenced by SHRM. This entity was chosen to be the case study here because it is considered one of the crucial public service organizations and almost the most important governmental financial institution in Egypt generally. In addition, this bank has launched many sounding reforms – that need to be assessed – during the past several years with the sake of retaining employees and satisfying customers as well (NBE official website, 2017).
Population, sample and selection of the sample. The field survey was conducted during December 2017. As NBE has an extensive network of nearly 400 units nationwide with a huge workforce (unavailable data), and because of time and other resource constraints, the researcher chose a random sample of 12 various branches located in Cairo. The whole population comprised around (300) people who work for the bank in those 12 branches (administrative staff only). A convenient and manageable sample size of (150) people was examined ([57] managers and [93] employees). This sample also was randomly selected. Knowing that 200 people (66.7 per cent of the population) were sampled and 150 people only responded, the response rate was 75 per cent.

Data collection. For the purpose of collecting the required primary data, an adopted Arabic language structured questionnaire was applied, as Arabic is the official language in Egypt (it was initially formulated in English and then translated). This questionnaire was developed on the basis of literature review (El-Ghalayini, 2017; Allui and Sahni, 2016; Mbugua, 2015; Francis, 2014; Alnaqbi, 2011). It encompasses 25 items representing the various aspects of the subject. Thus, the questionnaire was designed and organized into the following sections: demographic profile and professional characteristics of respondents (moderating variable) (five questions not included in the 25 main items), then SHRM practices (independent variable) that consist of recruitment and selection (three items), training and career development (three items), performance appraisal (three items), compensation and benefits (three items) and the strategic alignment with all (one item), whereas retention factors (dependent variable) contain the assessment of the satisfiers/intrinsic factors (four items), dissatisfiers/extrinsic factors (four items) and the general satisfaction with both (four items) (see Appendix 2).

It is worth mentioning here that the study used the questionnaire to gather data using a five-point Likert scale as the measurement tool, ranging from 1 = strongly disagree to 5 = strongly agree. Moreover, Cronbach’s alpha test was used to assess the stability of the questionnaire and reliability of the measures, and it was found that all coefficients are above 0.50, so there is evidence that the research variables seem to be consistent, stable, reliable and valid.

Methods of statistical analysis. Statistical Package for Social Survey (SPSS-V.18) and Analysis of MOment Structures (AMOS) were the tools for compiling and processing data in this research. Several statistical tools were also used for data analysis, which are descriptive analysis, Pearson correlation coefficient, simple linear regression and structural equation modeling.

Demographic and professional characteristics of respondents
Empirical results indicate that the sample consists of 84.7 per cent men and 15.3 per cent women, and 67.3 per cent of respondents their ages are 35 or above and 32.7 per cent are less than 35 years. According to the educational level, 77.3 per cent have a BSc degree or less and 22.7 per cent are post-graduates. The majority of 62 per cent of the sample are employees, whereas the minority of 38 per cent are managers, and finally 66.7 per cent of respondents have spent less than 10 years working for NBE in its different branches, whereas 33.3 per cent have spent 10 or more, which may give some indication about the relatively noticeable turnover rates putting into consideration the sample’s age categories.

Building indicators of the research variables
It is important to mention that nine indicators were already created: recruitment and selection, training and career development, performance appraisal, compensation and benefits, SHRM practices, satisfiers (intrinsic factors), dissatisfiers (extrinsic factors),
general satisfaction and employee retention. The indicators were composed by using equal weights method, via adding the scores of the questions which are related to each indicator and then dividing the sum by the number of these questions. Note that each of the four sub-indicators of SHRM was calculated according to its relevant questions, in addition to the question related to strategic alignment. The descriptive statistics here show that the values of the mean for all indicators are around 4 and 5 (in Likert scale); that is, dissatisfiers = 3.665 (the least) and performance appraisal = 4.538 (the highest), which clarify that respondents tended to agree and strongly agree to the existence of those indicators at NBE in general.

Using Pearson correlation coefficient, Table AI indicates the relation between the whole indicator of SHRM practices and its sub-variables (see Appendix 1), whereas Table AII illustrates the correlation between the employee retention sub-variables and the whole indicator, as well as the correlation between its two main sub-variables (satisfiers and dissatisfiers) and general satisfaction (see Appendix 1).

As shown in Table AI, there is a significant ($p$-value is less than 0.05) positive and strong ($R$ is almost around 0.6 or above) relationship at significance level $\alpha = 0.05$ (with confidence level 95 per cent) between the SHRM whole indicator and each sub-variable. Knowing that the highly correlated indicator is performance appraisal and the least is recruitment and selection, which reflects their influence on SHRM practices at NBE, this contradicts the empirical research ensuring that skill-enhancing HRM activities (e.g. recruitment and selection) are more prevalent in the public sector, whereas motivation-enhancing activities (e.g. performance appraisal) are used to a lesser extent.

From Table AII, it is emphatic that there is a significant positive and very strong ($R$ is nearly around 0.8 or above) relationship with confidence level 95 per cent between the employee retention whole indicator and each sub-variable at NBE. Knowing that the highly correlated indicator is dissatisfiers and the least is satisfiers. In addition, it is clear that the general satisfaction indicator is positively correlated with both satisfiers and dissatisfiers. However, the extrinsic factors (dissatisfiers) again are highly correlated with general satisfaction than the intrinsic ones (satisfiers) at the bank, which contradicts with previous literature recognizing that public sector employees are usually less extrinsically motivated.

Testing the research hypotheses

To accomplish the objectives of the empirical study, the research set out the following two hypotheses.

First hypothesis:

$H01$. There is no significant impact at significance level $\alpha = 0.05$ of SHRM practices on employee retention at National Bank of Egypt.

$H01.1$. There is no significant impact at significance level $\alpha = 0.05$ of recruitment and selection on employee retention at National Bank of Egypt.

$H01.2$. There is no significant impact at significance level $\alpha = 0.05$ of training and career development on employee retention at National Bank of Egypt.

$H01.3$. There is no significant impact at significance level $\alpha = 0.05$ of performance appraisal on employee retention at National Bank of Egypt.

$H01.4$. There is no significant impact at significance level $\alpha = 0.05$ of compensation and benefits on employee retention at National Bank of Egypt.

To show whether the previous hypotheses are acceptable, simple linear regression was used to test the impact of SHRM practices, along with the influence of each one of these activities
separately on employee retention, as presented in Table AIII (see Appendix 1). The hypothesis will be rejected if the significance of the model is less than 0.05, and vice versa.

Table AIII indicates the following:

- For the first model, when recruitment and selection indicator is the independent variable: It is obvious that recruitment and selection has a significant positive effect on employee retention at confidence level 95 per cent, and this appears from the value of beta. From adjusted R-squared, it is noticed that recruitment and selection has the ability to explain about 5.7 per cent only from the variation in employee retention at NBE.

- For the second model, when training and career development is the independent variable: It is clear that training and career development has a significant positive effect on employee retention at confidence level 95 per cent. From adjusted R-squared, it is noticed that training and career development has the ability to explain about 15.2 per cent from the variation in employee retention at NBE.

- For the third model, when performance appraisal is the independent variable: It is obvious that performance appraisal has a significant positive effect on employee retention at confidence level 95 per cent. From adjusted R-squared, it is noticed that performance appraisal has the ability to explain about 15.8 per cent from the variation in employee retention at NBE.

- For the fourth model, when compensation and benefits is the independent variable: It is clear that compensation and benefits has a significant positive effect on employee retention at confidence level 95 per cent. From adjusted R-squared, it is noticed that compensation and benefits has the ability to explain about 17.6 per cent from the variation in employee retention at NBE.

- For the fifth model, when the independent variable is the overall SHRM practices: It is evident that SHRM practices have a significant positive effect on employee retention at confidence level 95 per cent. From adjusted R-squared, it is noticed that SHRM practices have the ability to explain about 31.8 per cent from the variation in employee retention at NBE.

From the previous results, the study can conclude that there are significant impacts at significance level $\alpha = 0.05$ of the various SHRM practices (recruitment and selection, training and career development, performance appraisal and compensation and benefits), collectively and individually, on employee retention at NBE, which means that the first hypothesis as a whole and its different sub-hypotheses as well are all rejected.

Second hypothesis:

$H02$. There is no significant impact at significance level $\alpha = 0.05$ of SHRM practices on employee retention at National Bank of Egypt, putting into consideration the different demographic and professional characteristics of respondents.

To prove whether the previous hypothesis is acceptable, a structural equations model, illustrated in Table AIV, was used to test whether the moderating variable has significant impact on the relationship between SHRM practices and employee retention or not (see Appendix 1). Note that any of these moderating variables will have significant influence on this relation if there is a significant effect of SHRM practices on this variable, as well as a significant effect of this variable on employee retention.

Table AIV clarifies the following:
• Direct effect of SHRM practices on employee retention at NBE = 0.573 at confidence level 95 per cent, which refers to a positive impact.

• When entering the demographic and professional characteristics as moderating variables, it is noticed that age, employment status and work duration have significant effects on the relationship between SHRM practices and employee retention at NBE at confidence level 95 per cent, as their p-values are less than 0.05 in both ways, whereas gender and educational level do not have the same effect.

• Indirect effect of SHRM practices on employee retention through age = 0.331 \( \times \) 0.141 = 0.047, which means that when taking into consideration age of respondents, the effect of SHRM practices on employee retention at NBE will be negative; that is those who are above 35 years of age stated that this relationship is generally reverse.

• Indirect effect of SHRM practices on employee retention through employment status = \(-0.775\) \( \times \) \(-0.189\) = 0.146, which means that when taking into consideration employment status, the effect of SHRM practices on employee retention at NBE will be less (lower than 0.573); that is employees argued that this relationship is weaker if compared to managers.

• Indirect effect of SHRM practices on employee retention through work duration = 0.781 \( \times \) 0.385 = 0.301, which means that when taking into consideration work duration, the effect of SHRM practices on employee retention at NBE will be less (than 0.573); that is those who spent 10 years or more working for NBE stated that this relationship is weaker.

From the previous results, the research may conclude that there is a significant impact at significance level \( \alpha = 0.05 \) of SHRM practices on employee retention at NBE, putting into consideration the age, employment status and work duration, so \( H_{02} \) is also rejected.

**Conclusion: concluding remarks**

This study has gone a substantial way towards meeting its prime goal, which is examining the relationship between SHRM and employee retention in public organizations, especially in developing countries. The paper has concluded that the employment of best SHRM practices contributes to the retention of core public employees, as it was relatively found at the NBE, despite the need for further improvement efforts. The research has implications for both theory and practice; first it offers several contributions to literature by means of formulating a conceptual framework which identifies SHRM activities that may help in bolstering employee retention and eliminating turnover, and second, the paper provides a practical guide to executives and policy makers, particularly in the Egyptian public sector, to enable them recognize and initiate employment measures that will make the workplace experience a more pleasant one for workers, and hence weakening the employees' intents to leave. However, the field study here has some limitations. All findings are based on information taken from respondents. This is in addition to time limitations; that is findings reflect the labor market within a period of great challenges and transformations in Egypt.

Through both the theoretical and applied parts of this research, it has reached the following results and recommendations.

**Results and findings**

The success and competitiveness of any organization depend largely on employees who are considered as its backbone. Accordingly, SHRM has been an essential concept to enhance the strategic capabilities of organizations by ensuring the availability of committed,
motivated and skilled labor. Also, organizations that invest in their people need to guarantee that these investments are not lost, through developing strategies to retain staff long enough to obtain an acceptable return on their investments in employees’ skills and knowledge. Thus, SHRM policies might be regarded as a primary source of achieving staff retention in all institutions, whether public or private. In this respect, the main findings here are:

- The research claims that SHRM has three basic tenets: employees are viewed as major stakeholders, a focus on organizational mission and key objectives and an effective response to environmental pressures.
- The study establishes that by implementing SHRM practices organizations are able to retain their core talents and remain competitive; that is retention is regarded as one of the most important aspects in the success of any company. Nowadays, firms often find that they spend considerable time, effort and money to orient and train new staff, so that retaining current staff will save all of these costs.
- The research indicates that public sector HR professionals usually confront a variety of barriers to attract and keep qualified workforce, including increased competition with the private sector and inadequate funding. Also, they are faced with the lack of management support and the old information technology systems.
- Practical implications clarify that NBE suffers generally from some kind of problem concerning satisfaction levels and turnover rates, despite the good presence of most of the indicators of SHRM practices and employee retention overall, which means that there is still an urgent need to support and strengthen these concepts in the work context of the bank, specifically the set of skill-enhancing HRM activities like recruitment and selection, which are almost associated with turnover and were less correlated with SHRM at NBE. Those HR practices are compatible with the humanistic goals of public organizations and aim at strengthening public employees’ skills and opportunities to participate in decision-making.
- The results of this analysis provide evidence that SHRM has contributed to the retention of employees at NBE (by 31.8 per cent), as demonstrated by the positive linkage between the independent and dependent variables; that is it was proven that the extent of adopting various SHRM practices is positively related to employee retention, although the impact rates are way low. This indicates the poor compatibility between SHRM strategies and employee retention policies at the bank, along with the existence of other influence factors. In addition, it was emphatic that the relationship between SHRM and employee retention is moderated by some demographic and professional traits, but this influence is contradictory, as noticed through the negative and lower effects in this regard.

Recommendations and future research
In light of what was previously mentioned, the study has made the following recommendations:

- Management in public sectors should use SHRM policies and activities by embracing strategic recruitment, strategic training, strategic performance management and strategic compensation practices with the sake of promoting employee retention and ensuring that employees will remain in their organizations.
To retain key employees in public organizations, the latter must draw attention to establish a mutual understanding of the employer (government) and employee (civil servant) expectations, and then to set out workplace motivational policies and conditions for employees to satisfy their needs and to appreciate their efforts (intrinsic and extrinsic rewards). This means employee retention strategies set by HRM in the public sector need to be aimed at assuring some leading points, such as establishing clear-cut expectations and policies, providing employees with meaningful work putting into consideration not to overburden them, helping employees feel respected and valued and making sure they are treated fairly, investing in employees’ career growth and professional development, offering them a benefits package that truly serves their needs and eventually creating a culture of transparent and open communication.

The empirical results suggest that there should be more genuine efforts to strengthen, integrate and achieve consistency between SHRM strategies on one hand, and between these practices and the motivational policies of NBE on the other hand, which for sure would reflect positively on the decision of employees to stay. In this respect, and to enhance particularly the impact of the intrinsic factors of motivation that were less correlated with general satisfaction of the bank staff, the researcher emphasizes the importance of encouraging autonomy and empowerment in different areas of work because this will offer challenging job opportunities, which may spur employees and bring them closer to the bank.

Concerning future research, it should replicate the framework of this study with larger samples, and in other settings as manufacturing industries and within both public and private institutions. In addition, further studies must also consider broader aspects and other moderating variables, such as organizational culture, organizational climate, labor market and the regulatory and legal environment. Also, further work examining international comparisons is clearly requested. One could argue that many of the relationships linking turnover to its antecedents and consequences might be moderated by the national and cultural contexts. Also, an obvious complement to this study is to conduct longitudinal research to observe over time if the turnover intentions recorded at one point are associated with negative outcomes at a later point.

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### Appendix 1. Research tables

#### Table A1. Pearson coefficient of SHRM practices sub-variables

<table>
<thead>
<tr>
<th>Sub-variable</th>
<th>Recruitment and selection</th>
<th>Training and career development</th>
<th>Performance appraisal</th>
<th>Compensation and benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHRM practices</td>
<td>0.576</td>
<td>0.722</td>
<td>0.729</td>
<td>0.675</td>
</tr>
<tr>
<td><em>p</em>-value</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
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</table>

#### Table AII. Pearson coefficient of employee retention sub-variables

<table>
<thead>
<tr>
<th>Sub-variable</th>
<th>Satisfiers (intrinsic factors)</th>
<th>Dissatisfiers (extrinsic factors)</th>
<th>General satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee retention</td>
<td>Pearson coefficient 0.787</td>
<td><em>p</em>-value 0.000</td>
<td>0.875</td>
</tr>
<tr>
<td>Sub-variable</td>
<td>Satisfiers</td>
<td>Dissatisfiers</td>
<td>General satisfaction</td>
</tr>
<tr>
<td>General satisfaction</td>
<td>Pearson coefficient 0.497</td>
<td><em>p</em>-value 0.000</td>
<td>0.632</td>
</tr>
</tbody>
</table>

#### Table AIII. Simple linear regression models of the dependent variable on the different independent variables

<table>
<thead>
<tr>
<th>Simple regression model</th>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>Beta</th>
<th>Significance of the model</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>Employee retention</td>
<td>Recruitment and selection</td>
<td>0.353</td>
<td>0.002</td>
<td>0.057</td>
</tr>
<tr>
<td>Second</td>
<td></td>
<td>Training and career development</td>
<td>0.489</td>
<td>0.000</td>
<td>0.152</td>
</tr>
<tr>
<td>Third</td>
<td></td>
<td>Performance appraisal</td>
<td>0.549</td>
<td>0.000</td>
<td>0.158</td>
</tr>
<tr>
<td>Fourth</td>
<td></td>
<td>Compensation and benefits</td>
<td>0.474</td>
<td>0.000</td>
<td>0.176</td>
</tr>
<tr>
<td>Fifth</td>
<td></td>
<td>SHRM practices</td>
<td>0.981</td>
<td>0.000</td>
<td>0.318</td>
</tr>
</tbody>
</table>

#### Table AIV. Results of structural equations model

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>Estimate</th>
<th>S.E.</th>
<th>C.R.</th>
<th><em>p</em>-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>SHRM practices</td>
<td>-0.079</td>
<td>0.097</td>
<td>-0.82</td>
<td>0.412</td>
</tr>
<tr>
<td>Age</td>
<td>SHRM practices</td>
<td>0.331</td>
<td>0.123</td>
<td>2.693</td>
<td>0.007</td>
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<tr>
<td>Educational level</td>
<td>SHRM practices</td>
<td>0.034</td>
<td>0.113</td>
<td>0.297</td>
<td>0.767</td>
</tr>
<tr>
<td>Employment status</td>
<td>SHRM practices</td>
<td>-0.775</td>
<td>0.114</td>
<td>-6.808</td>
<td>0</td>
</tr>
<tr>
<td>Work duration</td>
<td>SHRM practices</td>
<td>0.781</td>
<td>0.109</td>
<td>7.146</td>
<td>0</td>
</tr>
<tr>
<td>Employee retention</td>
<td>Gender</td>
<td>-0.023</td>
<td>0.087</td>
<td>-0.265</td>
<td>0.791</td>
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<tr>
<td>Employee retention</td>
<td>Age</td>
<td>-0.141</td>
<td>0.069</td>
<td>-2.053</td>
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<tr>
<td>Employee retention</td>
<td>Educational level</td>
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<td>0.074</td>
<td>2.242</td>
<td>0.025</td>
</tr>
<tr>
<td>Employee retention</td>
<td>Employment status</td>
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<td>0.074</td>
<td>-2.577</td>
<td>0.01</td>
</tr>
<tr>
<td>Employee retention</td>
<td>Work duration</td>
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<td>0.077</td>
<td>5.02</td>
<td>0</td>
</tr>
<tr>
<td>Employee retention</td>
<td>SHRM practices</td>
<td>0.573</td>
<td>0.134</td>
<td>4.295</td>
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</tbody>
</table>
Appendix 2. Questionnaire statements

SHRM practices

Recruitment and selection:
- The bank uses professional recruitment agencies, associations, universities and the internet to search for new talents.
- The bank sets fixed and explicit requirements and specifications for different positions.
- The bank conducts impartial tests and personal interviews to assess the potential of candidates and their qualifications to choose the best, with preference to internal hiring.

Training and career development:
- The bank offers systematic training to develop the attitudes, skills and performance of employees and to enhance the quality and standards of the services provided.
- The bank allocates sufficient budget to properly analyze the training needs and to evaluate its results.
- The bank encourages staff career development through job enrichment and periodical job rotation, in addition to the commitment to promote capable employees into higher positions.

Performance appraisal:
- The bank practices regular assessments to ensure effective performance.
- The bank sets accurate and realistic measures to evaluate the employees’ job performance.
- The bank uses the performance appraisal reviews to take timely and corrective actions.

Compensation and benefits:
- The bank offers attractive/competitive compensation packages and relatively high incentives to the staff for motivation.
- The reward system of the bank is fair and basically based on performance.
- The responsibilities and performance expectations of the management are clear to all employees at the bank.

Strategic alignment:
- In general, HRM activities are aligned with the business strategy of the bank to respond to environmental pressures (translating business strategies into a set of expectations about what HRM system must perform, so that the bank’s strategic vision, mission and goals could be achieved through people).

Employee retention
Satisfiers (intrinsic factors):
- You like your work at the bank and enjoy the sense of challenging and achievement you get from doing your job.
- You feel valued and your job efforts are appreciated at work.
- You are allowed to enlarge your job responsibilities and to perform independently in your work.
- You are given the opportunity to be involved in activities that promote your professional advancement and growth.
Dissatisfiers (extrinsic factors):

- The bank has fair and flexible policies and procedures that ensure employment security and customer satisfaction as well.
- The bank has supportive and participative leadership, besides an effective two-way communication system.
- The staff gains satisfactory rewards (financial and non-financial) by working at the bank.
- The bank has healthy working environment and the employees have good relations with each other.

General satisfaction:

- Generally, your work at the bank gives you satisfaction and you are proud of being part of it.
- If it were up to you, you will definitely continue working for the bank for the next years.
- The rate of employee turnover at the bank is minimal.
- The bank has retained experienced staff as a result of good motivational policy.

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The nexus between financial development and poverty reduction in Egypt

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Abstract
Purpose – The purpose of this study is to empirically examine the impact of financial development on poverty reduction in Egypt. The paper also investigates whether financial development affects poverty via gross domestic product (GDP) growth.

Design/methodology/approach – This study uses the autoregressive distributed lag approach to estimate two specifications. The first is dependent on poverty by the ratio domestic credit to the private sector (percentage of GDP) and the second is dependent on the poverty by the ratio liquid liabilities to GDP or M3/GDP. The data are annual and cover the period from 1980 to 2015.

Findings – In long run, the study finds that relationship between economic growth and poverty is bidirectional. Financial development and poverty (household final consumption expenditure per capita) are complementary as bidirectional (in Granger sense). In short run, the study finds the bidirectional causality between financial development (real domestic credit to private sector per capita) and poverty reduction.

Practical implications – The findings suggest that governments should remove policies that impede the ability of banks to offer loan products or undermine the commercial incentive structure for banks or borrowers. It is crucial to enhance the role of specialized state-owned banks in financial intermediation.

Social implications – Several attempts have been made to investigate the relationship between financial development and other macroeconomic variables, but few studies have examined the impact of financial development on poverty reduction. Furthermore, the majority of the previous studies are based on Asia and Latin America – affording Egypt very little or no coverage at all.

Keywords Poverty, Egypt, ARDL, Financial development

1. Introduction
There is a general consensus among scholars that a financial system that effectively provides financial services, such as saving mobilization, better capital allocation and an effective risk management, is crucial for the process of economic growth (King and Levine, 1993; Beck et al., 2000; Beck and Levine, 2004). Recent studies have also focused on exploring whether a well-functioning financial system helps improve the standard of living for the poor (Akhter et al., 2010; Moreno, 2011; Jeanneney and Kpodar, 2011).

JEL classification – G20, E40, D90, C22
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Although the relationship between financial development and growth is well established, the same cannot be said for the casual linkage between financial development and poverty reduction. In the past two decades, many countries, especially the developing ones, implemented an extensive program of economic reforms and financial sector reforms, which take the form of financial sector liberalization. The proponents of financial liberalization argued that the determination of the rate of interest by market forces will allow for optimization in allocating funds for investment and hence will enhance economic growth.

Market reforms were implemented by Egypt in early 1990 and, while they were developing economic growth, they have not been effective in enhancing the living standards in Egypt which are low by international standards and have even declined continuously since 1990 for the average Egyptian. Since 1991, Egypt has been implementing a policy of financial liberalization which World Bank (WB) and International Monetary Fund (IMF) prescribed. The process of the financial liberalization that Egyptian economy adopted can be divided into two periods. The first phase of financial reform (1991-2003) contained what are known as the orthodox IMF and WB policy prescriptions consisting of liberalizing interest rates and channeling financial resources to the hand of private sector. The second phase of financial reform (2003-2011) involved restructuring the financial system, reinforcing the process of monitoring and supervising over all the financial sector and boosting competition through the privatization programme (Elsayed, 2013).

Poverty, unemployment and an unequal distribution of wealth in Egypt were among the principle reasons that led to the revolution on January 25, 2011. Egypt’s economic situation is not likely to improve shortly, as the economic status is predicted to deteriorate further against an economic situation fraught with problems.

The existing literature offers a set of explanations for the role of financial development in driving economic growth. Theory suggests that financial development forms an important mechanism for achieving long-lasting growth (Honohan, 2004; Levine, 2004; Beck and Levine, 2004). The literature confirms that an effective financial system can boost specialization, reduce transaction and information costs, mobilize savings, support productive investment and ameliorate risk and so on. Moreover, most previous studies that have examined such relationship have focused on Latin American and Asian countries while African countries received little attention.

This paper aims to analyze Egyptian history over a period of 36 years (1980-2015) to find out if financial development has had any bearing on poverty reduction and investigate the dynamic linkage between financial development and poverty reduction in Egypt by incorporating growth of GDP as an intermittent variable, thereby creating a simple trivariate setting.

The paper is organized as follows. Section 2 outlines literature review. Section 3 represents data sources and the underlying methodology. The results and discussions are presented in the Section 4. Finally, Section 5 draws the conclusion and implications in this study.

2. Trends of financial development and poverty in Egypt

In 1995-1996, poverty rate stood at 19.4 per cent, declining significantly to 16.7 per cent in 1999-2000. The gains achieved in reducing poverty from 1995-2000 were offset by the increase in poverty from 2000-2004 back to 19.6 per cent, and to 21.6 per cent in 2008-2009, then to 25.2 per cent in 2010-2011. Finally, in 2015, overall poverty in Egypt stood at 27.8 per cent, representing approximately 25.5 million, who could not obtain their basic food and non-food needs (Figure 1).

Poverty reduction in the 1990s resulted particularly from employment creation in the non-tradable service sector. Revenues from oil, which constituted over 40 per cent of merchandise exports, catalyzed employment creation in this sector and also resulted in
employment opportunities in the Persian Gulf countries for unskilled Egyptian workers. Labor migration, in turn, created remittances that financed increased demand in the economy. It is worth mentioning that remittances averaged more than $3bn in the 1990s, representing more than one quarter of Egypt’s total exports of goods and services. (World Development Indicator [WDI].) Foreign aid as well (which averaged nearly 20 per cent of central government expenditures in the 1990s) supported finance Egypt’s deficit on current account. Finally, receipts from tourism, another sector related to unsteady global changes, represented more than 20 per cent of total exports in the 1990s. The rapid growth of the Egyptian economy undoubtedly stems from these sources of income (WDI).

Egypt’s reliance on these sources of income leaves the country largely vulnerable to unforeseeable and unsteady global changes. In addition, their yields have been used to finance consumption rather than investments in productive assets. Because remittances (which are depended on oil receipts) are more volatile than other sources of employment and income, Egypt’s dependence on remittances for employment creation and income generation were disturbing. Therefore, the sustainability of growth, job creation and poverty reduction in Egypt are questionable. Sustained poverty reduction depends largely on structural reforms aimed at reducing the dependence of the economy on unstable and probably declining sources of foreign exchange, and local policy should aim at channeling whatever income comes from these sources toward investments in productive assets and should not depend on foreign labor markets to create jobs (Salem and Gleason, 2005). Over the past decade, the private sector plays a dominant role in Egypt. The first years of economic reform (1991-1993) were characterized by economic stagnation. Subsequently, a healthy growth rate is resumed. Critics of the economic reform process argued that such reforms would have a negative impact on the poor. This was not the case in Egypt: the incidence of poverty between 1995-1996 and 1999-2000 decreased from 19 to 17 per cent (Haddad and Ahmed, 2002).

Developing the depth of financial markets holds the promise of enhancing economic growth by supplying access to capital to financially restricted economic factors. Given that the expansion of access favors the poor, financial development may improve income distribution by increasing the efficiency of capital allocation. Moreover, financial frictions, such as information and transactions costs, may disproportionately restrain the poor who lack credit history. In principle, by relaxing the credit restrictions of this sort, financial deepening can help the poor and lessen income inequality (Nasr, 2010).

Compared to other developing countries, there are various financial indicators which have put the Egyptian financial sector at a moderate level in financial intermediation. Although mobilization of savings in Egypt is high by international standards, the banking sector is not intermediating efficiently. Most savings are channeled through the financial system as bank deposits, where the ratio of the deposit-to-GDP (per cent) is much higher.

Figure 1.
Poverty headcount ratio at national poverty line (% of population)

Source: CAPMAS (2015). “Poverty indicators according to HIES data”
than the world average and virtually higher than many developed countries. However, little of it is channeled to the real, productive private sector and is fundamentally used to finance government deficits or as loans extended to state-owned enterprises (Nasr, 2010). Over the period of the study, Egypt has experienced financial sector problems necessitating reforms of their systems. The problems are predominantly because of domestic problems, such as weak banking supervision and inadequate capital. For banking reform, it may be required to modernize the financial services industry as in the case of transition countries shifting from a public-sector-led to a market economy. External factors, such as deteriorating terms of trade, can cause currency crises and worsen banking problems.

The impact of the structural reforms, essentially those affecting the investment environment, started by the government appointed in July 2004 is being reflected in the significant amelioration in the investors’ perception of the business climate. The Financial Sector Reform Program was the main pillar of the government’s comprehensive reform program endorsed in September 2004. The program aims at enhancing the soundness of the financial sector and boosting an enabling environment for the growth of an effective private-led financial system that serves Egypt’s development and growth goals. Considerable improvement has been made in the enforcement of these financial sector reforms. Achievements include consolidating the banking sector, divesting the state-owned banks’ shares in the joint-venture banks, privatizing one state-owned bank, pursuing the restructuring of the remaining three state-owned commercial banks and establishing the supervisory capacity at the central bank.

For nonbank financial institutions, various reforms have been promised to strengthen the capital market, restructure the insurance sector, improve a well-functioning mortgage market and stimulate financial leasing and factoring. However, such progress has not yet been reflected in improved performance and enhanced financial intermediation.

3. Literature review

Financial development is investigated by many economists to be of main importance for output growth. Particularly, government restrictions on the banking system (such as interest rate ceiling, high reserve requirements and directed credit programs) prevent financial development and reduce output growth. (McKinnon, 1973; Shaw, 1973). Furthermore, the endogenous growth literature emphasizes the influence of financial markets on economic growth (Bencivenga et al., 1995; Greenwood and Smith, 1997; Obstfeld, 1994).

There is no common assent among economists that financial development is beneficial for growth. In an endogenous growth model, Pagano (1993) uses the AK model (AK model production function is a special case of a Cobb-Douglas function with constant returns to scale) to conclude that the settled state growth rate depends positively on the percentage of savings turned into investment, so one channel through which financial deepening has an influence on growth is diverting savings to investment. Berthelemy and Varoudakis (1996) find that the growth rate depends positively on the number of banks or the degree of competitiveness of the financial system. Their results display that educational development is a prerequisite of growth, and financial lagging is a barrier when the educational system is not fruitful. Greenwood and Jovanovic (1990) examine the relation between growth and income distribution, as well as between financial structure and economic development.

Levine et al. (2000) conduct their analysis using a sample of data for 74 developed and less developed countries over the period 1960-1995. They use dynamic estimators like generalized method of moments estimation (GMM) and cross-sectional instrumental variable estimators where legal rights of creditors, the soundness of contract enforcement
and the level of corporate accounting standards are used as instruments to elicit the exogenous component of financial development. Both estimation techniques correct for biases associated with previous studies of the financial development-growth relation. They found that the strong positive relationship between financial development and output growth can be partially explained by the impact of the exogenous components like finance development on economic growth. Beck et al. (2000) examined the relationship between financial development and economic growth and also the relationship between financial development and the sources of growth in terms of private saving rates, physical capital accumulation and total factor productivity. Instrumental variables (IV) and GMM estimators were used to correct for possible simultaneity biases. They conclude that higher levels of financial development lead to higher rates of economic growth and total factor productivity. For the remaining variables, they could not notify any relationship with financial development.

On the empirical front, very few studies have examined the relationship between financial development and poverty reduction. Some of the studies have attempted to examine the relationship between financial development and poverty reduction (Odhiambo, 2009; Jalilian and Kirkpatrick, 2002, 2005; Jeanneney and Kpodar, 2008a, 2008b; Jeanneney and Kpodar, 2005, Quartey, 2005; Honohan, 2004; Banerjee and Newman, 1993; Clarke et al., 2003, 2006; Stiglitz, 2002; Arestis and Caner, 2005; Dollar and Kraay, 2002; Beck et al., 2007; Honohan and Beck, 2007).

Generally, in theoretical literature, it is argued that financial development can help to reduce income inequality and poverty directly by providing credit and financial services to the poor that helps to increase their income through investing productive activities as well as through interest earned from savings, and indirectly by its growth stimulating effect (Schumpeter, 1934, McKinnon, 1973). Financial development can also indirectly reduce poverty and income inequality through enhancing economic growth and the gains from growth are channeled to the poor. One of the way in which financial development enhances economic growth is through the mobilization of funds from inefficient to efficient use.

The evidence pointed that the degree of financial intermediation has a strong and positive impact on the income of the poor (Jalilian and Kirkpatrick, 2002; Beck et al., 2007; Boukhatem and Bochra, 2012).

Financial development can improve the opportunities for the poor to access formal finance by addressing the causes of financial market failures such as information asymmetry (Stiglitz, 1998).

Also, financial development can enable the poor to start micro enterprises, which generates more employment and higher income and thereby reduces poverty. Other findings suggested that financial development may trickle down to the poor through its positive effect on economic growth because of the positive effect of economic growth on poverty reduction.

Ravallion and Datt (2002), Fan et al. (2000) and Uddin et al. (2014) found that a long-run relationship between financial development, economic growth and poverty reduction exists in Bangladesh, and financial development helps to reduce poverty, but its effect is not linear.

Shahbaz and Rehman (2013) find that financial development causes poverty reduction in Pakistan.

Shahbaz and Kirkpatrick (2001) tested the relationship between financial development and poverty through the growth channel. They conclude that one unit change in financial development leads to a 0.4 per cent change in the growth rate of the incomes of the poor, assuming that there are no direct effects. Moreover, they found that financial development
contributes to poverty reduction through a growth-enhancing effect up to a certain threshold level of economic development.

Jalilian and Kirkpatrick (2005) and Uddin et al. (2014) found that financial development contributes to poverty reduction and the effect varies with the level of economic development. It seems that there was a certain threshold level of financial development that an economy needs to attain before it can get the full indirect benefits and reduce the risks of capital account liberalization.

Milanovi (2005) indicated that there were significant increases in domestic and global inequality during the periods of global financial liberalization policies. In this regard, high interest rates, caused by financial liberalization policies, harm small firms and leave large firms in very good condition.

Ang and Mckibbin (2007) empirically examined the relationship between financial liberalization and financial development using the time series data of Malaysia. Empirical findings suggested that real interest rate and financial repression have negative impact on financial development, by removing the repressive policies financial liberalization promotes country’s financial sector.

Pradhan (2010) considers the relationship between the financial development, the economic growth and the poverty reduction in India through time series data covering the period 1951-2008. It emphasizes the existence of long-term equilibrium between financial development, economic growth and poverty reduction relationship. It also concludes the existence of unidirectional causality of poverty reduction to economic growth, economic growth to financial development, economic growth to reduce poverty and financial development to poverty reduction. It concludes that financial development and economic growth have a substantial contribution to reducing poverty in the economy.

Recently, in the case of Bangladesh, Uddin et al. (2012) examined the causal relations between financial development and poverty reduction using data over the period of 1976-2010 by applying the ARDL bounds testing approach to cointegration and the VECM Granger causality for long run and causality relationships respectively. Their results reported cointegration between the variables and feedback effect between financial development and poverty reduction.

Singh and Huang (2015) argue that if financial markets were perfect, the availability of finance would allow individuals to fund education, training or business opportunities. In this framework, financial development would contribute to equalize opportunities by reducing the importance of initial wealth and then would favor the poor. They confirm that the benefits of financial development are not automatic, and policies aimed at macroeconomic stability and institutional reforms needed to accompany financial development.

4. Estimation techniques and empirical analysis
This paper studies the link between the financial development and the poverty reduction in Egypt over the period 1980-2015. The data have been obtained from the WDI’s by the Word Bank.

4.1 Definitions of variables
4.1.1 Poverty reduction (povred). The current study uses household final consumption expenditure per capita growth (annual per cent). This is because the consumption expenditure of poor people is reliably documented and quite stable when compared with their income (Odhiambo, 2010; Quartey, 2005; Datt and Ravallion, 1992). The proxy is consistent with the definition of poverty by the WB as “the inability to attain a minimal
standard of living” gauged relative to their basic consumption needs (World Bank 1990 besides, Quartey, 2005; Odhiambo, 2010; Ho and Odhiambo, 2011; Uddin et al., 2014; Sehrawat and Giri, 2016a, 2016b).

4.1.2 Financial development (M3 and DC). Financial development is a multifaceted concept which captures financial depth, access, efficiency and stability (World Bank, 2014). What therefore measures financial development has been a matter of debate in the literature. This study chooses two proxies that frequently appear in the empirical literature to measure financial development. These are the domestic private sector credit by banks to GDP (DC) and M3 to GDP.

The DC measures the relative contribution of the financial system to the economy. Several studies, including Levine et al. (2000), Boyd et al. (2001), Honohan (2004), Levine (2004), Jalilian and Kirkpatrick (2005), Beck et al. (2007), Ho and Odhiambo (2011), Hamori and Hashiguchi (2012) and Sehrawat and Giri (2016a, 2016b), have also used this variable.

4.2 Estimation techniques
Using the autoregressive distrusted lag (ARDL) modeling approach (Pesaran et al., 2001) as an alternative to test cointegration Engel and Granger (1987) and Johansen (1988, 1991). This technique allows the use of variables which differ from order integration I (0) and I (1). It is also better suited to small samples. This paper uses the ARDL approach to estimate two specifications. The first is dependent on poverty by the ratio domestic credit to the private sector (per cent of GDP) and the second is dependent on the poverty by the ratio liquid liabilities to GDP or M3/GDP.

The data are annual and cover the period 1980-2015. The period covered is solely based on data availability. The data are sourced from the WDI database (2016) compiled by the WB.

This section outlines the econometric tests used in the paper and the empirical specifications for the causal estimation of the relationship between poverty reduction and financial development in Egypt.

Before proceeding to the ARDL approach, the study tested the stationary of each series. When the analysis is time series-based, it is essential to test the stationarity of the variables so as to identify the order of integration by the augmented Dickey–Fuller (ADF) and Phillips–Perron unit root tests. The ADF test is widely used in this regard (Dickey and Fuller, 1979, 1981). Phillips and Perron (1988) proposed a modification of the DF test and have developed a comprehensive theory of unit roots.

Choosing appropriate lags is very important in unit root testing. This study decided the appropriate lags for both tests based on akaike information criterion (AIC). These tests have been explained in many studies. The study uses the ARDL bounds testing approach to cointegration developed by Pesaran et al. (2001) to explore the existence of a long-run relationship between economic growth, financial development and capital stock.

The empirical formulation of the ARDL bounds testing approach to cointegration is given below:

\[
\Delta \ln povred_t = \alpha_0 + \sum_{i=1}^{q} \beta_i \Delta \ln povred_{t-i} + \sum_{i=0}^{q_1} \gamma_i \Delta \ln cd_{t-i} + \sum_{i=0}^{q_2} \delta_i \Delta \ln gdp_{t-i} \\
+ \theta_1 \ln hfce_{t-i} + \theta_2 \ln cd_{t-i} + \theta_3 \ln gdp_{t-i} + \mu_t
\] (1)
\[
\Delta \ln \text{povred}_t = \alpha_0 + \sum_{i=1}^{p} \beta_i \Delta \ln \text{povred}_{t-i} + \sum_{i=0}^{q} \gamma_i \Delta \ln \text{gdp}_{t-i} + \sum_{i=0}^{q} \delta_i \Delta \ln \text{gdp}_{t-i} \\
+ \theta_1 \ln \text{hfce}_{t-i} + \theta_2 \ln \text{gdp}_{t-i} + \theta_3 \ln \text{gdp}_{t-i} + \mu_t
\] (2)

Where \( \Delta \) is the first difference operator, and \( \mu_t \) is an error term assumed to be independently and identically distributed. Pesaran et al. (2001) suggest \( F \)-test for joint significance of the coefficients of the lagged level of variables. For example, the null hypothesis of no long-run relationship between the variables is (\( H_0: \alpha \text{YL} = \alpha F = \alpha \text{KL} = 0 \)) against the alternative hypothesis of cointegration (\( H_1: \alpha \text{YL} \neq \alpha F \neq \alpha \text{KL} \neq 0 \)). Pesaran et al. (2001) provide lower and upper bound critical values for the \( F \)-test. The lower bound critical values assume all variables are I(0), while the upper bound critical values assume all of the variables are I(1). If the calculated \( F \)-statistics exceed the upper bound, the null hypothesis of no cointegration among the variables can be rejected. If the calculated \( F \)-statistics fall below the lower bound, the null hypothesis of no long-run relation cannot be rejected. The next step is the estimation of the long-run coefficients that are involved in determining the ARDL model with optimal lags. The selection criteria for the optimal lags such as the Schwarz Bayesian Criterion (SBC) and the AIC are mostly used to determine the order of the ARDL model.

Once the variables are cointegrated for the long-run relation, the long-run and short-run causality can be investigated. The long-run and short-run direction of causality between financial development, economic growth and capital stock was investigated by the VECM (vector error correction method) Granger causality framework.

4.3 Empirical analysis

Table I presents the results of both ADF and PP tests, both of which provide us with a T1 consistent picture. All series have unit roots regardless of whether the tests are I(1). These results confirm that study could apply the ARDL because our series are not I(2). Before conducting the ARDL bound testing approach, this study selects the optimal lag length based on SBC because it performs better than others (Narayan, 2005; Pesaran et al., 2001).

The result in Table I indicates that four is the optimal lag order. Results in Table II indicate that the calculated \( F \)-statistic (6.194) exceeds the upper critical bound at the 1 per cent significance level when household final consumption expenditure (Ln) povred is

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intercept</th>
<th>With trend</th>
<th>Intercept</th>
<th>PP</th>
<th>With trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \ln \text{povred} )</td>
<td>-2.791 [0.101]</td>
<td>-0.686 [0.858]</td>
<td>-1.174 [0.636]</td>
<td>-1.512 [0.814]</td>
<td></td>
</tr>
<tr>
<td>( \ln \text{Yt} )</td>
<td>2.899 [1.000]</td>
<td>-1.701 [0.755]</td>
<td>6.215 [1.000]</td>
<td>-2.333 [0.414]</td>
<td></td>
</tr>
<tr>
<td>( \ln \text{DCt} )</td>
<td>-2.631 [0.124]</td>
<td>-0.724 [0.998]</td>
<td>-1.251 [0.644]</td>
<td>-1.319 [0.881]</td>
<td></td>
</tr>
<tr>
<td>( \ln \text{Mt} )</td>
<td>0.947 [0.985]</td>
<td>-2.216 [0.466]</td>
<td>1.188 [0.987]</td>
<td>-2.418 [0.379]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First difference</th>
<th>ADF</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \ln \text{povred} )</td>
<td>-5.554* [0.000]</td>
<td>-6.161* [0.000]</td>
</tr>
<tr>
<td>( \ln \text{Yt} )</td>
<td>-3.816** [0.007]</td>
<td>-5.319** [0.001]</td>
</tr>
<tr>
<td>( \ln \text{DCt} )</td>
<td>-5.313* [0.000]</td>
<td>-6.917* [0.000]</td>
</tr>
<tr>
<td>( \ln \text{Mt} )</td>
<td>-8.018* [0.000]</td>
<td>-7.966* [0.000]</td>
</tr>
</tbody>
</table>

Notes: * and ** is significance level at 1 and 5% respectively.
the predicted variable. This suggests that there is cointegration between household final consumption expenditure, real GDP per capita real and financial development. The coefficients of long-run and short-run results are reported in Table III. In the long-run equation, our results indicate positive and significant impact of financial development on economic growth at 1 per cent level.

Results in Table III indicate that in short run, empirical evidence shows that financial development has positive and statistically significant impact on economic growth. However, one-year lag of financial development has negative and statistically significant impact on economic growth (GDP per capita growth) in the current period. The lagged value of the error correction term (ECMt-1) is negative and significant at 1 per cent level of significance. This shows the speed of adjustment from the short-run toward the long-run. The study finds that the deviations in the short run toward the long run are corrected by 45 per cent each year. This low speed of adjustment in economic growth might be because of the low competitiveness of financial sector in Egypt.

The existence of a cointegration relationship between the variables allows us to apply the VECM Granger causality approach. The information about the direction of causality between the variables provides an important picture for policymakers to formulate policy. Therefore, the VECM Granger causality approach which provides information about the causality is crucial. The results of Granger causality test are reported in Table IV.

Table IV results indicate that the long-run causality results indicate that there is the bidirectional causality between financial development and economic growth, financial development and capital stock and economic growth and capital stock. It supports the “demand-following” hypothesis and the “supply leading” hypothesis in Lao context.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Ln povredt</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistics</td>
<td>6.194**</td>
</tr>
</tbody>
</table>

Critical values
5% level 10% level
Lower bounds 4.457 3.513
Upper bounds 5.393 4.421
Adj $R^2$ 0.898
$F$-statistics 13.105*

Notes: * and ** show the significance at 5 and 10% level, respectively

### Table II.
Results of ARDL cointegration test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>$T$-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln Y_t$</td>
<td>0.503*</td>
<td>6.014</td>
</tr>
<tr>
<td>$\ln Y_{t-1}$</td>
<td>0.328*</td>
<td>4.228</td>
</tr>
<tr>
<td>$\ln DC_t$</td>
<td>0.225*</td>
<td>6.888</td>
</tr>
<tr>
<td>$\ln DC_{t-1}$</td>
<td>0.044***</td>
<td>1.979</td>
</tr>
<tr>
<td>$\ln Mt$</td>
<td>0.328*</td>
<td>4.228</td>
</tr>
<tr>
<td>$\ln Mt_{t-1}$</td>
<td>0.044***</td>
<td>1.979</td>
</tr>
<tr>
<td>ECMt-1</td>
<td>0.452*</td>
<td>-5.312</td>
</tr>
</tbody>
</table>

### Table III.
Long-run and short-run results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>$T$-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.699*</td>
<td>56.741</td>
</tr>
<tr>
<td>$\ln Y_t$</td>
<td>0.503*</td>
<td>6.014</td>
</tr>
<tr>
<td>$\ln Y_{t-1}$</td>
<td>0.328*</td>
<td>4.228</td>
</tr>
<tr>
<td>$\ln DC_t$</td>
<td>0.225*</td>
<td>6.888</td>
</tr>
<tr>
<td>$\ln DC_{t-1}$</td>
<td>0.044***</td>
<td>1.979</td>
</tr>
<tr>
<td>$\ln Mt$</td>
<td>0.328*</td>
<td>4.228</td>
</tr>
<tr>
<td>$\ln Mt_{t-1}$</td>
<td>0.044***</td>
<td>1.979</td>
</tr>
<tr>
<td>ECMt-1</td>
<td>0.452*</td>
<td>-5.312</td>
</tr>
</tbody>
</table>

Notes: *, **, and *** denote the significant at 1, 5 and 10 per cent level respectively
### Table IV.

The VECM Granger causality analysis

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>$\Delta \ln P_t$</th>
<th>$\Delta \ln y_{t-1}$</th>
<th>$\Delta \ln P_{t-1}$</th>
<th>$\Delta \ln P_{t-1}, \text{ECT} t-1$</th>
<th>$\Delta \ln y_{t-1}, \text{ECT} t-1$</th>
<th>$\Delta \ln P_{t-1}, \text{ECT} t-1$</th>
<th>$\Delta \ln y_{t-1}, \text{ECT} t-1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta \ln povredt$</td>
<td>...</td>
<td>17.3081* [0.0000]</td>
<td>0.5213 [0.8644]</td>
<td>$-0.1133*** [-3.2055]$</td>
<td>...</td>
<td>18.1121* [0.0000]</td>
<td>8.0021** [0.0000]</td>
</tr>
<tr>
<td>$\Delta \ln y_t$</td>
<td>20.3284* [0.0000]</td>
<td>...</td>
<td>11.9954 [0.0000]</td>
<td>$-0.20121^* [-4.5287]$</td>
<td>15.5841* [0.0000]</td>
<td>...</td>
<td>10.5487* [0.0000]</td>
</tr>
<tr>
<td>$\Delta \ln DCT$</td>
<td>0.7846 [0.6208]</td>
<td>13.5478* [0.0000]</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>$\Delta \ln povredt$</th>
<th>$\Delta \ln y_{t-1}$</th>
<th>$\Delta \ln M_{t-1}$</th>
<th>$\Delta \ln P_{t-1}, \text{ECT} t-1$</th>
<th>$\Delta \ln y_{t-1}, \text{ECT} t-1$</th>
<th>$\Delta \ln P_{t-1}, \text{ECT} t-1$</th>
<th>$\Delta \ln M_{t-1}, \text{ECT} t-1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta \ln povredt$</td>
<td>...</td>
<td>14.9983** [0.0001]</td>
<td>5.0282* [0.0063]</td>
<td>$-0.08228** [-5.7001]$</td>
<td>...</td>
<td>17.5042* [0.0000]</td>
<td>8.7705* [0.0000]</td>
</tr>
<tr>
<td>$\Delta \ln y_t$</td>
<td>17.1487* [0.0001]</td>
<td>...</td>
<td>0.5212* [0.8301]</td>
<td>$-0.2187*** [-2.6709]$</td>
<td>12.3654** [0.0000]</td>
<td>...</td>
<td>6.9154** [0.0010]</td>
</tr>
<tr>
<td>$\Delta \ln M_t$</td>
<td>9.4587* [0.0003]</td>
<td>3.0052 [0.1182]</td>
<td>...</td>
<td>$-0.0088*** [-1.6794]$</td>
<td>8.2140** [0.0003]</td>
<td>4.7921** [0.0111]</td>
<td>...</td>
</tr>
</tbody>
</table>

**Notes:** *, **, and *** show significance at 1, 5 and 10% levels, respectively.
indicates that financial sector is important to promote economic growth. The financial reforms which part of economic reform has been implemented in 1990s. This reform promoted sound and efficient financial sector in Egypt. It has facilitated the flow of funds, improving an efficient allocation of resources and quality of investment. In addition, economic growth generates more demand for financial services and resources which lead to promote financial development in Egypt. This empirical result is consistent with Ang and Mckibbin (2007) for Malaysia; Majid (2007) and Majid and Mahrizal (2007) for Thailand; Gries et al. (2009) for Nigeria; Senegal et al. (2008) for Egypt; Wolde-Rufael (2009) for Kenya; Jenkins and Karircioglu (2010) for Cyprus; Gries et al. (2011) for Costa Rica, Chile and Suriname; and Shahbaz (2103) for Pakistan.

Table IV reveals the results of causality once the study used household final consumption expenditure per capita as measure of poverty reduction. In long run, the study finds that relationship between economic growth and poverty reduction is bidirectional (in Granger sense). Financial development and household final consumption expenditure per capita (poverty reduction) are complementary as bidirectional Granger causality is confirmed between both variables. The unidirectional running from financial development to economic growth supporting supply-side hypothesis and demand-side hypothesis is also true as economic growth Granger causes financial development. The results vary when the study used real liquid liabilities (M3) per capita measure of financial development. The feedback effect is found between financial development and economic growth. Economic growth and financial development Granger cause poverty reduction.

In short run, the study finds the bidirectional causality between financial development (measured by real domestic credit to private sector per capita) and poverty reduction (indicated by household final consumption expenditure per capita). The relationship between economic growth and poverty reduction is bidirectional, and feedback hypothesis is validated between financial development and economic growth. Furthermore, poverty reduction is Granger cause of economic growth and financial development (proxies by real liquid liabilities per capita). There is complementary relationship found between economic growth and financial development, i.e. bidirectional. Diagnostic tests were also applied to test the adequacy of the model specifications. These diagnostic tests suggest that long-run and short-run estimates are free from serial correlation, misspecification of the short-run model, non-normality of the error term and heteroscedasticity.

5. Conclusions
The estimated results confirmed the existence of long-run equilibrium relationship between financial development, economic growth and poverty reduction in Egypt. The results confirm that financial sector development plays a vital role in facilitating economic growth in Egypt.

The combination of financial restructuring and institutional reform will make Egypt’s financial sector more developed and efficient, leading it to provide better-quality financial products and services, exhibiting a lower cost of financial intermediation and being more competitive. Government intervention in the credit-granting and pricing process undermines banks’ incentives to make good loans and borrowers’ incentives to pay back and introduces other forms of market distortions. Regulations and policies to increase small firms’ access to finance, such as interest-rate ceilings, restrictions on lending, priority lending and credit subsidies and other government interference can contribute to a distorted enabling environment for financial intermediation, hindering access.
Governments should remove policies that either unnecessarily impede the ability of banks to design, price and offer loan products or undermine the commercial incentive structure for banks or borrowers.

It is crucial to enhance the role of specialized state-owned banks in financial intermediation. Although analysis of the use of financial services by households suggests that over the longer term, the most dramatic increases in access to financial services are likely to come from demand-side factors (such as those associated with improvements in human-capital development, education and income), in the near term, actions can be taken on the supply side to improve access for households. Specifically, better use could be made of the existing branch networks of state-owned specialized banks to foster access (Nasr, 2010).

It should be said that financial sector development in Egypt should support poverty reduction by broadening the access to financial resources of the poor. Financial development enables poor households to accumulate assets and therefore enables them to increase their future level of income. This suggests that financial development in Egypt, like other countries, would lessen poverty beyond its effect on growth or what is referred to in the literature as trickledown theory.

References


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Further reading


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Arab Spring future challenges: evidence from Egypt

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Abstract

Purpose – This paper aims to shed light on the Egyptian socio-economic and political conditions seven years post the 2011 revolution.

Design/methodology/approach – The authors depended on secondary data and information gathered from scholars and from domestic and international institutions as well. Additionally, the authors distributed 390 Likert-scale questionnaires among respondents to test their perceptions regarding the safety, social, political and economic conditions in Egypt seven years post the 2011 revolution.

Findings – The research findings confirmed that there was an agreement among participants that the safety conditions in Egypt improved during the past seven years post the 2011 revolution, and there was a general agreement among participants that the political conditions in Egypt became more stable lately. The economic and social cost presents a challenging status to the current decision maker.

Practical implications – Finally, authors came up with recommendations aiming to find solutions for certain economic and political problematic issues. The main research limitation is that the representative sample was confined only to the two main governorates in Egypt: Cairo and Giza.

Originality/value – Finally, the study is of a value, as it could be considered a road map to policy makers. Moreover, the findings provide a set of policies for governments to undertake tenable actions to accelerate development and economic growth.

Keywords Arab spring, Revolution, Diverse demographic background, Socio-economic and political condition

Paper type Research paper

1. Introduction

Since the 1980s, many emerging and developing countries suffered from social and economic inequalities. At any given rate of economic growth achieved, the poverty level increases, unemployment increases, youth become disparate toward their future and families endure low standard of living. All these aspects shape the feeling of dissatisfaction to their past and pushed them to aim for a better future. The dream of changing the era of autocratic regimes that lasted more than 30 years across many Arab countries reflected to give the term Arab Spring that will...
carry a bright future. On 17 December, 2010, Tunisian protestors spread in rural areas after a youth protestors set himself on fire hopelessness post authorities’ detention. This incident fired the anger across the frustrated youth to protest against antigovernment practices. Consequently, the event spread across social media, and protestors spread from rural to urban areas occupying the streets demanding for justice and a decent life. The majority of protestors from youth are targeting to change government practices; such a need blended with dreams spread to reach Egypt, Yemen, Libya, Bahrain and Syria.

The Tunisian youth up-rise was driven by their hope to achieve a democratic regime that can provide a brighter future; they blazed the winds of change across the rest of Arab countries setting people in streets till their demands are fulfilled. In Egypt, population was ten times the population in Tunisia, where the echo of the up-rise was higher, and people stayed in the streets for a longer period till the regime withdrew from the power. Citizens’ demand focused on three basics, namely, bread, freedom and social justice, a dream that pushed people to stay in the streets till the government fulfilled it.

After the outbreak of the revolution, inflation rates in Egypt declined during 2011 as a result of the economic slowdown, the decline in purchasing power and the decline in demand for goods. The inflation rate reached 11.27 per cent in 2011 and fell to 10.5 per cent in 2012 and reached its lowest level in the previous 10 years to 7.12 per cent [Central Bank of Egypt (CBE), 2016]. The decline in the work of many factories and the decline in production and thus the supply of products to the high inflation over the past five years led to increased speculation on the prices of products, especially in light of the fluctuation of the dollar exchange rate, which affects the prices of many basic products, leading to spiral increase in prices. Last year, the country experienced a surge in prices, the heaviest in the past three decades, after economic reforms including the floating of the pound, the application of value-added tax and the doubling of energy prices over the past year and a half. In the following sections, we will assess the impact of Egyptian Arab revolution economically, politically and socially; finally, conclusion and recommendations are provided.

2. Literature review
The transition stage from command to market economy set many Middle East countries to adopt economic reforms, during the 1980s and 1990s, due to many economic imbalances. These reform costs severely affected the lower level income by declining the quality of social services provided and decreasing their purchasing power. Furthermore, the financial crisis and the pace of recession pushed many companies and factories to lay off workers as a result of deteriorating economic activities and rising production costs. Also, the unreasonable pricing threatened the social, political and economic stability. In addition to the dominance of the ruling elite over the business community and deep network with many institution, the fact that facilitated their exploitation to the economic system and the financial sector. Furthermore, the existing of nepotism led to unequal opportunities among citizens and privileges in labor markets were given for certain people. Also, the increasing of corruption, lack of transparency and credibility for many state institutions, especially security, justice and administration, left citizens poorer, and the income gap become wider. Such a case triggered the bullet of revolution across the Arab countries. If government responds to all the current economic and political problems and they handled the citizens’ demands spontaneously, then the revolution will never exist.

Gurr (1970) defines revolution as, “highly organized political violence with wide spread general participation, designed to over-throw the regime or dissolve the state and accompanied by extensive violence”. The term revolution usually means demolition of a regime or social structure of regimes or a great sudden change in social principles. Gurr also
states that men quickly get angry when their social means prove inadequate, but they are slow to accept their limitations. He explains that people uprise if they believe that their problems and reasons of uprising will not be solved except through violence.

The causes of revolution are diverse; first, the government must be weakened by some sort of crisis such as a military or development failure, fiscal distress, sustained inflation or sharp spikes in food prices. The crisis may be ideological as well: when a government seeks to impose an ideology that is widely opposed by its own people, or when a government is seen as compromised by policies and ideologies with foreign enemies. Several of these items may combine to create a widespread sense of uncertainty and anxiety about the future. Goldstone (2013) viewed the causes of revolution which are as follows: when property and power are not widely distributed among individuals of a given society, such as the situation in modern industrial democracies. Social scientists have long debated the factors responsible for revolution, but they did not agree on specific reasons for revolutions. Some relate it to economic factors; others emphasize political reasons. Still, others rely on social determinants. Still, the interstate politics and distribution of power are assumed to play a profound role (Tiruneh, 2014).

3. Overview on the impacts of economic, political and social conditions post the revolution
Abdel Meguid et al. (2011) stated that in most countries of the world, inequality is considered as a lead cause for revolutions and unrest. Karl Marx predicted that an economic revolution would occur, due to the unequal distribution of wealth. According to Marx, the upper class has the wealth and power in its hand, and they are the ones who exploit the lower class. This eventually leads to certain problems; foremost among them is poverty and income equality.

Since 2010, all Arab countries, economic growth declined, many industries stopped, business closed and tourism revenue declined. All these factors increased the budget deficit, the incident that forced governments to borrow either internally or externally. In Egypt, the government covered the budget deficit via the international monetary fund (IMF) loan, which pushed the external debt to $60bn in the first quarter of 2016/2017 and the ratio of domestic debt to public budget increased from 75 to 104 per cent of the gross domestic product (GDP) during the period from 2012 to 2017 (Central Bank of Egypt, 2018). The conditioned loan allows for the devaluation of the Egyptian pound; such a decision pushed prices of food, fuel and raw materials to increase drastically, a situation that increased the cost of living and made life harder. Furthermore, the government increased the value-added taxes and decreased subsidies to be able to finance its deficit.

Arab countries passed through three challenging phases during Arab Spring; the first phase was during the uprise or the anti-autocratic regimes. The second is the political crisis phase where political parties tried to take the power and rule; however, they were secular or Islamic, a situation that reflected the clashes between the police and protestors. Third is the sustainable democratic system that carried reforms to overcome the economic imbalances. The last phase was characterized by low foreign direct investments, low growth rate, a high budget deficit, a high debt rate, high unemployment rate, high poverty rate and low standard of living. In Egypt, the revolution and the internal turmoil dropped the direct domestic investment during 2011 till 2014 from 19.5 to 14 per cent of the GDP, and then it recovered as a result of economic reforms that reached 15.3 per cent by 2017. While the gap between exports and imports increased after the revolution, the Egyptian exports declined $20bn to $18.7bn during the years 2000 till 2016, while imports dropped from $60bn to $57.4bn during the same period. Also, Egypt’s tourism sector suffered from the period of security chaos, and the tourism sector revenue declined from $11.6bn in 2011 to $3.8bn in
2017. All these challenges accompanied with high inflation rate that reached 35.25 per cent in July 2017, which was the highest level since the Second World War (CBE, 2017).

Recently, all over the Arab countries, government debt positions, with the exception of Lebanon, are not particularly high by international standards. But the vulnerability comes not from the level of the debt but from the increasing trend that has been seen recently in some of these countries, especially in Egypt and Jordan. In regard to this aggregate, as we saw, virtually all countries experienced deterioration in the aftermath of the crisis, some reaching levels that would certainly be seen as alarming for the future generation.

3.1 Impact of the Egyptian Revolution on the economy

Egypt is facing major challenges as the external debt reached $60bn in the first quarter of 2016/2017 (CBE, 2017). Due to the devaluation of the pound increasing food, fuel and raw material prices causing a rise in the costs of production for businesses leading to public loss of confidence in the government and protests over the government’s inability to control inflation. Inflation kept rising to reach more than 13.81 per cent in 2017 (Figure 1). The budget deficit increased as a result of the large increase in government expenses in terms of salaries, support and debt service, while the revenues did not rise to cover the increase in expenditures, and the successive governments resorted to local borrowing to finance this deficit, which led to directing a large part of the resources of the banking sector to finance the government at the expense of financing industrial and commercial activities. Moreover, banks expanded in attracting depositors’ to finance the government, the incident that increase the cost of financing debt. The increase in the inflation rate reached its highest level since the Second World War and reached 35.25 per cent in July 2017, and then the government returned to the application of many policies to control inflation a situation that forced pricing on commodities to continue increasing.

The total deficit of the general budget during the fiscal year 2010/2011 increased by 9.8 per cent, an increase of 1.7 per cent compared to the previous year. The deficit reached LE 134.5bn in 2017 compared to LE 98bn during the fiscal year 2009/2010, while the total budget deficit recorded 10.7 per cent from GDP (Figure 2).

Revenues decreased by 1.1 per cent to LE 265.3bn in 2010/2011, compared to LE 168.1bn during the fiscal year 2009/2010 and increased again in 2011/2012 to reach LE 303.62bn. On the other hand, expenses increased by 9.8 per cent during the fiscal year 2010/2011 to reach LE 402bn compared to LE 366bn during FY 2009/2010 and continued to increase in 2011/2012 to reach LE 471bn, which was reflected in the financial report issued by the Ministry of Finance to increase expenditure in all sections.

According to the central bank annual report, it pointed out that the ratio of domestic debt to public budget instruments to GDP at the end of June 2012 reached 75 per cent, recording

![Figure 1. The inflation and economic growth in Egypt during 2010 till 2017](source: Central Bank of Egypt annual report, different issues)
1.155bn pounds, compared to 967.90bn at the end of June 2011, 70.5 per cent of the GDP, recording 967.3bn pounds. The domestic debt service amounted to 104.625m pounds in 2010/2011 and 122.322m pounds in 2011/2012. The report pointed to the increase in the domestic debt is to increase the issuance of treasury bills and bonds as a result of increasing the funding requirements of the state. The external debt ratio decreases to 13.5 per cent and reached $34.385bn by 1.7 per cent at the end of June 2012 compared to 2011. The external debt service recorded $3.19bn in 2012, while it was $3.70bn in 2011 (Figure 3).

According to figures published by the Central Bank of Egypt, the Egyptian foreign debt in June 2017 amounted to $79bn, and the domestic debt reached 3161bn pounds, i.e. the total Egyptian debt is 4.555tn pounds, 131 per cent of GDP. This means that the share of the citizen Egyptian public and internal public debt figures June 2017 up to about 45,000 Egyptian pounds – the debt figures are large and serious. The domestic debt will reach at least 4tn pounds by the end of the current financial year in June and the external debt (after calculating the cost of the station) will reach $105bn, equivalent to 1.9tn pounds.

The average share of each household in Egypt will reach about LE 250,000. That the benefits of this debt are worth 590bn pounds, that is, spending on support, health and education combined. Public debt, both external and domestic, has become a burden on economic development as it limits the state’s ability to meet its obligations in terms of expenditure on education and health. Interest payments accounted for 26 per cent of expenditure in the 2015/2016 budget. The Ministry of Finance in 2017 raised the value of debt benefits for the year 2016/2017 to reach 292bn pounds, or 28.2 per cent of total expenses.

The revolution and internal turmoil have affected domestic and foreign direct investment. Direct domestic investment in 2009/2010 reached 19.5 per cent of the GDP,
which fell from 17.1 in 2010/2011 to 14 per cent in 2013/2014, and then increased as a result of economic reforms currently carried out by the country to 15.3 per cent. Moreover, the foreign investment was not at its best after the revolution, after foreign investment reached $6758m in 2009/2010. It witnessed a significant decline, reaching 2011, reaching $3982m. Government reforms to encourage the investment environment by providing incentives to push forward growth and attempts to prevent the flight of foreign capital to accelerate the pace of growth in foreign investment and foreign investment amounted to 6838m pounds.

This impact on the balance of payments after the 2009/2010 surplus amounted to $3.36bn and decreased transactions with the outside world, where the balance of payments deficit amounted to $9.8bn in 2010/2011 and increased deficit in 2011/2012 and reached $11.3bn after achieving a surplus in 2014-2015, it reached $3.7bn and returned a deficit in 2015/2016 to $2.8bn (Figure 4).

The deficit in the balance of current transactions in the years before and after the revolution led to the deficit of the trade balance. The proceeds of commodity exports decreased to $23.9bn compared to $49bn in imports in the year before the revolution (2009/2010), but the gap between exports and imports increased after the revolution (2011/2012) to $58.7bn compared to $27bn for exports. Egyptian exports were affected after the decision to float the currency as the price of the pound fell against the dollar, which reduced the Egyptian exports due to increased costs in the elements of production and reached Egyptian exports in 2015/2016 to $18.7bn, while imports amounted to $57.4bn. The following is a chart showing Egypt’s exports and imports during the previous years.

The January 25 revolution negatively affected the tourism sector in Egypt, where workers suffered the most for eight years due to the period of security chaos experienced by Egypt following the events of the revolution and the bad impression that made tourists feel that Egypt is unstable and insecure (Figure 5). The revenue of tourism in 2009/2010 was $11.6bn which is approximately 5.3 per cent of GDP while after the revolution it decline to $9.4m in 2011/2012 after the terrorist incidents and security instability. In addition to huge decline after the incident of the Russian plane hit, the tourist revenues recorded the lowest during the past 10 years to $3.8bn in 2015/2016.

3.2 Impact of the Egyptian Revolution on the political environment

On the political level, the threat came from the terrorism incident that led to eroding potential investments in the country. Egypt’s security environment is now characterized by instability and acute terrorist attacks as well as regular clashes between military forces and Islamist militants in the Sinai Peninsula. The rise of the inflation rate and weak currency, combined with the introduction of value-added taxes, has also placed pressure on consumers. Tourism has represented a driving force for Egypt’s economy for years but has faced difficulties since the Arab Spring causing more challenges for the Egyptian economy.

![Export and Import Chart](image-url)
Unfortunately, tourists are regular targets of terrorist attacks, alongside military personnel and government officials.

Egypt has suffered from the weakness of real political participation for many decades, where Egyptian President Mohamed Hosni Mubarak ruled Egypt since 1981. After revolution, the people were keen to elect the first civilian president in a fair election for the first time in the history of Egypt, but the people were frustrated when the choice was limited to the candidates only. The participation rates did not change much in the presidential elections of 2014. However, political life did not develop much in Egypt. The citizen did not feel the freedom to express his opinion or practice democracy as expected after the revolution of 25 January, which was one of the reasons for the deterioration of political life. In the democracy index of what it was before the revolution was ranked 138 in 2010 and then reached 109 in 2012, the lowest ranking reached in the years after the revolution until the democratic life deteriorated again and reached 130 in 2017 out of 167 countries (Figure 6).

3.3 Impact of the Egyptian revolution on the social environment
The revolution successes to change decision makers but did not achieve these goals. Successive governments neglected the poor citizen, but increased the burden, especially after the floating of the pound, which led to unprecedented price increases and the value of the entry the percentage of citizens living below the poverty line, reached 27 per cent from the total population (WB, 2017). After the floating of the pound in November 2016 and the loss of about half of its value will double the minimum line of poverty and will approach 1,000 pounds, and with the acceptance of the conditions of the IMF has increased fuel prices twice and is likely to rise again by June 2018 and thus will raise subsidies on fuel for a final electricity prices.

Figure 5.
Participation % of the tourism return form GDP during 2008/2009 till 2015/2016

Source: Central Bank of Egypt annual report

Figure 6.
Democracy, political stability and corruption indices during 2009 till 2017

Source: World Bank indicator
The post-revolution years are the result of many companies and factories that lay off workers as a result of deteriorating economic activity and rising production costs. The unemployment rate reached 13.4 per cent in 2013, but with the government reforming, the unemployment rate fell to 11.9 per cent by the end of 2017 (Figure 7).

The citizens are still searching for security and safety in the streets after the anger of the people and the storming of some of the police stations. The situation which has led to the instability of the security in the country and with the emergence of terrorist movements also affected the stability of security in the country. In the year 2011, Egypt reached the rank of 47 according to the global terrorism index, and this is one of the best ranks reached by Egypt in the past eight years due to the deterioration of security life because of the emergence of armed terrorist groups (WB, 2017).

Soon after the 2011 revolution, the Government of Egypt (GOE) started to apply key reforms through reducing energy subsidies, introducing new taxes, increasing electricity tariffs, increasing the prices of fuel products and working on the civil service reform. In addition, the large Gulf Cooperation Council inflows in the fiscal year 2014 and the significant monetary financing of deficits provided some relief from further debt accumulation as well. These financial inflows partially supported the Egyptian economy and helped the country to meet its energy and food needs. Additionally, few incidents boosted Egypt’s international image during the year 2015, which were the major gas discovery in Egyptian waters, the opening of the New Suez Canal after just one year of work.

The Central Bank of Egypt (CBE) embraced in 2015 a policy which allowed a more flexible exchange rate to improve the availability of foreign exchange, strengthen competitiveness and support exports. As a result, lower inflation projected for financial year (FY 16). Going forward, Egypt needs to meet the demand for foreign currency; it did indeed as the national reserves of foreign currency reached $36bn by the end of July 2017. On real basis, this does not mean that the Egyptian economy has overcome the vulnerability stage; it still remains vulnerable to many political and economic risks. Regional conflicts and deterioration in domestic security could affect investor confidence and tourism sector in the country tremendously. This means that further structural reforms are needed to decrease fiscal and debt levels and to boost the economic growth of Egypt. The GOE started in 2014 to implement two economic stimuli to reach an increase of 3 per cent of GDP. These stimuli are mainly focused on investment spending that includes planned mega projects that include substantial public-sector wage and pension increases for mostly the middle-income earners.

4. Research methodology

There is a gap in literature to assess the consequences of revolution economically, socially and politically. We applied a primary research methodology based on survey.

4.1 Sample size, type and demographics

The researchers conducted a total of 390 questionnaires; they used the random sampling technique and approached participants from different genders (males, 60.5 per cent; females,
As for the age groups (31 till 40 accounted for 39.5 per cent; age category 21 till 30 which accounted for 32.3 per cent; age category 41 and more, which accounted for (20.3 per cent), and finally the age category less than 20 that accounted for 7.9 per cent). As for the occupation, most of the respondents are working in the private sector, which accounted for 40 per cent; workers which accounted for 21 per cent; the professional career which accounted for 20.8 per cent. The academic staff and the public administrators accounted for 13.1 and 5.1 per cent, respectively.

Regarding the educational level, most of the respondents are university graduates which accounted for (43.6 per cent); post graduates, which accounted for (23.1 per cent), then primary school, which accounted for (20 per cent), and finally secondary school, which accounted for (13.3 per cent). The income level, the income category (3000 – less than 4000) accounted for (36.1 per cent), then Income category (500 – less than 1500), that accounted for (25.6 per cent), then income category (1500 – less than 3000) and that accounted for (19.5 per cent). Finally, the income category (more than 4000), (less than 500 EGP), that accounted for (15.6 per cent), (2.6 per cent). The variable economic and social level, the average level counted for (38.2 per cent), the low level counted for (34.6 per cent) and finally the high level counted for (27.2 per cent).

4.2 Research objectives

- studying the current socio-economic and political situation seven years post the 2011 revolution in respect to the data and information gathered from the field study;
- investigating the perception of participants from different demographics regarding the economic, social and political situation in Egypt now; and
- analyzing the respondents’ answers and trying to come up with adequate conclusion and recommendations enriching the purpose of the study.

4.3 Statistical analysis

The researchers used the SPSS (version 20) for data coding, verification and analyzing quantitative data. Data verification is done by making frequency tables and ensuring that the data were entered correctly. The questionnaire was designed according to the Likert scale format and throughout this research; the mean, frequency and percentage were calculated through the descriptive analysis using several types of tests. These tests included the arithmetic mean, standard deviation and coefficient of variation as well as ANOVA (F test), to find the significant differences between the more two groups represented of the economic and social level. The statistics proved that there is a significant difference for the situation in Egypt after seven years of the revolution of January 2011 related to the (economic and social level).

Pearson correlation relationship was used to study the relationship between the four dimensions to find out the strength and direction of each of the dimensions: security, economic, social and political situation in Egypt after seven years of the revolution of January 2011. To check the reliability, the coefficient “Alpha’s Cronbach” is used to test the stability of the variables for the total dimensions of “Investigating Egyptian citizen’s opinions after seven years since the 2011 Revolution”. The stability of coefficient for the total sample is (0.839) which indicates high degree of validity for the study sample, which was reflected also by its coefficient that is equal (0.915). For the dimensions (Safety Conditions), the reliability coefficient is (0.818), for the dimensions (Political Conditions), the reliability coefficient is (0.832), for the dimensions (Social Conditions), the reliability
coefficient is (0.786); finally, for the dimensions (Economic Condition), the reliability coefficient is (0.825). The researchers used the $p$-value as the main figure to test the relationship between the dependent and independent variables. The $p$-value is used as alternative to rejection point to provide the smallest level of significance at which the null hypothesis will be rejected. If the $p$-value is less than 0.05, then there is a significant relationship between the variables.

4.4 Research questions
The researchers distributed 390 questionnaires in Likert scale format regarding the safety conditions, the political conditions, social conditions and economic conditions.

4.5 Research results
4.5.1 Safety conditions in Egypt post the 2011 revolution. Around 75.61 per cent of participants agreed that: (Only the elite areas in Egypt are enjoying a safety environment), 74.24 per cent confirmed that (The safety laws and legislations in Egypt need adjustments and alterations), 63.59 per cent of participants stated that (The Police and Army cooperate together to protect the Public Entities) and 62.55 per cent of respondents believed that (The Egyptian Police is securing the main roads). Whereas 55.44 per cent of participants agreed that: (The percentage of crime and assaults decreased lately), 54.03 per cent of participants believed that (citizens can walk in streets any time safety and freedom) and 53.05 per cent of participants stated (I feel safe walking in the streets).

4.5.2 Political conditions in Egypt seven years post the 2011 revolution. Around 75.85 per cent of participants agreed that (The Egyptian Government succeeded in defeating the Muslim Brotherhood in Egypt), 71.11 per cent of participants believed that (Egypt is still facing many challenges since the beginning of the economic and political reconstruction post the 2011 revolution), 69.96 per cent of participants agreed that (The Egyptian Government is combating terrorism and extremists very well). In total, 64.46 per cent of respondents stated that (The political awareness of the Egyptians increased after the 2011 revolution) and 58.84 per cent of respondents believed that (The Egyptian Government is running the country’s external relations now perfectly).

4.5.3 Social conditions in Egypt seven years post the 2011 revolution. Around 56.56 per cent of participants disagreed that (The food is been submitted with fair prices) and 56.46 per cent of participants agreed that (they enjoy diversity and fair prices buying cloth where they live). 63.31 per cent of respondents believed that (The medical equipment’s are adequate and good in the public hospitals), 61.54 per cent of them confirmed that (The Egyptian citizen is enjoying the medical care whenever is needed and it is provided easily), 66.48 per cent stated that (The government houses sizes are acceptable and suitable) and 59.34 per cent respondents admitted that (The government houses are being provided to citizens with suitable prices).

Around 54.15 per cent of participants believed that (The developmental and industrial projects in Egypt increased citizens’ quality of life), 55.68 per cent of respondents agreed that (The Egyptian government is developing the health care in public hospitals) and 54.82 per cent of respondents believed that (The Egyptian army is cooperating with the government in building houses for citizens with suitable cost).

4.5.4 Economic conditions in Egypt after seven years from the 2011 revolution. Around 84.04 per cent of participants agreed that (The Egyptian citizen is being negatively affected by imposing taxes on foreign commodities), 77.86 per cent of respondents believed that (The Egyptian citizen is being negatively affected by imposing taxes on foreign commodities), 71.63 per cent of participants said that (The Egyptian Government is exerting a big effort to
subsidize bread), 59.56 per cent stated that (‘Al Data’ project helped in solving the electricity disconnection problem in Egypt), 53.66 per cent respondents agreed that (The discovery of ‘Zuhor’ gas field will support the Egyptian economy and cause development), 52.33 per cent of participants confirmed that (One of the main goals of the fiscal policy in Egypt nowadays is currency stability) and 51.13 per cent of the participants stated that (The devaluation of the Egyptian currency helps the economy to revive again).

5. Research results’ analysis

There was an agreement among participants that the safety conditions in Egypt improved during the last seven years post the 2011 revolution, and there was a general agreement among participants that the political conditions in Egypt became more stable lately. Noticed, that the research participants were nearly divided regarding the social conditions in Egypt, and obviously it seems to be a controversial matter among Egyptian citizens.

If we have a close look at the social condition statements, we will realize that it was grouped into three groups: the food and cloth, the medical care and the housing. All three groups were granted disapproval from the respondents; especially the food variety and prices following the medical care and equipment’s in public hospitals, then the sizes and prices of flats offered by the government to the Egyptian citizens. One of the main causes of the increasing in food prices was the government’s decision in November 2016 to float the pound – a condition of the IMF loan – after which the currency deteriorated against the dollar. The fund also required Cairo to cut fuel subsidies, with the reforms helping restore investor confidence in Egypt’s ailing economy. But the lender stayed clear of demanding cuts to the bread programme, considered by successive Egyptian Governments as crucial for political stability.

The most obvious reason behind Egypt’s urbanization problem was the lack of low-income and social housing available across the country. The housing ministry decided that 500,000 new homes need to be built every year for five years to keep pace with the expanding population and to finalize the unfilled requests of 3 million housing units. In 2014, the country signed a $40bn agreement with the UAE’s Arabtec to develop 1 million housing units. Although the deal broke down in mid-2015, the government has continued with its pledge to develop the number of units required to meet the current demand. There are concerns that the speed of delivery has been too slow and is not covering the shortage of housing. As a result, Egypt’s Government set a new timeline for the completion of public and middle-income housing units, according to a cabinet statement in April. The statement went on to say the government has committed to delivering about 300,000 housing units by the end of 2016. Cairo also plans to deliver about 750,000 housing units by the end of 2018, in addition to 135,000 units for those currently living in informal housing (Fargues, 2010). The state of health care in Egypt has in the past become a major cause of social and political discontent among Egyptians. In 2013, Egypt ranked 118th among the 193 member states of the World Health Organization (WHO) and 15th among Arab countries, in life expectancy at birth. It is 117th in hospital beds per capita and faces a severe shortage of intensive care units.

As for the economic conditions, the participants agreed that it improved in Egypt during the past 7 years post the 2011 revolution.

In 2015, the health sector accounted for 5.4 per cent of the total government budget, compared with 12 per cent for education, this is one of the lowest rates in the Middle East and North Africa region. There have been some improvements in aggregate health indictors over the past few decades. However, they mask striking inequalities among Egyptians by gender, income level, education and geographic location (Bayoumi, 2016). This brief...
analysed review of the social conditions in Egypt prior and after the 2011 revolution and till these recent days, explains a great deal of the respondents’ discontent of Egypt’s social conditions.

6. Conclusion
In 2018, Egypt’s Government is targeting to increase the economic growth to reach 5.2 per cent a target that can ease the burden and provide more jobs to decrease the unemployment rate to 11 per cent by the end of the year. While in Morocco and Tunisia, it is expected to improve economic growth to range between 3 per cent and 3.7; though in Jordan and Lebanon continue to suffer from the conflict in Syria, which hinders their business environment and affects negatively the domestic consumer’s confidence, despite the fact that the continued flow of refugees is draining public finances. Projected growth for these two countries is in the range of between 3 and 3.6 per cent (WB, 2017). Once Arab countries run the engine of growth and the citizens’ start to participate economically and politically then the cost of revolution will be covered. After reviewing the cost of the revolution on political, social and economic life, the revolution did not achieve all its objectives, and the governments are still in the process of implementing economic, social and political reforms. But countries such as Libya, Syria and Yemen are still in the first phase—up-rise or the anti-autocratic regimes. On the other hand, Morocco and Algeria did not place themselves in the revolution stage and handled their citizens’ needs suddenly.

All Arab Government is working to turn the engine of economic growth; they work to increase production especially after they achieve political stability. The adoption of the economic reforms will enhance the country’s competitiveness and help to attract foreign direct investments. The speed in the mapping of investment and distribution of investment opportunities geographically, giving priority to remote areas and most needed will encourage foreign investments in the country and facilitate the procedures and implementation of an integrated plan to improve the investment climate. Government in the revolutionary countries face a new risk that emerged in the financial aspects, reflecting the increasing of the debt rates internally and externally, the incidents urge for stabilizing these countries’ economies and manage the associated risks.

The core drivers based on achieving a balance between the political, economic and social aspects and the success of these transition process is based on initial change of a political elite, applying democratic reforms, avoiding domestic and regional conflicts and building political institution (through: election systems, existence of political parties, existence of civil society institutions and independent judiciary). Such balance requires applying democratic reforms and building political institutions to allow for transparency and accountability, in addition to equal opportunity across citizens. Consequently, changes will pave the road to achieve the economic objectives.

7. Recommendations
After reviewing the cost of the revolution on political, social and economic life, the revolution did not achieve its objectives for which, with the change of governments, the situation is still the same as before, although governments are trying to implement economic, social and political reforms. The following are some suggestions and recommendations.

We believe that it is better to allocate the IMF fund on investment projects working on the employment of young people and reduce unemployment rates and raise the standard of living of the individual rather than spending in bridging the budget deficit and the repayment of other loans, which increase the country risk level:
Work to reduce imports and prevent most imports of products that can be produced locally to promote the local product, taking into account raising the efficiency and quality of local products to meet the needs and will lead to the possibility of exporting these products abroad and thus raise the price of the local currency against the dollar, which will also increase the foreign exchange reserves. It will balance the trade balance and thus generate surplus, and this will affect the balance of payments as a whole positively.

The speed in the mapping of investment and distribution of investment opportunities geographically, giving priority to remote areas and most needed to encourage foreign investment in the country and facilitate the procedures and implementation of an integrated plan to improve the investment climate, and find a new investment law to meet the aspirations of investors. Increase the freedom of expression and independence of the media, give freedom of association and the right to assemble in the constitution, release political prisoners who have not been convicted in any cases, ensure fair trials of political detainees and maintain the independence of the judiciary and protect them from the pressures of the executive authority.

Better utilization of the public-private partnership (P.P.P.) model. The P.P.P. model has been successful in other sectors such as power and water.

Unlocking large plots of land across the country. Inflated land prices have negatively impacted the feasibility of large low-cost housing schemes.

Tackling the informal economy through micro-finance solutions to improve the accessibility of the social housing fund for some of Egypt’s poorest.

Changing the methods of large housing projects. Contracts are currently being awarded on a build-only basis. More integrated contracts that include infrastructure work such as utilities and roads will improve the synergy between the housing ministry and ministry of transport.

Ensuring that new developments are built with the necessary basic services and adequate transportation infrastructure to increase living standards and prevent disconnected communities and the emergence of new slums.

Seeking foreign investors: this model is currently being applied in Bahrain where contractors from China, South Korea and Europe are being invited to serve as investors. Pay attention to poor classes and establish a real support system to ensure that support reaches its beneficiaries, redistribute income and implement the law of minimum and maximum wage and link productivity to achieve social justice. Work out a reform plan for the health care sector, the housing sector and the education sector. Protecting human rights and developing the security services and their independence from power to protect the people and achieve security stability in the country, which will lead to the recovery of tourism and the return of foreign investment in the country.

References
Further reading


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East Mediterranean gas: a new arena for international rivalry

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Abstract

Purpose – This paper aims to explore the international response to the discovery and development of gas fields in the East Mediterranean basin.

Design/methodology/approach – The study applies key concepts into a framework and explores the strategies used by nations for developing their influence in the region.

Findings – The key nation states (the USA and Russia) and the supranational EU are notable in their divergent approaches to obtaining access to and influence regarding the gas fields.

Practical implications – The development of the strategies used by the international rivals for access to the resources available from the offshore oil fields is set to be an area for further study.

Originality/value – This paper offers insight into a developing rivalry over energy security, which will be a platform for further investigation throughout the exploitation of the “New Gulf” gas fields.

Keywords Pipeline, Energy security, Gas facilities, Concession area, Energy dependency, Offshore field, Liquefied natural gas, Exclusive economic zone, Estimated reserves, Hydrocarbons, East Mediterranean

Paper type Research paper

1. Introduction

The repercussions of discovering the massive hydrocarbon wealth in the eastern Mediterranean basin have not been limited to the countries of the region but rather are extended to affect the major global powers of broad international expertise in the field of energy, particularly the EU countries, which suffer from a serious shortage in the energy production equation at the global level. This is also clearly manifested in the competition between Russia and USA to expand their influence over this inflammable region that is rife with disputes and conflicting interests among its parties. Therefore, the discrepancies of major powers interests resulted in other discrepancies in the way each party handles the issue of the eastern Mediterranean gas. However, the common factor among these countries is their efforts to maintain an effective existence in the explored gas fields and the concession areas offered by the countries of the region in international tenders.

1.1 The theoretical and conceptual premises

Various theories cared about explaining the nature of the relationship between natural resources (including energy sources) from one part and the break out of conflicts whether on the internal level or in between countries from the other part. However, before interpreting...
this relationship, it is worth mentioning the importance of developing a definition for the resources. The World Bank defines “resources” as “naturally originated materials that are essential and useful for mankind.” The sources are divided into two groups: renewable resources such as agricultural land, forests and water, and non-renewable resources such as minerals, diamond, gas and petroleum. The ability of a State to access and have control over the resources and wealth is a main determinant in defining the international position of the State in the World Economic System.

The multi classifications of natural resources mainly go back the fact that the “term is wide by its nature,” because natural resources could be classified through specialization such as strategic natural resources, energy sources, shared water resources, biological resources, mineral resources and other classifications.

From among natural resources, the research focuses primarily on hydrocarbon resources, in particular, gas and oil sources as being the two main sources of fuel. Oil is a flammable liquid that can be refined and turned into gasoline. Natural gas is used for lighting and producing fuel. The issue of fuel scarcity or difficulty in obtaining it is one of the biggest concerns in both developing and developed countries because they depend primarily on fuel.

Therefore, the increasing demand for obtaining energy sources from developed countries may play an important role in the escalation of conflict and rivalry of major international powers which seek to secure their supplies. Meanwhile, the trans-boundary natural gas transport line and boundary fields also contribute in increasing the tension among various international parties (USA Institute of peace, 2007, p. 4).

1.1.1 Theoretical view about the relation between energy sources and conflict and rivalry.
Theoretical literature is divided upon interpreting the relation between conflict and rivalry from one side and the sources of energy from the other side. Theoretical views regarding the causes of the flared competition varied between scarcity and abundance as determinants for the conflict.

1.1.1.1 First: the scarcity of energy sources as a tool for rivalry and conflict. Some call it the “neo-Malthusian view” after the English demographer “Thomas Robert Malthus.” This view indicates that the population growth, environmental deterioration, resources depletion and increasing demand for resources lead to the unequal access to those resources. This factor represents a major cause for the escalation of rivalry among the internal elements of the State also increases the risks of the involvement of those States in external conflict with the aim of obtaining energy sources (Colin, 2006, p. 333).

1.1.1.2 Second: abundance of energy sources as a tool for rivalry and conflict. A different view has been introduced that indicates that the abundance of sources resulting due to new discoveries would be a motive for escalating rivalry and conflict within what is called of “resources curse,” because the new discoveries and the resulting abundance lead to greed among the parties whether inside the State or among other international parties to obtain a share from this wealth.

Apart from determining the extent to which scarcity or abundance can affect energy sources, each plays a relative role in causing rivalry, which may sometimes turn into conflict (USA Institute of peace, 2007, p. 8).

1.1.2 Conceptual framework. The study raises a number of key concepts that should be identified to determine the phenomena subject of the study and the means of analyzing it accurately. The most prominent of them are as follows.

Energy security: The concept of energy security can be defined through two main inputs; the first is based on energy security through securing supplies and is known as the case when the State or all or most of its citizens and its works shall have access to adequate energy sources at reasonable prices in the foreseeable future without the risks of great
energy downtime. The second input considers energy security through securing the energy supply series at three levels:

1. **upstream level** to secure exploration operations and production;
2. **midstream level** to secure transportation lines of energy sources whether oil or gas; and
3. **downstream level** that includes securing and ensuring the safe transport and distribution of energy sources, as well as investment, maintenance of refineries, transport and distribution networks, storage potential and regulatory and legal frameworks (Arafa, 2014, p. 61).

**International conflict**: It means a particular competitive position; one party or parties are aware of the incompatibility in the potential future situations in which each of them is compelled to adopt or take an action inconsistent with the potential interests of the other party or parties (Salman, 2007, p. 16).

**Geopolitics**: According to Douglas Jackson, it is the science that studies the political phenomenon in its dimensions of area. Some American academics also define it as a science that deals with the interaction between geography and political processes. However, the closest definition adopted by the study is the one presented by Roger Casperbsson and Julian, which is the “spatial analysis of the political phenomenon”.

**Territorial sea**: It is a belt of coastal waters extending up to a maximum of 12 nautical miles measured from the baseline of the coastal country. It is considered a full sovereignty area of the State, although foreign vessels, whether military or civilian, are entitled to cross over through so-called innocent passage. The State sovereignty also extends to both the air scope and the seabed under that territory.

**Exclusive economic zone**: It is defined as the area beyond the territorial sea and adjacent to it and does not extend to more than 200 nautical miles measured from the baselines from which the territorial sea is measured (Seoudi, 1977, p. 3).

### 2. Natural gas discoveries in Eastern Mediterranean basin

The eastern Mediterranean region has been witnessing the discovery of a large number of natural gas fields since 2000. The region is considered highly significant as it possesses enormous strategic reserves that reached potentially 122 trillion cubic feet of gas according to USA Geological survey, 2010. In this context, it is worth mentioning the most prominent discoveries in the eastern Mediterranean basin, taking into consideration the chronology of exploration and development operations (USA Energy Information Administration, 2013). In late 1990s and the beginning of 2000, the American Nobel Energy Company explored the gas field of Mari B, which is 25 km off the coast of Gaza Strip and at a depth of 243 m below sea level (Buftman et al., 2014, p. 3). The volume of the reserves has been estimated at 1.1 trillion cubic feet of gas. It has been put into service and production as of 2004 (Wurmser, 2013). The Israeli Delek Group Company owns the right of concession and exploitation of the field by holding (52.9 per cent) of the total share, whereas Nobel Energy Company holds the remaining percentage estimated at (47.1 per cent) (Darbouche et al., 2012, p. 5). In the same year, British Gas Company, an affiliate to British Petroleum Company, announced the discovery of the Gaza Marine Field, which is 36 km off the coast of the Gaza Strip with a total gas reserve estimated at one trillion cubic feet of gas. The Palestinian authorities signed a four-year agreement for the exploration and development of the field with a number of companies at different rates. On the top of the list of companies comes British Gas (60 per cent), followed by Consolidated Contractors Company (30 per cent) and Palestine
Investment Fund (10 per cent) (Darbouche *et al.*, 2012, p. 3). However, Israel promptly hampered this agreement due to its determination to control the flow paths of gas from the field to the outer world (Middle East Economic Survey, 2012) by insisting that it is necessary for the field supply to reach Ashkelon first to meet its needs of gas, then afterward to Gaza. Furthermore, Israel set a condition to purchase the gas at prices lower than international rates, a matter that was rejected by the companies (Khadduri, 2011). Consequently, both the Palestinian Authorities and British Gas Company are unable to carry out the exploration operations because of Israel’s intransigent stance toward the exploration (Shaffer, 2011, p. 5380). During the same year, another field called Noa, located 36 km off the coast of Ashdod at a depth of 750 m below sea level with relatively small reserves that amounted to 0.4 trillion cubic feet of gas, was discovered. Delek Group Company possesses (52 per cent) and Nobel Energy Company (47.1 per cent) of the total concession (Reuters, 2012).

Explorations went on successively throughout a decade until 2009. In 2009, a number of gas fields were discovered, on top of which was Tamar Field, which was discovered in January 2009 and was considered the third largest natural gas field, where its total reserves amounted to around 9.7 trillion cubic feet, according to geological surveys. The Field is located at 90 km off the coast of northern Israel at 1,650 m below sea level. Four oil companies were licensed to carry out the exploration; these were Nobel Energy, holding 36 per cent of total operations, followed by Delek Group (31.25 per cent), Isramco Company (28.75 per cent) and Dor Gas Company (4 per cent) (Darbouche *et al.*, 2012, p. 4). Moreover, Dalit Field was discovered 60 km offshore west of Hadera. Its total reserves are relatively low compared to other fields in the basin as it ranges between 0.35 and 0.5 trillion cubic feet of natural gas, which makes it less economically viable and, consequently, more likely to run out of gas supply very shortly (ELNoamaie, 2011, p. 1). Despite its low reserves, four companies participate in its exploitation; these are Nobel Energy (36 per cent), Delek Group (31.25 per cent), Isramco (28.75 per cent) and Dor Gas (4 per cent) (Darbouche *et al.*, 2012, p. 5). By December of the same year, Cyprus authorities announced the discovery of Aphrodite Field, located 180 km off the southern western coast of Cyprus at a depth of around 1,700 m below sea level. The total reserve of Aphrodite Field is estimated at nine trillion cubic feet of natural gas. For Cyprus, this field represents a sufficient source to meet all internal gas needs without the need to import gas from other countries. Explorations in Aphrodite Field are carried out only by two companies specialized in this domain: the American Nobel Energy Company, holding 70 per cent of total operations, followed by Delek Group (30 per cent) (Darbouche *et al.*, 2012, p. 5). Furthermore, November 2011 witnessed the discovery of Dolphin Field, located at around 110 km off Israeli coasts with gas reserves estimated at 0.8 trillion cubic feet of natural gas (Sharof, 2015). Four companies possess the rights of concession, exploration and exploitation of this field: Nobel Energy (39.66 per cent), Avanza Oil (22.67 per cent), Delek Group (22.67 per cent) and Ratio Oil (15 per cent).

Explorations went on at a moderate pace of time until 2012, which marks one of the most significant years in the history of hydrocarbons discoveries in the eastern Mediterranean region. A huge wealth of natural gas was discovered within a series of discoveries, the most prominent of which was Tanin Field, which is called “Temsah” in Hebrew. Tanin, located 120 km off the coasts of Israel and discovered in February 2001, is the seventh gas field discovered by Israel. The initial estimates showed that the gas reserves amounted to 1.2 trillion cubic feet. Thus, it is considered the third largest field in terms of gas reserves discovered by Israel after the two fields of Leviathan and Tamar. Two companies are executing the exploitation and exploration operations in this field: Nobel Energy (47.06 per cent) and Delek Group (52.49 per cent) (Yeshayahou, 2012). After less than two months, specifically in April, Shimshon Field was discovered 90 km off western Ashkelon city at
1,200 km below sea level with reserves estimated at 0.55 trillion cubic feet. A number of companies carried out the exploration at varying percentages: Isramco Israeli Company (29 per cent), Modiin Energy Company (10 per cent), Naphtha oil (10 per cent), the Israeli INOC Company (11 per cent) and ATP Company (45 per cent) (Modiin Energy, 2012). By June 2012, Israel announced the discovery of Leviathan Field, which is considered the second biggest natural gas field ever discovered in the eastern Mediterranean region. In terms of the potential gas reserves, it amounts to 17 trillion cubic feet. This field is located 135 km off the northern coast of Israel, near the city of Haifa, at 1,600 m below sea level. The exploration and drilling of the field have been assigned to three major companies at varying percentages, on top of which was Delek Group (45.34 per cent), followed by Nobel Energy Company (39.66 per cent) and Ratio Oil Company (15 per cent) (Darbouche et al., 2012, p. 4).

By 2015, Egypt announced the discovery of the largest gas field of Zohr in eastern Mediterranean by the Italian Company of Eni. Zohr Field is located in the Shorouk concession area, south-eastern of the Mediterranean Sea, in the exclusive economic zone of Egypt. The field is 100 km² and is 1,450 m deep (The Guardian, 2015), double the Leviathan gas field which was earlier discovered by Israel (The Economist, 2017). The field includes gas reserves estimated at 850 billion cubic meters, which is equal to 30 trillion cubic feet of natural gas. It is expected that the field shall meet the gas needs of Egypt within four years following its discovery (El werdany, 2016). On April 2, 2016, many international news agencies reported that Eni Company has sold 10 per cent of its share in the field to British Petroleum Company (Henderson, 2017, p. 12). Few months later, Russian Company Rosneft announced its acquisition of 30 per cent of shares of the Italian Company of Eni. Thus, the shares of the companies operating the field are as follows: Eni Company (60 per cent), Rosneft Company (30 per cent) and British Petroleum (10 per cent) (Politi and Farchy, 2016).

3. Patterns of global rivalry over the East Mediterranean basin region gas

Naturally, the major international powers of broad global expertise in exploring and developing gas and oil fields would have never stayed idle before this massive wealth. In fact, this wealth persuaded some of those powers, in particular, the EU, Russia and USA, to find themselves a foothold in the fields of the region. Each country adopted a different strategy to break through the region, benefiting by the insufficient expertise and potentials of the countries of this region to explore and develop this wealth by themselves and without seeking outside assistance.

3.1 The European strategy toward the eastern Mediterranean gas

The energy has become one of the most pivotal issues not only for the Europeans but also for all countries of the world. But the importance for Europe increases with the ongoing fall in the level of the continent’s contribution to the world energy equation, which urged the official European institutions to shed more light on energy issues. This also pushed the European Commission President Jean-Claude Juncker, who has been elected since 2014, to form “An Energy Union” called “The Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy” (Raines and Tomlinson, 2016, p. 3) that aims at achieving five basic objectives as follows:

1. Energy security, solidarity and trust: This could simply be achieved by diversifying the offer, and in particular to what is related to natural gas, in addition to enhancing and improving means of cooperation and coordination in encountering crises and enhancing the European role in the international energy market.
Establishment of an integral European energy market: This can be achieved by focusing on the infrastructure such as pipelines to physically link the markets, in addition to focusing on other matters concerning the activation of the energy-related legislations and removing organizational and procedural barriers that stand against integration and focusing on poor consumers and customers in the field of energy.

Achieving the efficient use of energy to contribute in balancing the demand: This can be achieved, especially in the fields of construction, building and transportation.

A free-carbon economy: This can be achieved by merging the 2030 climate program with the energy package in the business of EU institutions, continuing the program of reducing and decreasing emissions and maintaining global leadership in the field of renewable energy.

Promoting means of research and innovation: This can be achieved by introducing a new strategy for research and innovation in fields such as renewable energy, smart networks and carbon capture and storage, in addition to nuclear technology (European Commission, 2015).

3.2 Factors shaping European vision toward East Mediterranean gas

The EU, as one of the highly influential international powers, has a clear policy toward gas resources recently explored in the eastern Mediterranean region, which emerges from three main factors.

3.2.1 Exploration as an opportunity to diversify energy-attaining sources. The EU considers the massive wealth discovered in eastern Mediterranean as being great opportunities to get rid of Europe’s overdependence on the Russian sources of energy as Europe gets more than one-third of its imports from the Russian gas (Moncef et al., 2013, p. 12). EU countries are highly dependent on natural gas imports from abroad. In 2013, their imports amounted to 448.6 billion cubic meters, then slightly fell to 413.7 billion cubic meters in 2014 before witnessing a rise in 2015 to reach 456.4 billion cubic meters. Eventually, during 2016, the EU imports of natural gas remarkably increased to exceed 472.2 billion cubic meters (Figure 1).

The Russian Federation was ranked first among exporters of natural gas to the EU, where their exports amounted to 166.1 billion cubic meters in 2016, representing 35 per cent of total European imports (British Petroleum, 2017a, p. 34) (Figure 2).

3.2.2 Effective participation in the exploration and development of gas fields. European oil and gas companies found themselves in an advanced position in natural gas explorations in eastern Mediterranean countries, particularly Egypt, Cyprus and Palestine. A number of

![Figure 1. European imports of natural gas according to their type (2013-2016)/billion cubic meters](image-url)
companies are participating in these operations, such as British Gas, an affiliate to British Petroleum, the Italian Company of Eni, the French Company of Total and the Dutch Company of Shell.

European companies working in the gas investment sector consider Egypt as the most important country in the eastern Mediterranean region. British Petroleum Company is one of the oldest and biggest companies operating in the field of natural gas exploration, and their investments in Egypt date back to more than five decades. Therefore, the company is now producing 30 per cent of the Egyptian gas and nearly 15 per cent of total oil production in cooperation with a number of other partners. Although its projects are disseminated over almost all parts of the Egyptian country, the most prominent offshore projects are concentrated in two main areas. One is the concession area of West Nile Delta (British Petroleum, 2018), a project that involves the development of northern Alexandria and western Mediterranean Sea gas fields located at a distance of 65-85 km off the coasts of Alexandria. The project is divided into two stages: the first stage involves the development of the five fields of Taurus, Libra, Fayoum, Giza and Raven, whereas the second stage encompasses the development of another five fields; Maadi, Viper, Ruby, Polaris and Hodoa.

In March 2015, British Petroleum and its German partner RWE DEA signed an agreement with the Minister of Petroleum, the Egyptian General Petroleum Corporation and The Egyptian Natural Gas Holding Company to develop the first stage of the project against investments that amounted to $12bn. First-stage fields are expected to have gas reserves estimated at five trillion cubic feet, in addition to 55 million barrels of condensed oil. Technically, according to the project, both Taurus and Libra Fields will be linked to Gas Burullus Facilities in Al-Burullus area, while both Giza and Fayoum Fields will be linked to the already existing onshore Rosetta Gas Treatment Plant in Rasheed. Raven Field will be linked to another factory that will be established in Rasheed as well (Offshore Technology, 2017a, 2017b).

First stage of production began on March 24, 2017, when the British Company announced the commencement of the actual production of Taurus and Libra Fields that contain nine wells; six in Taurus Field and three in Libra Field. As for the other three fields, in which work has not started yet, they will contain 12 natural gas wells according to the company. It is worth mentioning that British Petroleum Company owns 82.75 per cent of the project, whereas its German partners hold 17.75 per cent (British Petroleum, 2017a, 2017b, 2017c).

On the other hand, the projects of British Petroleum Company are also concentrated on the North Damietta concession area, where the company discovered three gas fields. The first field was Salamat Field. On September 9, 2013, British Petroleum Company announced

![Figure 2. European imports of natural gas from Russia/2016](source: Own elaboration based on data in BP Statistical Review of world Energy June 2017)
the discovery of the natural gas field of Salamat in North Damietta concession area within the framework of North Damietta agreement that was signed in 2010. The field is 649 m deep, and the total depth of the well reaches almost 7,000 m, which makes it the deepest well ever drilled in the Nile Delta area (EGAS Report, 2015). Bob Dudley, British Petroleum Head of Explorations Sector, said: “the success of the Salamat discovery confirms the existence of hydrocarbon resources within a geological formation of 50 km long with a hydrocarbon column of 180 meters high, which enhances the company’s trust in the economic feasibility of deep layers in East Delta and North Damietta.” It is worth mentioning that British Petroleum Company’s share in the field is 100 per cent (Ahram Online, 2017a, 2017b). By March 2015, the company announced the discovery of the second gas field of Atoll, at 923 m deep; the depth of the well reaches 6,400 m, which was measured using the sixth-generation semi-submersible rig Maersk Discoverer. The field is located 80 km from North Damietta and 45 km off the Temsah offshore facilities. The potential reserve of the field is 1.5 trillion cubic feet of gas and 31 million of oil barrels. This field is expected to feed the Egyptian market with 300 million cubic feet of gas on a daily basis once its production operations start in 2018 as scheduled; it is also worth saying that the share of British Petroleum Company is estimated at 100 per cent (Offshore Technology, 2017a, 2017b). On March 26, 2017, a statement by British Petroleum Company announced the discovery of the third field of Qattameya Shallow-1 in the concession area of North Damietta, to a total depth of 1,961 m in water depth of approximately 108 m using El Qaher II jack-up rig. The company asserted, through the wire line logs pressure data and fluid samples, the existence of a gas layer of 37 m of thickness in high-quality rocks of Pliocene sandstones formation. The well is located 60 km off North Damietta, 30 km off south western Salamat Field and 35 km off western Ha’py Offshore Facilities. British Petroleum Company’s share in this discovery is 100 per cent (British Petroleum, 2017a, 2017b, 2017c).

Eni, the Italian Company, is considered one of the oldest companies operating in Egypt. It started explorations and drilling in the Egyptian fields since 1954 by IEOC Company’s branch in Egypt (Eni, 2018). The company’s total number of licenses amounted to 53 exploration licenses covering an area of 11,691 km² through which it discovered 59 gas and oil fields (Nour, 2015). However, the period from 2015 to 2017 witnessed a significant leap in the activities of Eni Company in Egypt. On January 14, 2015, the company announced that it obtained the approval of the Egyptian Government for natural gas exploration in the two new sectors of North Leil, a fully acquired field by the Italian Company, which covers an area 5,105 km², and Karawan concession of which both Eni and British Petroleum are equal partners (Eni, 2015). In line with Eni’s approach to pump more investments in natural gas Egyptian fields, the company signed an agreement to amend the work program to implement exploratory and developmental activities in the concession areas of Balaaim in Sinai, Abu Madi in the Nile Delta, Ashrafi in the Gulf of Suez, North Port Said in the Mediterranean Sea and Baltim in the Nile Delta. The Italian company and its partners, according to the agreement, have initiated a number of investments estimated at $5bn in Sinai and Abu Madi to execute a work program that involved explorations, development and operation for four years (Eni, 2016). On August 30, 2015, the company announced the discovery of Zohr Field in Shorouk concession area that contains, as per estimations, 850 billion cubic meters of gas reserves, which is equivalent to 5.5 billion equivalent oil barrels. Thus, this field became the greatest exploration realized in Egypt and the Mediterranean Sea. Production was expected to start in December 2017 (Ahram Online, 2017a, 2017b). By December 2016, the two companies signed two new agreements with the Egyptian Government for gas exploration in the two regions of North El Hammad and North Ras El Esh in the Mediterranean Sea. Eni Company acquired 37.5 per cent of North El
Hammad concession, which covers an area of 1,927 km$^2$, while British Petroleum Company acquired 37.5 per cent and Total Company acquired 25 per cent. Furthermore, Total acquired 50 per cent of Ras El Esh concession, which covers 1,389 km$^2$, whereas British Petroleum Company acquired the remaining percentage (Eni, 2016).

In Cyprus, European countries had a powerful presence on the map of gas fields explorations, especially British Gas Company, which announced in November 2015 its acquisition of 35 per cent of Aphrodite Field gas reserves from the American Nobel Energy Company in a deal worth of $165m (Reuters, 2015). In 2016, both Eni and Total companies managed to get the individual exploration rights in Block 8, while a consortium formed of Eni, Total and the Cyprus B companies obtained the exploration concession in Block 6 according to the Cyprus’ third license for hydrocarbon materials exploration in the Exclusive Economic Zone of Cyprus (Republic of Cyprus, Ministry of Energy, commerce, Industry, and Tourism, 2016).

On the Palestinian level, British Gas Company was the first company to conclude agreements with the Palestinian authorities aiming at exploration and investment in offshore gas fields. In November 1999, the Palestinian authorities concluded a 25-year agreement with the British Company, which allowed the company and its partners, in particular Consolidated Contractors Company and the Palestinian Investment Fund, to carry out gas exploration off the Palestinian coasts. Consequently, in 2000, the company discovered two gas fields, Gaza Marine 1 and Gaza Marine 2, to have potential gas reserves of 1.4 trillion cubic meters worth of $4bn. However, the project was suspended because of the opposition of the Israel authorities (Alquds Alarabi, 2015).

3.2.3 Supporting common natural gas exportation projects. The Europeans realized from the very beginning that the optimal benefit from the massive gas wealth in eastern Mediterranean mainly depends on creating a strong cooperation among the countries of region, especially in gas export. This pushed the EU to support all projects and movements of cooperative nature, which is likely to pave the way for the Mediterranean gas exportation (Charles et al., 2016, p. 17). The most prominent features of the European support for cooperation projects in the field of eastern Mediterranean gas are represented as follows:

- In 2015, the EU approved the gas transport Pipeline project of EastMed as being a project of common interest, including it in the second list of projects of this type and considering it as a part of Southern Gas Corridor Projects.

- The project should be listed in the last Ten Years Development Plan in coordination with European Network Transportation System Operators of Gas to create a consolidated gas market and a transportation network capable of fulfilling Europe’s current and future needs (IGI Poseidon, 2018).

- Participation should be done to finance the initial feasibility studies of the project. During the period from 2015 to 2016, IGI Poseidon Company conducted Pree-FEED studies at $4m, in which the EU contributed $2m, which equals 50 per cent of the total cost of the study, which, accordingly, confirms the importance of this project for the Europeans. The initial outcomes of the feasibility study resulted in three main things: the project is technically applicable, economically fruitful and commercially competitive (Margheri, 2017, p. 3). In the meantime, these common cooperative projects, including the establishment of an integral energy market, are still facing some challenges, on top of which is the market risks relating to projects financing and including matters related to definition and supplies, in addition to technical and engineering issues and environmental and legal risks, in particular those relating to the organizational uncertainty in the Middle East in the absence of
an international binding legal framework for all parties. This is in addition to political risks, particularly and to a great extent, with the prevailing unstable geopolitical climate (Zemach, 2016, p. 11).

Within the framework of analyzing the European approach in dealing with the eastern Mediterranean gas discoveries, the followings results are observed:

- The eastern Mediterranean gas represented a potential opportunity for the Europeans to liberate themselves from Russian dependency in the field of natural gas.
- There is dependency of the European side to create an area of common interest with the parties of the region, which was not only manifested in the practical steps but also in the continuous confirmation at the level of statements, which is considered an extremely pivotal psychological element to the eastern Mediterranean countries.
- There is lack of interest in Israel’s gas on the part of the European companies and concentration on Egyptian and Cyprus gas only, leaving the Israeli arena for the American and Israeli companies within the framework of direct or implied agreement among global powers to divide the economic gains of the region.

3.3 Russia’s strategy toward the eastern Mediterranean gas

Despite the prevailing concept that Russia has no interest in gas discoveries of the eastern Mediterranean region, it seems that the Russian officials have finally realized the significance of this region, not only for the sake of gas but also for being of a special strategic nature, which pushed them, during recent years, to get involved in gas projects at all levels. Since 2013, Russia has been accessing the Lebanese gas market where four major Russian oil and gas companies, Rosneft and Gazprom State-owned companies and Novatek and Lukoil private sector companies, announced their interest in investing in ten blocks in the Lebanese Exclusive Zone (Sputnik News, 2013). In the same month, Gobran Basil, Lebanon’s Minister of Energy, asserted during his visit to Moscow that his country has signed a memorandum of cooperation in the field of energy with the Russian side by which Russia is allowed to conduct natural gas exploration and development off the Lebanese coasts (Stergiou, 2017, p. 107).

At the Syrian level, in spite of the ongoing state of war for more than five years that resulted in a fierce struggle for power, on December 25, 2013, Russia could manage signing an agreement with the Syrian authorities through the government-controlled Soyuzneftegas Group. By this agreement, the company shall carry out survey and exploration off the Syrian coasts in what is called Block 2 for 25 years with investments estimated at $90m (Coats, 2014), of which $15m is dedicated to cover the costs of the survey study costs and another $75 for the initial drilling works. This concession is considered the first to be signed in relation to marine areas off the coasts of Syria in the Mediterranean Sea. It is worth mentioning that the current onshore gas and oil fields are located in Euphrates River basin and are considered quite small as per other discoveries standards in the Middle East. These fields are currently under the control of the Assad’s opposition groups, in addition to the embargo imposed on their exports by the International Security Council (Henderson, 2013).

Despite the tense situation in the Palestinian arena, Russia continued its efforts to place a foothold in the Palestinian gas, which could potentially be benefitted by in case of reaching an agreement with the Israeli side in the future. On January 23, 2014, the Palestinian President, Mahmoud Abbas Abu Mazen, signed, during his visit to the capital city of Moscow and meeting the Russian President, Vladimir Putin, and his Prime Minister, Dmitry
Medvedev, an agreement that entitles the Russian party to invest in the development of Gaza Marine fields off Gaza Strip coasts (Yorgancioglu, 2015, p. 1). On June 21, 2014, the Undersecretary of Ministry of National Economy, Taiseer Amr, and the Deputy Minister of Economic Development in Russia, Lechachov, signed the first round protocol for the meetings of the high-level Palestinian–Russian action group to hold consultations in the economic and investment issues with the participation of the Palestinian Ambassador to Russia, Fa’ed Mostafa. According to the protocol, the two sides agree to study the possible options for cooperation in the field of gas, oil, electric energy, industry and transportation, as well as activating cooperation projects of priority between Russia and Palestine including processing the financing issues. In the same context, the two sides confirmed the role of Gazprom in studying the cooperation possibility with the Palestinian Investment Fund in the field of gas and oil exploration and extraction. The two parties also pointed out that Technopromexport is ready to take part in building the power plants in Palestine after determining the sources of financing the construction (Palestine Today, 2014). By September 2015, Abu Mazen visited Moscow once more, where he further discussed with the Russian President, Vladimir Putin, the means of cooperation in the energy projects in Palestine, and in particular the possibility that Gazprom Company develops Gaza Marine Field, but no specific clear formula was reached in light of the continuous opposition of Israel (Sputnik Arabic, 2015).

Egypt has also been an area of the Russian interest in gas, especially after the discovery of “Zohr” Field with its huge reserves. This was revealed after the announcement of Igor Sechin, CEO of Rosneft, on December 12, 2016, that his company would enter into the agreement of “Shorouk” concession, following an agreement signed between the Italian company “Eni” and his company. In accordance with that agreement, Rosneft owns 30 per cent of Shorouk concession worth $1.1bn. Furthermore, the Russian company owns 15 per cent of the shares of the concession operating company. This was a coalition between IOK, a branch of “Eni” in Egypt, and Egyptian Natural Gas Holding Company. Moreover, there is an option for Rosneft to buy an additional 5 per cent share under the same conditions. Thus, Rosneft owns a share in the largest gas field ever discovered in the Mediterranean, Zohr Field, whose reserves are estimated at 850 billion cubic meters of gas (Deloitte, 2017).

On the Israeli level, Russian attempts to take part and benefit by the huge amounts of gas discovered have not stopped since 2012. Gazprom Company bid for a share of 30 per cent of the concession of Leviathan Field. The Russian company news agency reported that it had submitted the highest bid, yet eventually lost the bid for the Australian Woodside Energy, a company that was shut down shortly afterward. It is reported that the Russian President, Vladimir Putin, had visited Israel in July 2012 to support the Russian state-owned Company (Stergiou, 2017, p. 106).

The Russian pursuit continued to infiltrate into the Israeli gas market, until Gazprom was able, in February 2013, to persuade the Israeli side to cooperate, a matter that resulted in signing an agreement between the company and the Israeli side to exclusively obtain liquefied natural gas from Tamara and Dalit Fields for 20 years (Thompson and Sarah, 2015, p. 6).

Although the agreement has not been translated into reality and has not been applied, it could be considered a serious attempt by Russia to hold a significant position on the Israeli gas map (Thompson and Sarah, 2015, p. 7). The Russian efforts have not stopped at this point; several months after signing the agreement, Gazprom entered into a new round of negotiations with the aim of buying 30 per cent share of Leviathan gas field. The offer included introducing a new strategic partner in the field that would offer what the current
partners could not, especially the financial capacity and the technical and managerial expertise that could exploit the huge reserves of the field as soon as possible. In spite of the extreme enthusiasm of Dalik Group officials to introduce the Russian company, the American partner in the field, Nobel Energy Company, objected. The company preferred to introduce a Western and not a Russian party, in particular the Australian Woodside Company, which had to drop out at the last minute before the signing of contracts with the justification of the instability of the Israeli gas sector investments. It is worth mentioning that a number of major companies operating in the oil and gas sector, such as the South Korean Kogas, the Chinese CNOOC and the Australian Woodside, have showed interest in entering into a partnership of the field of Leviathan due to its strategic importance as it contains large quantities of gas (Cohen, 2016a).

Despite the obstacles that the partners placed in front of the Russian state-owned company, Russian officials did not despair and continued their attempts. In the same context, a Russian delegation, including a number of representatives of companies operating in the gas sector, headed by Deputy Minister of Energy Anton Inyutsyn went to Israel on a two-day visit on July 14, 2015, to discuss possible cooperation in the field of natural gas. On the sidelines of the visit, Inyutsyn met the head of Manufactures Association, “Shraga Brosh,” and the representatives of the companies to discuss ways of strengthening Israeli–Russian cooperation, especially in the field of energy transfer and gas export, as well as strengthening cooperation and exchange of information in the same field (Cohen, 2016b). However, the Russian attempts relatively paid off on June 13, 2016, after Israeli Prime Minister Benjamin Netanyahu called on Russian companies to invest in the Israeli gas sector in the Mediterranean during a joint press conference with President Vladimir Putin in Moscow. Netanyahu stated “Our doors are open to all companies with extensive experience in the development of the gas field, including Russian companies for sure” (Globes, 2016).

3.3.1 Reasons behind Israeli acceptance of Russian gas partnership. The above-mentioned discussion shows that Israel has opened the door to Russian investments in the field of gas, due to several reasons that are not only related to the special aspects of energy but also to political and geo-strategic ends, at the forefront of which are the following:

- **Protecting Israeli gas facilities in the East Mediterranean.** It is known that Hezbollah is the main, if not the only, threat to the gas infrastructure in Israeli fields. Therefore, it was natural to turn Russia into a balanced element in the Israeli energy equation that would represent a self-securing factor. As Hezbollah is one of the main pillars of the Russian–Shiite alliance in the region, Hezbollah would not harm the interest of one of its most important allies in the international arena represented by the Russian side. This is what was explicitly expressed by the Russian President during his attempts to convince the Israeli prime minister to develop a partnership with Gazprom in the Leviathan Field when the Russians promised to prevent extremist groups from attacking the Israeli gas infrastructure.

- **Ensuring the provision of a channel for the export of Israeli gas:** As the Russian involvement represents an optimal solution in the process of exporting gas to other countries, especially after Moscow announced its commitment to invest tens of billions of dollars not only in development processes but also in transferring and exporting of Leviathan gas field, particularly at the time when Tel Aviv suffered from the failure of reaching an agreement with other countries in the region, especially Turkey and Cyprus, on exporting its gas to Europe (Josh, 2016).
3.4 US strategy toward the eastern Mediterranean gas

A major breakthrough in gas discoveries in the eastern Mediterranean region has raised tension among countries in the region. Hydrocarbon resources have become a new source of regional conflict, which has been reflected in US attitudes toward the eastern Mediterranean gas discoveries. Therefore, the US vision for Mediterranean gas is governed by three main determinants:

1. **Gas as an access for peace in the region and the preservation of Israel’s security**: The USA attempted to use and adapt natural gas in the framework of the Israeli–Palestinian peace process. This was reflected in the proposal made by John Kerry, US Secretary of State, in May 2013 in what is named as “The Economic Plan for the Palestinian Territories” or “Palestine Economy Initiative,” which aims at developing the economy in the West Bank and Gaza Strip for three years as a foundation for a comprehensive political settlement to end the Israeli–Palestinian conflict (DE Micco, 2014: 20). The initiative also focused on the gas issue and suggested the necessity to start negotiations between both parties to develop “Gaza Marine” field to make it easy to construct four power stations in Gaza Strip (Office of The Quartet Representative Tony Blair, 2013).

2. **Israeli security**: On the level of the direct Israeli security, the USA conducted some naval military maneuvers alongside Israel and Greece from March 26 to April 5 with the purpose of defending natural gas drilling facilities in the Mediterranean (Gabe, 2012).

3. **Gas as a tool to bring its allies closer**: It is known that the eastern Mediterranean region includes a number of USA’s allies whose interrelations are a relative deteriorating as per each case independently. At the Israeli–Turkish level, many US officials, in the forefront comes the American diplomat Amos Hochstein, the special envoy of the US Secretary of State for Energy, have emphasized on August 21, 2016, that the large quantities of gas in the eastern Mediterranean region represent a real opportunity for the countries of the region, especially Israel and Turkey, to strengthen their relationship, particularly as Israel continues to develop Leviathan Field and the possibility to construct a pipeline to export the Israeli gas via Turkey to Europe. Thus, the USA supported Israeli–Turkish reconciliation agreement as it paves the way for this process (Wainer, 2016).

4. **Achieving economic gains and interests**: This could be done through the control of US companies, in particular, “Nobel Energy,” on gas investments in the Levant Basin, especially off the Israeli and Cypriot coasts and, in particular, “Aphrodite” Field located in Block 12. However, it seems that the American companies have not been satisfied with those investments, as they are seeking to expand them, especially in the Lebanese maritime areas, which can only be achieved if the American mediation efforts succeed to end the Israeli–Lebanese conflict on the maritime triangle, especially since the Lebanese authorities have warned the American company “Nobel Energy” to carry out any exploration activities in the disputed area with Israel (DE Micco, 2014, p. 20).

4. Conclusion

The huge gas discoveries in the eastern Mediterranean region have become the focus of all major international powers, especially the USA, Russia and the EU. The region is seen as the future of the world’s gas production. The motives of international powers to take care of the
region’s gas vary to great extent. However, the EU sees otherwise as it represents a real opportunity to ensure energy security through reducing the dependence on Russian gas, while Russia and USA focus mainly on the political aspect more than the economic one. Moreover, the equation of exploration and discovery of gas has been different recently. The American and European companies are no longer the only dominants parties over the gas market as Russia has begun to gradually penetrate the region.

On the other hand, it is quite clear that the Russian penetration method of the gas market is different from the European and American ones. While European and American companies are focusing on vigorously accessing and bidding to obtain exploration rights in offshore concession areas offered by the coastal state, Russia is adopting a different pattern that mainly depends on buying shares of already discovered fields via American and European companies. The exception shall be in the case when Russia obtains the concession right for exploration in Block 2 off the Syrian coast, which could be read in a purely political framework regarding the Russian presence in the region to support the regime of Bashar Al-Assad, not economically.

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Further reading


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The journal would like to bring to the attention of its readers that the issue REPS 3.2 was accidentally published as REPS 13.2. This was due to an editorial error and Emerald sincerely apologizes for this.
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