Future of Egyptian female entrepreneurs post COVID-19

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Abstract

Purpose – Currently, COVID-19 delayed economic growth and forced many businesses to shut down. Both formal and informal entrepreneurs are trying to develop a way out to survive. To measure the impact of the current crisis it is important to consider that many females are unrecorded in the formal market due to their secondary jobs as housewives. This paper explores some of the determinants that contribute in the acceleration of the Egyptian female entrepreneurs (EFEs) to participate in the labour force.

Design/methodology/approach – The Dynamic model can determine the link between EG and Egyptian female labour force participation (EFLFP) for the period between 1990 and 2019. The cointegration test provides an insight on the future path of the relation and the significant role of EFEs in the labour market.

Findings – The outcomes point out the existence of a positive significant impact by the EG on the EFLFP and a fluctuating relation between fertility rates and the EFLFP. The results support the literature and highlight the current challenges, as the EFLFP is minute due to the increase of EG. Taking into consideration that many female activities are unrecorded and official statistics only counts the monetarist economic activities and does not include the secondary and mandatory activities – delivered at house. Results provide guidance on setting the required strategies and policies to survive after the corona crisis.

Research limitations/implications – The study cover only the time interval during 1990 and 2020. No available data before this interval.

Practical implications – Egyptian entrepreneurs is challenged with numerous obstacles difficulties such as lack of experience, shortages of finance, marketing channels and finally the pandemic. On ground many entrepreneurs depend on starting their business using a bootstrapping approach to overcome such obstacles and focuses on primary activities. In developing countries the importance role of female entrepreneurs needs to be disseminated as they can function efficiently from home and can balance between house commitment and the country commitments. Using technology can help in measure the female participation and foster their education to enter entrepreneurial activities and accelerate development and growth.

Social implications – In developing countries the importance role of female entrepreneurs needs to be disseminated as they can function efficiently from home and can balance between house commitment and the country commitments. Using technology can help in measure the female participation and foster their education to enter entrepreneurial activities and accelerate development and growth.

Originality/value – The current study contributes to the new stream of empirical analysis that provides evidence of the role of EFEs in one of the highest population developing countries (Egypt) during the time of corona virus. Also, shows the impact of COVID-19 that forced EFEs to develop micro-businesses. Results point out to the minor role of EFEs in the formal economic activities and provide an insight on the required regulations and policies to accelerate EFEs. Female activities in the informal market that are unmeasured lead to underestimating the female contribution. As well, the indirect role of female at house is not included in the data.

Keywords COVID-19, Dynamic model, Economic growth, Female entrepreneurs

Paper type Research paper

1. Introduction

Entrepreneur's reaction and agility to adapt depends on the availability of information provided by the media and the government that considered less transparent in developing countries. Entrepreneurs describe COVID-19 as a natural disaster that must overcome it, as it is expected to occur again in the future (Villar and Miralles, 2019). During disaster, many entrepreneurs adopted a frugality approach to sustain for a longer time where they depended

JEL Classification — J16, J21, C36

on cutting costs. During COVID-19, female entrepreneurs (FEs) forced to shut down their businesses such as nurseries, restaurants, training centres, fitness centres and beauty centres . . .etc., therefore increasing their financial risk.

Scholars showed that entrepreneurs are the engine for economic growth (EG) due to the contribution they provide either in traditional or non-traditional sectors. In addition to absorbing the unemployed ones, (Wennekers and Thurik, 1999; Acs and Armington, 2002; Klapper and Quesada Delgado, 2007; Naude *et al.*, 2008; Lechman and Okonowicz, 2013; Herrington and Kew, 2013; Meyer and Meyer, 2017). FEs activities are present in many unregistered businesses as they start from home using the bootstrapping approach to engage in creating income. Usually less-developed countries are dominated by agricultural activities depend on FEs to raise their family's standard of living. Other females are not fully equipped with the required skills and self-confidence to enter the market, as they are afraid of failure and depressed from the business barriers such as culture prejudices – many associations tend to supply male-owned businesses only (Cheng, 2018). On the other hand, many self-employed females are forced to be entrepreneurs due to their need to cover their family's needs. Urban females' target to create a balance between their family commitments and their business scopes (Williams, 2020).

1.1 Research questions

(1) How the economic growth affects the EFLFP during the period 1990–2019?

(2) What are the other determinants that affects EFLFP participation?

(3) Identify the strategies that female entrepreneur apply post COVID-19?

1.2 Research hypothesis

(1) Economic growth accelerates EFLFP

(2) Fertility rate hinder EFLFP

The current study aims to test for the long-term relation between economic growth (EG) and the Egyptian female labour force participation (EFLFP) during 1990–2019. The research hypothesis proposes the existence of a positive influence on EG and EFLFP. As well, testing the long-term relation between divorce rates and the EFLFP. This paper is design to start with reviewing the literature. Followed by the data description of the economic model and the econometric methodology in Section 3. Then followed by Section 4 reports the model results. Finally, conclusion and policy recommendations in the light of the pandemic effects.

2. Empirical review
Growth theory has suggested that economic growth is depending on the gathering of the economic assets and the yield on these assets, which will depend on the technological advancements and the adequacy which the assets are being used. Gender equality can participate in enhancing the economic growth and productivity by raising the physical capital; sustain the stock of human capital and increasing labour productivity. Gender gaps in employment have the similar deformation on the economy as do gender gaps in education.

2.1 Relation between economic growth (EG) female participation in labour market
Scholars debated about the role of female on EG. Becker (1965), Heckman (1978) and Killingsworth (1983) they argued that since females have many responsibilities within the family such as children and house management they are loaded with many tasks which

decline their productivity in work and slow down the EG. In 1994, Goldin provides evidence of the inverse relation of female participation in labour and EG. He claimed that to allow females to have a positive impact on EG a diversified economic structure is needed especially traditional economies are required to increase industrial activities.

On the other side, Tansel (2002) and Mollet (2011) argued that female labour force participation has a positive impact on development and they are driving EG. However, the investigation of the researcher relay of the availability of data and the measure they use it, despite the debate of the impact whether it is positive or negative or absent of the relation Gaddis and Klasen (2014). The secondary role of female that is uncounted in official statistics is also a debatable one, as many tasks are non-monetized or underestimated. In addition, many determinants affect female participation in terms of types of jobs, culture, tradition, health, education, wage level and fringe benefits.

Despite the continuous development, female slight educational improvements and the value of their time in the market upsurges alongside the demand-side pull from increasing service industries. Recently, numerous females break free of the failure and verify themselves as successful entrepreneurs. In high-income countries, the rise in young females labour force participation categorized by female gaining the possibility of shifting into paid, often white-collar work, while the opportunity cost of departing the workforce for childcare increases. Female commitments to childcare is underestimate despite the indirect role of raising a child that will be participate in the labour force later.

The female role on EG is an indirect effect as her role at house and raising children is not recorded in the country's production. Her role as an engine to manage the family's stability and provide healthy and educated youth is not count as well. In addition to her role of earning income from handmade and house products is also is uncounted. Investing on educating females indirectly affects the countries EG. Education accelerates the female participation and verifies themselves as successful entrepreneurs. The number of females that are preliminary up their own businesses is increasing day after another.

In order to emphasize whether the increase in female participation in an economy's labour force, a wider look need to take on the different perspectives regarding the issue. Even though one would think that any increase in the number of labour force would promote economic growth because of an increase in domestic production, several opinions declare the opposing sentiment when it comes to the increase of the participation of "females" in the labour force. In other words, some perspectives support the stance that participation of females in the labour force has a negative impact on EG.

2.2 Impact of COVID-19 on female entrepreneurs (FEs)

During crisis uncertainty, increases and business become more volatile under the current situation. However, health crisis has different consequences, not just because of physical weakness, but also because of the economic status. The capacity of countries and individuals to bounce back depends on the available information and the possible solutions. Research investigates for the factors that can help countries to overcome any crisis referring to the population structure, Lee et al. (2016) indicate that the overall risk of the labour market for older workers was found to be greater than youth. Other focuses on the health expenditures level and health policies as it reflected on the time taken to control the disease or the pandemic, Qiu et al. (2017). Across the globe, it is clear that the consequences from the current crisis are dramatic but there must be away out to survive.

Globally FEs survived during the virus under economic and family stress, the risk of domestic violence increases during lock down as it reflected on their in ability to get out for earning money, especially in informal and casual labour. The unrecorded role of the female in many sectors is increasing in developing countries more than developed especially

non-working mothers, as they are loaded with a more stressful life style during the lockdown. During 2008 crisis, female-led business in Poland, France and Spain were strictly affected (Buratti *et al.*, 2017). While in 2020, COVID-19 the impact is more specifically under the lock down and the strict measure of social distancing. The previous crisis showed no differences in the vulnerability of businesses between male and female owners (female-led businesses were mainly in the health, education and personal services sector). However, COVID-19 and the restrictions significantly limited the retail of these services, which aggregated by the closedown of educational institution. Furthermore, in European countries female-led SMEs are also intense in the sectors that followed lockdown measures, Koltai *et al.* (2020). While in developing countries, FEs crushed after the current pandemic pushing them to digitalize their operations and accelerate applying remote management to rebounce back. In Zambia and South Africa FEs survived depending on the cellular phones for business and social communication purposes, Kayamba (2007).

Small and medium enterprises (SMEs) are more vulnerable due to their higher level of instability and lower resilience in term of their size. Entrepreneurs response varies depending on the importance of the product they provide. If their activities depend on food, medical products, technology or Internet base and education all were in the safe zone while other faces high risk as they lose their earning. SMEs in service sector, i.e. retailing, tourism, hospitality and transport, are from the losers sectors. In addition, the COVID-19 did not differentiate between female and male in business as both suffered equally in time of crisis but they discriminate female in time of expansion.

2.3 Egyptian females' participation in the labour market (EFLFP)

EFs struggle similarly as many developing countries female, however, the pandemic deepen the vulnerability of the Egyptian labour market. Egypt has a huge problem of wide gender wage gap, with a rank of 134 from 144 countries and this problem remains challenging till this day with regards to EG and development in Egypt (WEF, 2018). In 2018, International Labour Office showed that 53.2% from female jobs are mainly in the informal, insecure and poor jobs; low-skilled wages or in areas where social protection is not available. The largest share of female informal employment especially in agriculture with an 81%, followed by a large difference in services service around 16%. According to the (WDI) world development indicator (2020), during the period from the 1990s until present the unemployment for male range between 5 and 10% while female unemployment rate range between 17 and 25%. During the same period the percentage of self-employed female, range from 32 to 52% while male rate range between 30 and 45% (WDI, 2020). This referred to as the structure of the Egyptian economy that was depending on the agriculture sector. An activity that managed by female and it is not recorded in the country labour force participation despite her productivity to create income; as well, they are deprived from insurance and pensions. In rural areas, the female's main responsibility is to manage the house and raise children.

In 2020, CAPMAS survey showed that from 62% of the employed labour (formal workers) around 26% of the working labour force becomes unemployed and 56% work less number of hours and 18% are intermittent workers. The informal workers are from the most affected groups especially they are deprived from social security and health insurance. They reasoned this due to the disproportionate EG as the construction and transportation grew more than agriculture and industrialization and other sectors. Survey also showed that almost half of the families depended on borrowing from relatives to overcome the current situation and only 5.4% from irregular employment grant. Additionally, the "World Economic Forum" showed that despite all the economic reforms that are taking place in Egypt, the FLFP remains low at 23.1% in year 2017.

According to the united nation data (2020), the married growth rate in the rural area during the period 1980–2000 was 7%, which is higher than the urban area that was 3%.

During the period from 1990 until 2000, the rate got higher in the rural to record a growth rate of 11% and the urban of 7%. After 2000, the youth rate at the age of married doubled than before 2000 the increasing rate of youth reflected in accelerating the married growth rate during the period from 2000 until 2017 as the married rate to record a 68% in the urban area and 61% in rural area. This increasing rate reflects on decreasing female's participation in work in the private sector as they approach the age of marriage. Getting married and carrying a family responsibility which is characterized by unpaid job and uncounted contribution in the economic activity despite the indirect effects on raising children and carrying family chores.

From the previous review the increasing rate of marriage during the last twenty years and the few opportunities for females due to the structure of the economic activity increases the female self-employment rate from 32.1 to 52.3 % while the male represent 29% and 43% during the same period. The female demand for work increased with the increase of the divorce rate for purpose of covering her expenses. The recent data showed that divorce rates increased during the period from 2017 till 2000 as the urban area reached 67% while rural area only 47% the current situation is completely different than the period from 1980 until 2000 as the rate in the urban was 37% and the rural area was 65%. The current situation explains one of the main forces that females starts to search for small business to earn her living, UN Database (2020). The female dependence on herself creates more pressure in the current pandemic as the fragility of the tradition a business stress her to develop the type of need of business to overcome the current pandemic. The decline in the percentage from total but also the total labour force has increased in terms of number due to the increase in population, however, the female percentage maintained to be higher since 2010 until present. According to the World Bank enterprise survey (2020), the SME in Egypt almost doubled between 2005 and 2019 while large firms declined by 12% during the same interval, see the following table.

The Egyptian females' share in managerial positions declined while their share as professionals improved – as the white collars females' share as technicians, social professionals and clerical support workers, while blue-collar occupations witnessed a decline in females' employment share (Salman and Bassim, 2019). Still, males' share in economic activities is higher than of females as seen in Figure 1, except human and social activities and education. In recent study, show the existence of negative and significant relation between education and female entrepreneurs, Salman *et al.* (2020).

3. Economic model and methodology

3.1 The economic model
Mapping the literature showed the importance of labour to EG and to serve the aim of the paper which assess the impact of EG on female participation. The following model specification is deployed to test for the hypothesis proposed. The theoretical link between female labour force participation and economic performance is in addition to other explanatory factors. This study uses the Egyptian Female Labour Force [EFLFP] participation (as a dependent variable), which explains females' [15 years old and above] share in the country's total labour force and the explanatory variable is the economic growth rate GDPGR. Adding other variables such as fertility rate, married female, the model is expressed as follows:

$$\text{FLFP} = \alpha_0 + \delta_1 \text{LnGDPpc} + \delta_2 \text{FR} + \delta_3 \text{FPOP} +_{it} \tag{1}$$

3.2 Data and methodology
The variables used in the model are the Egyptian Female labour force participation (EFLFP) which is used as a measure of the Egyptian female participation in the total labour market,
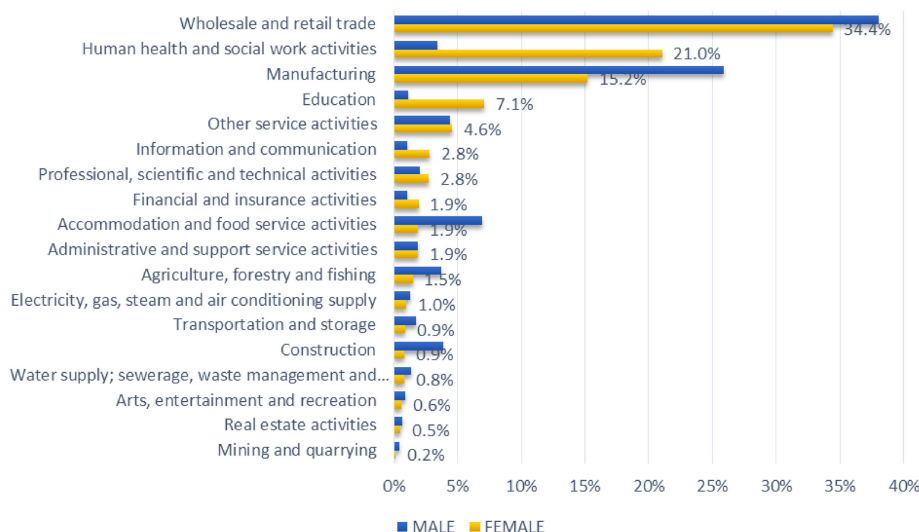
Gross domestic product per capita using purchasing power parity (GDPpc), fertility rate (FR) and percentage of female from total population (FPOP). The data extracted from the (WDI) World Bank development indicator statistics. This study applies dynamic approaches during the period 1990–2019. To verify for the presence of the long-run equilibrium relationship among variables, the study starts by using the Johansen co-integration test (1991). The Johansen test is base on the Vector Autoregressive models (VARs). The Johansen test the hypothesis of the long-run equilibrium relationships. And to determine the order of integration of each series I(d) of variables included in the model it is applied by using ADF test (unit root test).

3.2.1 The stationarity test (unit root test). The test starts by investigating for the stationary of the variables; the estimation of variables parameters using OLS gets a very high R^2, which leads to spurious results. The test for a unit root is to examine the significance of the coefficient of (Y_{t-1}) and it cannot reject the hypothesis of unit root when the Augmented Dickey–Fuller unit root test is less than the critical values.

3.2.2 The co-integration test. The stationary results have shown that the variables are integrated of order one, I (1). Then the next step is to determine existence of at least one linear combination I (0) of these variables is a stable and non-spurious relationship exists among variables. After this, the Johansen co-integration test to determine the number of co-integrated vectors for any given number of non-stationary variables of the same order. This test depends on the optimal lag length that determines by vector error correction model using either the Akaike Information Criterion (AIC) or Schwartz Bayesian Criterion (SBC) statistics.

3.2.3 Auto regressive distributed lag (ARDL). Autoregressive distributed lag (ARDL) models are an integral part of estimating scientific processes over time. Coefficients tell us about the immediate effect of some variables but have little to say about the long-run effect. This model allows us to determine the effects that are of a change in a policy variable. Contemporary econometric test tends to investigate for the long-run relation between variables using ARDL. To apply the model there is a best condition to employ it that some of the variables are stationary in the first difference and some of the variables stationary in the second difference.

4. Results

The study starts by testing for stationary and outcomes showed that all variables are non-stationary at levels nevertheless they are stationary at their first differences at a 5% level of significance, see Table 1. Consequently the time series are integrated of order one I (1) and the by using minimum value of the AIC criterion the optimal lag length is determined.

Variables	Lags	Constant	Lags	Constant and trend
EFLFP	0	−1.561	0	−2.044
GDPpc	0	−1.304	0	−0.468
FR	0	−2.089	0	−1.244
FPOP	0	−2.271	0	−0.692
DEFLFP	0	−6.551***	0	−6.714***
DGDPpc	0	−4.229**	0	−4.491**
DFR	6	−0.561	7	−10.998***
FPOP	2	−5.778**	2	−5.085**

Note(s): (**) and (***) indicate 5% and 1% level of significant, respectively
Akaike Information criteria (AIC) is used to select the lag length
DX represents the first difference of variable x
DDX represents the second difference of variable x

Table 1.
Augmented Dickey–Fuller unit root tests

Correlation test for the variables of the model showed female as percentage of population is highly correlated – then this variable is dropped from the model (see Table 2).

	FLFP	FR	GDP_pc	FEM_POP
FLFP	1.000000			
FR	0.283423	1.000000		
GDP_pc	0.464759	−0.414258	1.000000	−0.887034
FEM_POP	−0.404062	0.667412	−0.887034	1.000000

Table 2.
Correlation test

To determine the optimal lag: Following the stationary test that included variables are I (1) the study test for the existence of a long-run equilibrium relationship. Thus, a VAR estimate is used to select the optimal lag length. It is often advised to use the Akaike Selection Criterion (AIC) in selecting the lag length that "prefers" the more parsimonious models. However, the information criterion with the smallest criterion value evidences the ideal lag length to employ. Results from AIC advice to adopt ARDL (3, 3 and 4) see the following Figure 2.

The autoregressive model ARDL results (see Table 3).

The results showed a significant positive effect of GDP per capita (GDPpc) on the EFLFP and the relation is negative. Also, a negative significant relation is shown for the fertility rate on the EFLFPR. In case of increase EFLFP an increase in GDPpc by 0.001481. This low percentage however this is in the long run. On the other side, the relation of the fertility rate is not stable in the end. To verify whether the residuals from the model are serially uncorrelated, a Breusch–Godfrey Serial Correlation LM Test is applied to test if the residuals are serially uncorrelated; the F-statistic p-value of 0.544 indicates that we will fail to reject this null. We therefore conclude that the residuals are serially uncorrelated, as seen from the following Table 4.
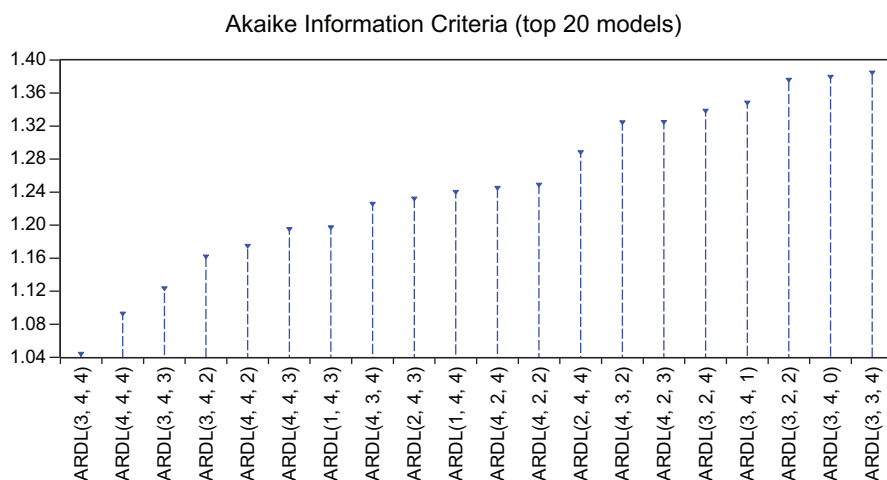
Akaike Information Criteria (top 20 models)

Figure 2.
Optimal lag length

Selected model: ARDL(3, 2, 2)

Variable	Coefficient	Std. error	t-statistic	Prob.*
FLFP(−1)	−0.151637	0.204423	−0.741782	0.4683
FLFP(−2)	−0.420184	0.208786	−2.012510	0.0603
FLFP(−3)	−0.406360	0.172278	−2.358749	0.0306
FR	114.6001	21.72504	5.275023	0.0001
FR(−1)	−217.5530	41.76685	−5.208747	0.0001
FR(−2)	108.5100	21.16286	5.127377	0.0001
GDP_pc(−1)	0.000496	0.000458	1.082470	0.2942
GDP_pc(−2)	0.000751	0.000500	1.502022	0.1514
GDP_pc(−3)	0.001481	0.000448	3.305423	0.0042
C	20.33486	3.787849	5.368444	0.0001
R-squared	0.877245	Mean dependent var.		22.59171
Adjusted R-squared	0.812258	S.D. dependent var.		0.945436

Note(s): *p-values and any subsequent tests do not account for model

Table 3.
Dependent
variable: FLFP

F-statistic	0.544763	Prob. $F(2,15)$		0.5910
Obs*R-squared	1.828346	Prob. Chi-Square(2)		0.4008

Table 4.
Breusch-Godfrey serial
correlation LM test

Similarly, testing for residual homoscedasticity a Breusch–Pagan–Godfrey test is applied. Since the null hypothesis is that the residuals are homoscedastic, the F-statistic p-value of 0.5180 indicates that we will fail to reject this null even for a significance level of 10%. We therefore conclude that the residuals are homoscedastic at 10% significance (see Table 5).

F-statistic	0.518038	Prob. $F(9,17)$		0.8418
Obs*R-squared	5.811153	Prob. Chi-Square(9)		0.7587
Scaled explained SS	1.746819	Prob. Chi-Square(9)		0.9949

Table 5.
Heteroscedasticity test:
Breusch–Pagan–
Godfrey

To test for the presence of cointegration a Long Run Form and Bounds Test is applied. Below the Table 6 of coefficient estimates. The hypothesis is stated as:

H0. No cointegration equation

H1. H0 is not true

Test statistic	Value	Signif	I(0)	I(1)
			Asymptotic: $n = 1{,}000$	
F-statistic	8.673955	10%	2.63	3.35
k	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

Table 6.
Bound test

Rejection of the null hypothesis is at the relevant statistical level, 10, 5, 1% level.

The *F*-statistic value 8.673955 is large enough to reject the null hypothesis at the 5% significance level, but not necessarily lower. We will consider only short-run models since the variables show no evidence of long-run relationship as indicated from the Bound tests.

The previous results showed the absent of long-run relation which supported the deprivation of the EFLFP and the available data ignore the indirect effects of female as its role in the informal market. Such results showed the important of designing new measure to include the nonpaid and the informal entrepreneurs' activities in the economic activities.

5. Conclusion

This paper contributes to literature by providing evidence on the positive but marginal role of female participation. It is vital to highlight the doubling in the number of population in the last thirty years that created a challenge for future decision makers. As fertility rate increases thus hindering females to participate in the labour market. This can be explained due to the increase in the married rate during the last twenty years. Increasing marriage and high fertility direct a group of Egyptian females to prioritize their choices by deciding to carry family responsibility. While another group took the hard way and tried to participate in the formal labour market while carrying their family's responsibility.

Furthermore, the on-going COVID-19 hindered economic activities thus increasing the gender gap. Under the current recession and the decline in job opportunities in the traditional activities had a significant effect on sectors with high female employment share in contrast to "normal" recessions which affects men's employment more severely than female's employment. A situation that forced many females to search and utilize the available personal and home resources searching for providing products or service via the Internet from home to avoid the risk poverty. The availability of the female in business is characterized by traditional activities were few provide business ideas using technology and innovation, a fact that urged more females in investing in their education especially as it adds more value to their businesses thus accelerating their participation.

6. Policy recommendation

This section discusses the importance of providing social securities, health insurance and increase the unemployment benefit – post corona crisis. In addition, providing financial support to the low-level of income families. Moreover, simplifying the rules of regulation for small businesses to transfer them into formal activities also, exempting them from taxation for a certain interval of time and provide more training courses.

As well, apply refundable loans to micro projects to accelerate bootstrapping projects; to encourage younger females participating in the labour market. Applying substantial possessions to drivers supporting FEs and couturier to the socio-economic framework should establish a key share of government policies targeting to create better quality jobs and boosting greater participation of young females. Deepening education and removing barriers, however, is just one way of an ideal government plan to increase EFLFP. It also can be via stimulating females in formal job opportunities especially in SMEs, educational activities, medical sectors and financial services. Females have been participating in all economic sectors for decades, from farming to manufacturing, medicine, engineering, banking and research. The services sector appears to be the growing sector that provides more opportunities in future expansions. The fast growing technology can also attract female to acknowledge her capabilities and encourage her to participate in better opportunities in the labour market.

Abbreviations

ARDL	Auto Regressive Distributed Lag
EFLFP	Egyptian Female labour force participation
EF	Entrepreneurial female
FR	Fertility rate
FPOP	Female Percentage from total population
GDPpc	Gross domestic product per capita using purchasing power parity
VAR	Vector Autoregressive models
SME	Small and medium and enterprise

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