

“Economic Recovery from Coronavirus Pandemic Crisis: Suggestion Macroeconomic Policies in Knowledge Economic Era to Re-Rise Growth in USA, UK, and Egypt”

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Abstract

This paper aim to suggest the best macroeconomic policy to maintenance economic recovery in USA, UK, and Egypt with and after coronavirus pandemic period, and achieving high economic growth in this three countries as it was before the pandemic and better. So it suggested deferent policies according to the differences among the three countries, with respecting to the statues of USA, and UK as advanced countries, and Egypt as a developing country. We used theoretical and quantitative analysis with getting experience from exiting of the previous recessions, and re-visiting to Taylor principle and rule especially in using interest rate in both short-run and long-run. So we assure on the importance of technological changes through innovation and R&D to keep on autonomous growth in advanced countries in long-run as well as in Egypt, and increasing nominal federal funds rate to 0.7% to reach real federal interest rate in U.S.A to 1.35% in the short-run, rising real interest rate by 0.2% in UK, to become 2.2% or suppose the autonomous component of the real interest rate ($\bar{r} = 1.2$) in short-run in UK, and reducing nominal interest rate in Egypt to 10.3% in short-run. This will lead to achieve the goals of the study and maintenance on economic recovery and rising growth of GDP in USA, UK, and Egypt.

Keywords: Economic Recovery from COVID-19 Crisis. -Macroeconomic Policy in USA, UK, and Egypt. Knowledge Economy.

Introduction

Coronavirus or COVID-19 started from Wuhan, the most populous city in central China, in mid-December 2019, and it spread all over the world through people or trade with China, COVID-19 become Pandemic killed and infection hundreds persons every day, and this pandemic effect on all economic activities of human being, on health, education, agricultural, industry, education, Services, and environment. Economic policies include monetary, fiscal, and trade policies, which divided into sub-policies or economic tools to achieve economic goals, such as interest rate, exchange rate, and money supply in monetary policy; and tax policy, or government expenditure in fiscal policy; and tariff with other trade restrictions, and export subsidies or export promotion in trade policies.

All macroeconomic policies in any country aim to: -

Rise growth rate of GDP

Stable price level or control inflation rate

Support employment rate or decrease unemployment rate.

This goals will have investigated in USA, UK, and Egypt through

era of knowledge economy with coronavirus pandemic. We will have suggested the best economic policies from our perspective in all three countries through and after the period of coronavirus pandemic.

Literature Review:

First paper from International Monetary Fund (IMF), which showed the USA confirmed the first case of COVID-19 in January 2020, and key policy responses in US as of January 7,2021, which started on December 28 , when President Trump signed a US \$877 bn (about 4.5% of GDP) [1]. IMF estimated US \$2.3 trillion coronavirus aid, relief and economy security Act (“CARES Act”), in the same paper, IMF wrote monetary and macro financial policies were taken in USA, as well as UK, and Egypt.

Economic policy response to the pandemic in UK was written by Felix FitzRoy and David Spencer, the authors showed the Job Retention Scheme (JRS) and Universal Credit (UC), with many alternative policiesfor workers and other monetary policies in UK, such as Bank of England cut his interest rate to 0.1%, helping other

banks to cut interest rates on their lending, and helping banks to expand lending, with helping businesses pay their staff and suppliers [1, 2]. Breisinger, C [3]. suggested that covid-19 could reduce national GDP in Egypt by between 0.7 and 0.8 percent (EGP 36 to 41 billion) for each month that the global crisis continues, as a result of the effect of COVID-19 on tourism, payments received from the Suez Canal, and remittances from Egyptians working abroad. There are many studies, such as, which showed that the economic impact and consequences of coronavirus on USA, and the macroeconomic policies, that followed under knowledge economy edge to beat COVID-19, such as Biden-Harris' seven-point plan to beat COVID-19: Ensure all Americans have access to regular, reliable, and free testing [4]. Fix personal protective equipment (PPE) problems for good.

Provide clear, consistent, evidence based guidance for how communities should navigate the pandemic- and the resources for schools, small businesses, and families to make it through. Plan for the effective, equitable distribution of treatments and vaccines because development is not enough if they are not effectively distributed. Protect older Americans and others at high risk. Rebuild and expand defences to predict, prevent, and mitigate pandemic threats, including those coming from China. Implement mask mandates nationwide by working with governors and mayors and by asking the American people to do best: step up in a time of crisis.

The impact of COVID-19 on UK economy was studied by { Marcus R.K (et al.) (2020), Jack Leslie and Charlie McCurdy (2020), and OECD (2020)}, which showed the UK economy was affected by COVID-19 alone would impose a direct health-related economic burden of £39.6 bn. (1.73% of GDP) on the UK economy, the total cost to the economy is £308 bn. (13.5% of GDP); £66bn. (2.9% of GDP) of which is attributable to labour lost from working parents during school closures, and £ 201bn. (8.8% of GDP) of which is attributable to business closures. Suppressing the pandemic over a longer period of time may reduce deaths by 95%, but the total cost to the UK economy also increase to £ 668 bn. (29.2% of GDP), it is greater than the cost of the great recession in 1930s, and the financial crisis in 2008-2009.

Indeed, the economic recovery is started from USA, UK, and Egypt respectively by starting taking vaccines in January, February, and March 2021 in this three countries respectively, this will show from the next section, when we will discuss the coronavirus profile in three countries. In Egypt like many developing countries suffer from negative effect of COVID-19 on the economy, the world bank showed that in Egypt the disruptions caused by the pandemic started in March 2020. In spite of, average real growth has remained positive during FY 2019/20 and foreign reserves continue to be rather ample. Nevertheless, the COVID-19 pandemic has inevitably caused job and income losses, passing additional strains on Egyptian households' livelihoods, and is thus exacerbating the long-standing challenge of job-creation in Egypt,

notably in the formal private sector. In the next section we will show the profile of COVID-19 in USA, UK, and Egypt.

COVID-19 Data Profile in USA, UK, and Egypt.

There are many sources for publishing data and statistics about total cases, number of recovered people, and deaths from COVID-19 around the world like {Johns Hopkins University (JHU), World Health Organization (WHO), European Center for Disease Prevention and Control (ECDC), US Centers for Disease Control and Prevention (US CDC), ... etc}. COVID data tracker from covid.CDC.gov showed that United States at a glance, total cases in US was 29,052,862, total deaths were 527,726, and total vaccines administered 98.2 M in US on March 12, 2021. The total cases and deaths in US through last 30 days was remarkable sharply decreased, which means that after starting vaccinating the COVID-19 becomes under control in US, and economic recovery was started with discovering vaccines and Americans peoples back to their jobs and they knew how to deal with this pandemic [4].

In UK according to JHU CSSE COVID-19 data showed that total cases 4.24M, and total deaths were 125,168 on March12,2021. And according to worldometers. Info that active cases (number of infected people) or total coronavirus currently infected also was decreased sharply from more than 2000k on Dec21,2020 to less than 762k on March10,2021[5].

Egypt also has improvement in recent period, wherever, according to JHU data, that is total cases were 189k, recovered 146k, and deaths less than 12k in Egypt on March12, 2021. The daily new cases and 7-day average were decreased in Egypt from 1,407 and 1,366 to 645 and 599 from Jan.2,2021 to March10, 2021 respectively. This data profile show that improvement in coronavirus statistics in all this three countries US, UK, and Egypt, and the economic recovery was started in this three countries. The question now is that, what are the best macroeconomic policies should be followed to maintenance economic recovery and achieving the long-run economic growth in US, UK, and Egypt?

Knowledge Economy and Macroeconomic policies: Findings and Evidences

It is not surprising that, Knowledge is factor of production, like labor and capital stock. Information about coronavirus infection is the main factor to beat COVID-19, data about number of infected people, recovery, and number of deaths, also know-how about invent vaccine and all information around the world, that were facilitated by good infrastructure of information and communication technology (ICT), R&D and innovation, with efficient macroeconomic policies, which accelerated the recovery from the pandemic in USA, UK, and Egypt. Not only information and knowledge about this pandemic are important, but also knowledge economy with seven (Es) are the main factors to treat and reduce the negative effects of the COVID-19 on economic activities. The 7-Es such as (E-learning, E-commerce, E-finance, E-money, E-government, E-business, and E-industries) are played a vital role in all economic fields and sectors in pandemic period.

We live in knowledge edge, so knowledge is the key factor to beat this virus, with the macroeconomic policies that followed in US, UK, and Egypt, which were concerned with allocating a lot of money to confront this pandemic (such as \$1,9 T Biden bill, and in Egypt more than EGP100bn, which was announced by Sisi in the first stage of emerging this virus). To make testes, save masks and face shields or equipment and medicine to confront COVID-19. Macroeconomic policies that followed in US, UK, and Egypt in coronavirus period were studied by International Monetary Fund (IMF) as key policy responses by country worldwide , so we will depend on this study to show the macroeconomic policy reaction in US, UK, and in Egypt through the COVID-19 period as follow:

Macroeconomic analysis and policy responses to COVID-19 in USA:

Macroeconomic analysis

To understand COVID-19's hit on the economy in USA, consider its effect on different industries. Consumption makes up 70% of America's Gross Domestic Product (GDP), but consumption has slumped as businesses closed and as households hold off on major purchases as they worry about their finances and their jobs. Investment makes up 20% of GDP, but businesses are putting off investment as they wait for clarity on full cost of COVID-19. Arts, entertainment, recreation, and restaurants constitute 4.2% of GDP, with restaurants and movie theatres closed, this figure will be closer to zero until the quarantines are lifted. Manufacturing makes up more than 10.7% of US GDP, but much of this will be disrupted, too, because global supply chains have been obstructed by factory closures and because companies are shutting down factories in anticipation of reduced demand. Ford and GM, for example, have announced temporary closures of car factories

Fiscal Policy:

On Dec.28, 2020 president Trump signed US\$877bn (about 4.5% of GDP) coronavirus relief and government funding bill which includes enhanced unemployment benefits of US\$300 weekly federal enhancement in benefits through March14, direct stimulus payments of \$600 to individuals. On August8, president Trump issued executive orders mostly to address the expirations of certain coronavirus reliefs provided by previous legislations.

US\$483 billion pay check protection program and health care enhancement Act.

An estimated US\$2.3 trillion Coronavirus Aid, Relief and Economy Security Act ("CARES Act")

US\$8.3 billion Coronavirus Preparedness and Response Supplemental Appropriations Act

Monetary and Macro-Financial Policies:

Federal funds rate was lowered by 150bp in March to 0-0.25. purchase of treasury and agency securities in the amount as needed. Federal reserve also introduced facilities to support the flow of credit. Supervisory action. Federal banking supervisors encour-

aged depository institutions to use their capital and liquidity buffers to lend.

Regulatory action. Lower the community bank leverage ratio to 8%.

Fannie Mae and Freddie Mac have announced assistance to borrowers. The previous negative effects were in the first quarter of 2020, but Bureau of Economic Analysis showed that US's GDP by industry was improved, because real GDP increased at an annual rate of 33.4% in the third quarter of 2020, as good macroeconomic policies that followed in US, and as efforts continued to reopen businesses and resume activities that were postponed or restricted due to COVID-19. Private goods-producing industries increased 47.2%, private services-producing industries increased 35.1% and government increased 10.1%. Overall, 21 of 22 industry groups contributed to the third-quarter increase in real GDP . This figures show that the recovery in USA was already started from the third quarter of 2020.

Macroeconomic analysis and policy responses to COVID-19 in UK:

Macroeconomic analysis.

The first confirmed case was reported on January 31, 2020 in UK, the largest economic hit was in 2020 Q2 when GDP fell by 19.8%, reflecting a sharp contraction in April. As USA the UK has improvement in economic indicators and get economic recovery earlier in the third quarter of 2020, because GDP grew by 15.5% in the third quarter but remained some 10% below the pre-pandemic level.

On May10, UK reopening of the economy, since the government set out a roadmap to ease the lockdown in England (Scotland, Wales and North Ireland have separate rules). Reopening too place in three steps starting on May13 and continuing through July, but eventually a second country-wide lockdown was put in place on November5. The educational facilities, construction and manufacturing remained open . On Jun.4,2021, PM Boris Johnson imposed a third coronavirus lockdown across England. The full emergency lockdown, initially expected to end on Feb.15,2021 Britain's recovery from the coronavirus pandemic continued for a third month in a row in July 2020 as shops reopened and manufacturing activity resumed, the Office for National Statistics (ONS) said gross domestic product (GDP) rose by 6.6% in July compared with the previous month .

Fiscal policy

Tax and spending measures to support households and families during the health emergency include: (i) additional funding for the NHS, public services and charities (£48.5 billion), (ii) measures to support businesses (£29 billion), including property tax holidays, direct grants for small firms and firms in the most- affected sectors, and compensation for sick pay leave, and (iii) strengthening the social safety net to support vulnerable people (by £8 billion). In July, the government adopted a package of measures to protect

and create jobs and support the economic recovery. A package of measures announced on Sep.24, 2020 entailed the following: (i) a 6-month job support scheme. (ii) extending the self-employment income support scheme for those continuing to actively trade but face reduced demand due to coronavirus. (iii) extending the temporary 15% VAT cut (from 20 to 5%) for the tourism and hospitality sectors. (iv) allowing to pay VAT payments deferred until end of March. (v) extending the maturity of loans under the CBILS and BBILS to up to 10 years. On Jan.5, 2020, a day after the government imposed its toughest COVID-19 restrictions since last spring (until March8) Chancellor Sunak announced a £4.6 bn fresh financial support package for struggling UK companies. On March3, Chancellor Sunak announced on additional fiscal stimulus of £59 bn (nearly 2.6% of GDP)

Monetary and macro-Financial policies

Key measures include (i) reducing bank rate by 65 basis points to 0.1%. (ii) expanding the central bank's holding of UK government bonds by £450 billion. (iii) introducing a new term funding scheme to reinforce the transmission of rate cut, with additional incentives to lending to the real economy. (iv) HM treasury and BoE have agreed to extend temporally the use of the government's overdraft account at the BoE to provide a short-term source of additional liquidity to the government if needed. (v) launching the joint HM treasury Bank of England COVID corporate financing facility. (vi) activating a contingent the bank's existing sterling liquidity facilities. (vii) together with central banks from Canada, Japan, Euro Area, USA, and Switzerland, further enhancing the provision of liquidity via the standing US dollar liquidity swap line arrangements. (viii) reducing the UK countercyclical capital buffer (CCyB) rate to 0% from a pre-existing path toward 2% by Dec.2020.

The government's stimulus package started to push UK's economy toward recovery again after the third reopened economic activities, such a programme could together create 1.6 million jobs over the next decade, with another positive effects such as low-carbon, closing the huge gaps in social care and in health care .

Deloitte's GDP growth forecast for the UK shows that they expect a contraction in the first quarter of 2021 owing to the impact on activity of restrictions needed to contain the new COVID-19 variant, but they expect improvement in the third quarter of 2021, with the rollout of the vaccine and warmer weather to allow for a modest easing of restrictions, followed by a strong bounce in the third quarter as vaccine coverage exceeds 50% of the population. So they expected increase UK GDP growth from 3.9% in 2021 Q2 to 5.4% in 2021 Q3 . This improvement will continue after vaccine coverage all population in UK.

Macroeconomic Analysis and policies responses to COVID-19 in Egypt:

Macroeconomic analysis

Like the rest of the world, the Egyptian economy will be strong-

ly affected by COVID-19, the UNIDO and IMF estimated that COVID-19 epidemic is likely to impact the Egyptian economy primarily due to declining travel and tourist activity, reduced worker remittances, capital outflows, and slowdown in domestic activities. The weaker demand in the global market will also reduce Egypt's exports as well as earnings from the Suez Canal. The impact on manufacturing, SMEs and their employees follows the global pattern: production decline, loss of jobs and income, loss of remittances, repatriation of migrant workers, and lower trade across borders, informal sector workers and vulnerable groups with little savings are hit hard.

Youth unemployment and under-employment will worsen, particularly among daily labourers, underpaid (women) workers with irregular/ informal contracts and migrant workers. However, a large youth population (almost one third of the total population) may also constitute a potential resource for effective national mobilization in Egyptian recovery .

Fiscal Policy

IMF (2021) showed key policy responses as March4, 2021 as follow:

The government has announced stimulus policies in the USD 6.13 billion package (EGP 100 billion, 1.8% of GDP) to mitigate the economic impact of COVID-19. Pensions have been increased by 14%, expansion of the targeted cash transfer social programs, Takaful and Karama, are also being extended to reach more families. A targeted support initiative for irregular workers in most severely hit sectors has been announced, which will entail EGP 500 in monthly grants for 3 months to close to 1.6 million beneficiaries. A consumer spending initiative of close to EGP 10 billion has been launched to offer citizens two-year, low-interest loans to pay for consumer goods discounted by up to 10-25% and provide ration card subsidies. A new guarantee fund of EGP 2 billion has been formed to guarantee mortgages and consumer loans made by banks and consumer finance companies. To support the health-care sector, EGP 5 billion has been allocated, targeted at providing urgent and necessary medical supplies. Energy costs have been lowered for the entire industrial sector.

Real estate tax relief has been provided for industrial and tourism sectors, and subsidy pay-out for exporters has been stepped up, discount on fuel price has been announced for the aviation sector. As part of the EGP 100 billion stimulus, EGP 50 billion has been announced for the tourism sector. The moratorium on the tax law on agricultural land has been extended for 2 years. The stamp duty on transactions and tax on dividends have been reduced. Capital gain tax has been postponed until further notice . FY2020-2021 budget targets overall deficit 6.3% of GDP, supported by an increase in total revenues by 13.6% and total expenditures by 8.8% , so total revenues EGP 1,286 bn, and total expenditures EGP 1,713.2 bn . According to data of Egyptian Ministry of finance the changes in total revenues through FY 2020-2021 were as follow: 12.6% increase in tax revenues, 16.3% increase in income taxes, 10.0%

increases in VAT revenue, 16.6% increase in non-tax revenues, 32.8% increase in other taxes, and -14.0% decline in customs. Whenever, changes in expected total expenditures were as follow: -0.6% decline in interest payments, -0.4% decrease in subsidies, grants, and social benefits, 12% increase in wages, 32.9% increase in investments, 16.1% increase in defence and other expenditures, and 33.7% increase in purchase of goods and services .

Monetary and Macro- Financial Policies.

The central bank of Egypt reduced the policy rate by 300bps. The preferential interest rate has been reduced from 10% to 8% on loans to tourism, industry, agriculture, and construction sectors, as well as for housing for low-income and middle-class families. A new lending initiative with soft loans at zero-to-low interest rates from banks is aimed at replacing old cars with natural gas-powered vehicles.

The central bank has also approved on EGP 100 billion guarantee to cover lending at preferential rates to the manufacturing, agriculture and contracting loans. The central bank has also extended previously existing initiatives, namely:

- i. initiatives for the tourism sector and distressed companies with debt below EGP 10 million have been extended for another 6 months.
- ii. the share of bank loan portfolios that must be allocated to SMEs has been raised from 20 to 25% .

As a result of this packages, the Egyptian economy inter recovery stage earlier as USA and UK, wherever, headline and core inflation still preserves moderate levels with the central bank of Egypt's (CBE) target range of 9%, and the annual urban headline inflation rate dipped to 3.4% in August 2020, down from 4.2% in July and 5.6% in June 2020, due to a favourable base effect.

On Sep.24, 2020, the Monetary Policy Committee (MPC) decided to cut interest rates by 50 bps for the first time in four consecutive meeting. In mid of July 2020, the CBE has announced an increase in bank deposit by around EGP 92 billion by the end of April to reach EGP 4,518 trillion against EGP 4,426 trillion in March 2020, the credit facility balances for clients in banks rose by around EGP 258.1 billion, with an increase of 13.9% in July-April of the 2019/2020 fiscal year . the domestic liquidity rose by EGP 489.4 billion.

American chamber of commerce in Egypt showed that the economic policy responses to COVID-19, while Egypt's package does not beat it, peers in terms of value, it does include the biggest interest rate cut in MENA region and has a higher number of tax exemptions, social safety net spending channels and private sector support tools. The government has also accounted for foreign exchange and foreign trade risks as well as targeted many more sectors for debt-relief initiatives than its neighbours .

Suggesting the Best Policies to Economic Recovery and Rise Growth in USA, UK, and Egypt with and after Coronavirus Pandemic:

Frist of all USA and UK are advanced countries, and Egypt is developing country, so the best macroeconomic policies for both groups are different. In case of US and UK, we will suggest the macroeconomic policies that driving the growth and maintenance economic recovery, such as policies that modern economists like Mishkin, F.S.(2015) and Samuelson, P. A and Nordhaus, W.D (2010) suggested to driving growth in long run as follow:

Drives of growth are technology or knowledge, policy and institutions . Samuelson mentioned seven basic trends of economic growth, and all economists studying the economic history of advanced nations like USA and UK have found that the following trends, that we suggesting them within and after coronavirus period as indicators for long run growth in US and UK, as follow:

The capital stock has grown more rapidly than population and employment, resulting from capital deepening.

For most of the period since 1900, there has been a strong upward trend in real average hourly earnings.

The share of labor compensation in national income has been remarkably stable over the last century.

There were major oscillations in real interest rates and the rate of profit, particularly during business cycles, but there has been no strong upward or downward trend over the post-1900 period.

Instead of steadily rising, which would be predicted by the law of diminishing returns with unchanging technology, the capital-output ratio has actually declined since the start of the twentieth century .

That point showed that modern market economy is in favour of labor on account of capital, this fact is opposite the prediction of the law of diminishing returns, whatever, the productivity of labor and his real wages will increase with growth and increasing production, when we have advanced technology and knowledge economy pillars in USA and UK through and after coronavirus crisis. For most of the period since 1900, the ratios of national saving and of investment to GDP were stable. After effects of the business cycle are removed, national product has grown at an average rate of 3.3% per year. Output growth has been much higher than a weighted average of the growth of capital, labor, and resource inputs, suggesting the technological innovation must be playing a key role in economic growth. his point also asserts on the importance of R&D and innovation, and the other three pillars of knowledge economy such as {human capital and learning, infrastructure on Information and Communications Technology (ICT), and the efficiency of the macroeconomic institutions}.

For Egypt, like the most developing countries, we suggest some good macroeconomic policies in light of advisors of the world bank group-open knowledge repository, that are come as follow: COVID-19 not only represents a worldwide public health emergency but has become reducing economic activity, these human and economic costs are likely to be larger for Egypt like the most developing countries, which generally have lower health care capacity, larger informal sectors, shallower financial markets, less fiscal space, and poorer governance. Egypt is one of the developing countries, so policy makers will need to weigh carefully the effectiveness and socioeconomic consequences of containment and mitigation policies. Macroeconomic policy in the short term should be focused on providing emergency relief to vulnerable populations and affected businesses. The short-term goal is to avoid mass layoffs and bankruptcies, in the medium term macroeconomic policy should turn to recovery measures, which are already started in Egypt, that typically in value monetary and fiscal stimulus. However, in Egypt, stimulus may be less effective because monetary transmission is weak and fiscal space and fiscal multipliers are often small, a more viable goal for macroeconomic policy is avoiding pro-cyclicality, ensuring the continuity of public services for the economy, and supporting the vulnerable.

United Nations (UN) introduced five streams of work (pillars) constitute package, focusing on:

- i. Ensuring that essential health services are still available and protecting health systems
- ii. Helping people cope with adversity, through social protection and basic services
- iii. Protecting jobs, supporting small and medium-sized enterprises, and informal sector workers through economic response and recovery programmes
- iv. Guiding the necessary surge in fiscal and financial stimulus to make macroeconomic policies work for the most vulnerable and strengthening multilateral and regional responses, and
- v. Promoting social cohesion and investing in community-led resilience and response systems, these five streams are connected by
- vi. A strong environmental sustainability, and
- vii. Gender equality imperative to build back better.

Because COVID-19 is truly a global shock, international coordination is essential, in economic policy, health care and science. Critical times call for well-designed government action and effective public service delivery-preserving, rather than ignoring, the practices for macroeconomic stability.

To continuing the recovery in Egypt and re-rise economic growth above 6% annually as it was before coronavirus crisis, we agree with world bank and UN in their advices, and ensure the importance of macroeconomic policy with supporting export sector beside fiscal and monetary policy, which already started by the Egyptian government.

Re-visiting the Taylor Principle and Taylor Rule to Overcome the Decline in Aggregate Demand in USA, UK and Egypt with COVID-19.

Depending on analyses of Irving Fisher (1907), Joseph Schumpeter (1912), Paul A. Samuelson and William D. Nordhaus (2010), and Frederic S. Mishkin (2015), we will use interest rate as the mysterious key of solving the problem of economic recession with COVID-19 in USA, UK, and Egypt. Interest rate is not a narrow phenomenon applying only to a few business contracts, but permeates all economic relations. It is the link which binds man to the future and by which he makes all his far-reaching decisions. It enters into the price of securities, land, and capital goods generally, as well as into rent, wages, and the value of all "interactions". It affects profoundly the distribution of wealth. With respect to short-run and long-run analysis, real vs. nominal interest rates, deferent kinds of rate of return on capital, or profit, or interest rates, and differences between Taylor principle and Taylor rule. We will start from recalling the deference between the real interest rate and the nominal interest rate as follow:

$$r=i-\pi^e \quad (1)$$

Where:

r = real interest rate.

i= nominal interest rate

π^e = expected inflation rate.

When prices are sticky as it is now with coronavirus pandemic in USA, UK, and Egypt, the changes in monetary policy will not have an immediate effect on inflation and expected inflation. So when the Federal Reserve in US or central banks in UK or Egypt, lowers the federal funds rate in US or funds rate in UK and EGYPT, the real interest rate falls; and when the Federal Reserve or central bank raises the federal funds rate or funds rate, real interest rates rise. This shows how the monetary policy control real interest rate in short-run.

Now we will use the second equation for monetary policy curve. That indicates the relationship between the real interest rate set by the Federal Reserve or central banks and the inflation rate as follows:

$$r=\bar{r}+\lambda\pi \quad (2)$$

Where \bar{r} is the autonomous (exogenous) component of the real interest rate, which is unrelated to the current level of the inflation rate or to any other variable in the model, and where λ is the responsiveness of the real interest rate to the inflation rate.

Mishkin (2015) assumes that $\bar{r} = 1.0$ and $\lambda = 0.5$, so when inflation rate was equal 0.4% as of February 2021. Therefore, in US the real interest rate is (1.2%) as follow:

$$r = 1.0+0.5(0.4) \quad (3)$$

Bank of England expected inflation rate at 2% post-pandemic inflation risk, so real interest rate in UK will be 2% as follow:

$$r = 1.0 + 0.5(2) \quad (4)$$

Egypt's annual inflation rate jumps to 6.3%, and monthly rate rises to 2.9%: CAPMAS on Dec.10,2020. So the real interest rate, according to annual inflation rate will be equal (4.15%), and according to monthly inflation rate will be equal (2.45%) in Egypt from equations (5) and (6) respectively as follow:

$$4.15 = 1.0 + 0.5(6.3) \quad (5)$$

$$2.45 = 1.0 + 0.5(2.9) \quad (6)$$

From the experience of the previous recession in 2009, Scott, Kannan and M. E. Terrones found that the monetary policy is more effective than any macroeconomic policy in recovering from recession in short-run, where they showed that a 1% reduction in the real interest rate beyond that implied by the Taylor rule increase the probability of exiting a recession in a given quarter by about 6%. On the other hand, fiscal policy, measured either by changes in the primary balance or in government consumption, is not found to have a significant impact on the duration of recessions when examined across all recessions.

According to Taylor Principle and Taylor Rule, we can add the following equations:

$$r = 2.0 + 0.5(\pi - \pi^T) + 0.5(Y - Y^P) \quad (7)$$

Where the Taylor rule proposes that the Federal Reserve set the real federal funds rate, its policy instrument, at its historical average of 2% plus a weighted average of the inflation gap and the output gap.

From equation (1) we can rewrite it as follow ($i = r + \pi$), and adding (π) to both sides of equation (7) then:

$$i = \pi + 2.0 + 0.5(\pi - \pi^T) + 0.5(Y - Y^P) \quad (8)$$

Or, in words with applying on US.

Federal funds rate = inflation rate + historical average of the real federal funds rate + 0.5 (inflation gap) + 0.5 (output gap).

To illustrate using the Taylor rule in Egypt, we suppose the inflation rate target is 5.6%, while the current inflation rate is 6.3%, suppose also that the positive inflation gap of 0.7% (=6.3% - 5.6%) pushes real GDP to 3.3% above its potential, resulting in a positive output gap of (3.3%). The Taylor rule suggests that the central bank of Egypt should set the nominal interest rate at (10.3%), by substituting these figures in equation (8) as follow:

$$10.3\% = 6.3\% + 2.0\% + 0.5(0.7\%) + 0.5(3.3\%) \quad (9)$$

From the previous model with analysis and in light of actual available data, situation of coronavirus pandemic, and economic recovery in USA, UK, and Egypt. We suggest the following quantitative macroeconomic variables:

Increasing nominal federal funds rate to 0.7% to reach real federal interest rate in U.S.A to 1.35% in the short-run. This will lead to continue economic recovery and improving real growth rate in GDP with reduction the output gap and inflation gap in long-run. Rising real interest rate by 0.2% in UK, to become 2.2% or suppose the autonomous component of the real interest rate ($\bar{r} = 1.2$) in short-run in UK. This will lead to inflation rate target is 2%. According to equations (2) and (8) the economic recovery will continue in short-run, and real interest rate will be (2.2%) as follow $\{2.2\% = 1.2\% + 0.5(2.0\%)\}$. In long-run the nominal interest rate will be (4.35%) as follow:

$$i = 2.0\% + 2.0\% + 0.5(2.0\% - 2.0\%) + 0.5(0.7\%) = 4.35\% \quad (10)$$

This will lead to narrowing the inflation gap to become zero, and maintenance stable prices, and improving the real growth rate of GDP with narrowing output gap by (0.3%), with keeping inflation rate at 2% in UK.

Reducing nominal interest rate in Egypt to 10.3% in short-run, to maintenance on economic recovery and achieving growth rate to more than 6.3% in long-run, with targeting inflation rate at 5.6%. this will lead to narrowing inflation gap to (0.7%) and output gap to (3.3%).

X- Summary and Conclusion:

We divided this paper into seven main sections to contribute with other economists in solving economic crisis, that resulting from coronavirus pandemic, in order to maintenance economic recovery, which already started in USA, UK, and Egypt, after reopening economic activity, and suggestion the best monetary policy to re-rise economic growth in GDP in all three countries as it was before COVID-19 and keeping on driving of USA, and UK to the world economy after pandemic, with maintenance on sustainable development for Egypt in knowledge economic era. In the first section, we introduce brief overview about history and organ of COVID-19, and the macroeconomic policy tools with its goals. The second section concerned with literature review, which we have catch from available source through internet, that related with coronavirus pandemic. The third and fourth section introduce COVID-19 Data Profile in USA, UK, and Egypt; and Knowledge Economy and Macroeconomic policies: Findings and Evidences, that they summarized the statue of the pandemic in USA, UK, and Egypt at a point of time in era of knowledge economy, with this section we preferred to analysis the macroeconomic policy that followed in three countries separately. So we added sections five, six, and seven about Macroeconomic analysis and policy responses to COVID-19 in USA, UK, and Egypt respectively.

The main part of this paper is that include the last three sections, especially section eight and nine, which introduce the main contribution of this study about the best macroeconomic policy, that should be followed to maintenance the continuity of economic recovery and inter the autonomous growth as it was before COVID-19 and better than it in USA, UK, and Egypt. This paper depending only on knowledge or technological innovation and monetary policy from the best macroeconomic policy, especially interest rate as a magic instrument to achieve the goals of this paper, so we advise in the future study to concentrate on one or more instruments of fiscal or trade policy, and its rule to achieve macroeconomic goals.

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