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Money, FDI and Economic Growth in MENA Countries.

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Money, FDI and Economic Growth in MENA Countries

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Chapter 1:

Abstract:

The first chapter examines the link between FDI, trade, capital formation and economic growth in 12 MENA countries using panel analysis for yearly data between the period 2001 to 2017. Using the cointegration and Hausman test, our results indicate that, all the variables are stationary at first level, and the long-run relationship exists between our variables. A model of endogenous growth highlights that MENA countries favored FDI to trade, where trade has a negative relationship with economic growth. Capital formation and labor have a positive and significant relationship. We also, address the relation of education level, as we know that increase in Education level will enhance the adoption of foreign technology. The results were consistent with our initial model. Furthermore, we answered the question of whether FDI is a compliment or a substitute? Our results show that FDI has a negative relation with the stock market. In other words, FDI is a substitute not a compliment to the stock market. FDI is positively correlated with political stability, stock market, liquidity, saving, and GDP.

The second chapter explores the long-run demand for money and its stability for MENA countries for the period of 2002 to 2016 using annual data. By applying a panel cointegration approach, the result reveals evidence of cointegration between the variables in the long run. Therefore, an error correction (ECM) is applied to determine the factors that influence real money aggregate(M2). The result shows that export and import have positive and negative effect respectively, an increase in exporting will increase the value of the currency, and the opposite is true. Further, all the variables have a significant effect in the long run, while GDP affects the demand for money in the short run. The CUSUM test of paraments stability shows that the money demand function is mostly stable over the period. At the individual level, the results change from one county to another.

Keywords:
Money demand, exchange rate, Export, Import, FDI, Stock, Trade, Economic growth, Capital formation MENA Countries.

Chapter 1:

FDI, Trade Openness, Capital Formation, and Economic growth in MENA countries analysis. And whether FDI is a complement or substitute for stock market development in MENA countries.

1.Introduction:

Economic literature discusses excessively the relation between foreign direct investment (FDI) and economic growth in less developed countries. There is a long debate on how FDI, affects the host country, economist believes that FDI increases the growth of a country in many different channels. It helps increase employment, creates jobs, and motivate technological changes by introducing new technology. This technology will generate positive spillovers for local firms. As technology develops in the host country, FDI is expected to improve the knowledge through labor training, skill acquisition and flow. FDI also, introduces new management practices and a more efficient organization of the production process. Therefore, FDI improves the productivity of host countries not only at the firm level but on the economy of the host country and motivates its economic growth. Pugel (2007) finds FDI increases technological spillover, promotes the competition in the industry, and improves the productivity of goods and services for the host country and therefore increases their economic growth.

On the other hand, some studies that disagree with the statement that FDI has a positive impact on the host country. Hanson (2001) and Gorg and Greenaway (2004) argue that FDI does not create positive spillover to the host country. Blomstrom and Kokko (2003) argue that it may take time for the host country to adjust to the new technology and that the local condition is an important influence for the host country.

International trade also, has a role in developing the economic growth of a country through the adoption of superior production technology and innovation. Belloumi (2014) study the relationship between the trade, FDI in economic growth and he finds that trade openness and economic growth endorse the long-run relation of FDI, and it serves as a broadcast belt to transfer technical knowledge. Therefore, trade openness has a positive impact on economic growth.

From that argument we can say that both FDI and trad play a major role in improving economic growth in countries, however, this effect may vary from country to another. Human capital also, plays their roles in observing capacity in the host country. Further, Capital formation

is used to fund the development programmer in the country, they use it to build schools' hospitals, roads, and its play major roles in decreasing poverty, and improve economic development. Therefore, the link between FDI, Trade Openness, capital formation, and economic growth tends to be positive.

Capital formation increases the economic growth how? When the government increases the injection of capital in the form of long-term investments, productivity will increase and influence economic growth. The growth theory assumes that increase the efficiency of investment brought by FDI provides comparative advantages, where the local company will compete to catch up and therefore increase the economy in the long run (Romer 1986). Further, macroeconomic and political stability may play a role in FDI and trade effect. The literature supports the fact that less developed countries face a high inflation rate, and macroeconomic instability is not in favor of economic growth.

There is 2 theory for economic growth, first the neoclassical model, which only show the impact of technology on economic growth, this model is not able to identify the determinant of technological progress. The other theory is the growth theory which established to know the determinant that impacts technological progress. It focuses on what drives growth like innovation, creation. The difference between both of them is that, neoclassical assumes the technological progress to be exogenous while growth theory assumes that technology is a form of investment spill over as endogenous. The implication of technology been endogenous is that economic growth may be slowing down because of favor, and/ or protecting the existing industry. Theories present different sources of technological spillover like FDI, human capital, science, all these assume endogenous technological is the main driver of economic growth in the long run. The finding of both theories may differ, Mello and Luiz (1999) study the FDI in time series and panel data, they find that neoclassical model when FDI is exogenous can only affect growth in the short run, because of the diminishing return in the long run, while the new growth theory when technology (FDI) is endogenous can find the long-run effect on growth because the knowledge that occurs with FDI transfer, and continue for a long term, therefore the return will harvest in the long-run. Counting FDI as endogenous in the model will result in the long-run effect of FDI.

Shahbaz and Rahman (2010); stress out that FDI inflows boost stock market competition, where there is a high chance that FDI inflows end up listing their shares on the stock market of the host country. In other words, FDI can enhance the liquidity of the stock markets if foreign investors

were able to obtain shares in the host country. Nguyen & Hanh (2012) investigate the stock market development determinant of Southeast Asian Countries and find that Stability, liquidity, savings, financial development, and growth affect the stock market positively, while inflation has a negative effect. Dev & Shakeel (2013), look at the stock market development determinant in Pakistan and they find that liquidity and investment are the determinate that affect the stock market development. Ayunku & Etale (2013), study Nigeria's stock market development and find that inflation and saving affect the stock market negatively, while the exchange rate market capitalization and banking has a positive influence on the stock market. Acquah- Sam (2016) look at Ghana stock market determinant and find that Growth and capital formation affect the stock market development positively while treasury bill affects it negatively. FDI and Inflation do not affect the stock market. Islam et al. (2017) study the stock market development in Bangladesh and he finds that inflation, growth, and market capitalization are the major influence on the stock market.

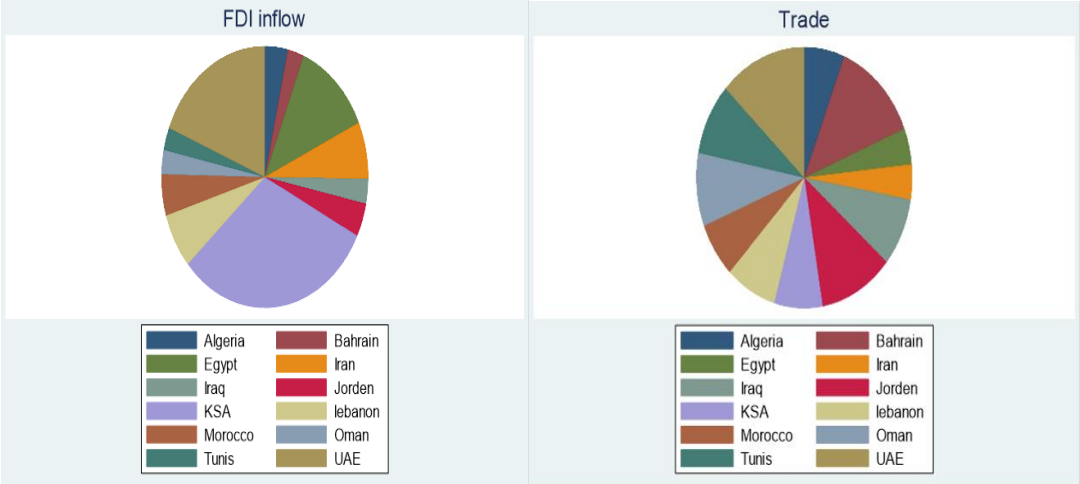
Kaehler et al. (2014), investigate the Iraq stock market and he finds inflation, electricity, political stability, interest rate, and exchange rate, has an impact on the development of their stock market. Yusoff & Guima (2015) study the determinant of the stock market in 3 countries Saudi Arabia, Tunis, and Egypt they find that Growth, Savings, Interest rate, Exchange rate, inflation, and oil rent have a significant impact on stock market development.

As we have seen there is no strict rule whether FDI will affect less developed countries positively or negatively. Thus, the studies contribute to the existing literature by, uniform a model that studies the relation between FDI, trade, labor, capital formation, inflation-CPI (macroeconomic stability), political stability and its effect on economic growth. Furthermore, we investigate the role of FDI on the stock market development of the host country and whether it is complements or substitutes. Our interest falls for MENA country which we use 12 countries from 2001 to 2017. In the stock market we had to drop our sample to 10 countries because of the lack of stock data for Iraq and Algeria. We restrict our sample for this period because of the availability of the data. Our contribution in this paper is to provide a link between FDI, Trade, Capital formation, and economic growth. Also, we address the effect of education level on FDI, Trade, Capital formation, and economic growth to see if it would change our result. Further, we ask the question of whether FDI is a substitute or a complement to stock market development? As far as we know we are the first paper to address this issue in MENA reason. In our analysis, we divide

our study into two sections, first we study the long-run relation using a panel for all the country. Our major result indicates that a long-run relationship exists between economic growth determinant consistent with Mello and Luiz (1999). In pooled OLS our FDI and trade are complementing to each other however this change after taking the Fixed effect where trade has negative relation, that could be due to change in the regulation or quote of the tariff. Another reason is the decline in oil prices in the Middle East could affect where there is a positive relationship between oil prices and trade. Political stability does not affect our model, while inflation-CPI has a negative relation with growth in the Fixed effect, which indicates that the government needs to increase the effort to make all the essential income adjustments for people to retain a good quality of life. Our labor force and capital formation are positive and significant an increase in economic growth will increase the capital formation (government support) and labor. We also, add a section where we include the education level (primary and secondary level) and its proxy for human capital according to Berthelemy and Demurger (2000). And the results were consistent with our initial result. We find a negative relation between the secondary education level and the growth, that could be due to less graduated human capital from the secondary level.

Next we look at the effect of FDI on the stock market development. So, we take the stock market determinate and see its relationship with FDI. Our result indicates, FDI and the stock market development do not complement, however, they are substitute, and that liquidity and saving have a positive relationship with FDI. The more the stock market is liquid the more the investors can access their savings and therefore invest in FDI. Also, the higher the saving the more inflow of capital that can be used in investing in FDI. Further, the more stable the exchange rate the less is currency risk, and therefore attract more FDI. Lastly, GDP and political stability have a positive relationship with FDI. An increase in the level of income will increase the attraction of FDI, and the more the country is stable the more the inflow of FDI.

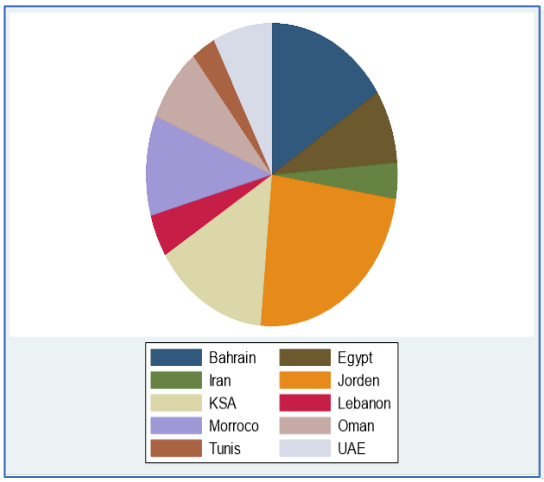
Figure 1-Represent the percentage of trade and FDI inflow for MENA countries.



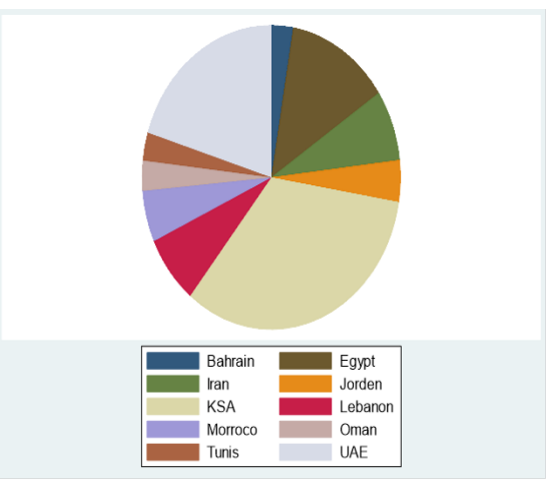
As we can see from the graphs KSA has the most inflow of FDI for that period. One reason is that during the Arab spring the follow of FDI dropped sharply for some Arab countries like Tunisia, however, Some GCC counties benefit from that like Saudi Arabia where the flow of FDI increased. Following KSA comes UAE, then Egypt is the hired country that has a high inflow of FDI then Iran, and Lebanon then the rest of the courtiers. Looking at the trade graph we can see that UAE and Bahrain they trade more than other countries, KSA surprisingly is less than them in the trade that could be due to the oil price drop that happened in the late 2014 begging of 2015 where the oil price drop to almost half from 100S to 50S. Other countries Jorden, Oman Iraq, Tunis they trade more than they have FDI inflow. Algeria, Morocco, Lebanon we can see it's almost equal the inflow of FDI and Trade.

Figure 2- Represent the percentage of stock and FDI inflow for MENA countries.

Stock



FDI Inflow



The graphs show that KSA has the most flow of FDI for that period followed by the UAE, Egypt is the hired country that his high percentage of inflow of FDI then Iran, and Lebanon then the rest of the courtiers. Looking at the Stock market development we can see that Jorden, KSA, and Bahrain have the highest percentage of the stock market.

The remainder of the paper is organized as follows, section 2 literature review. Section 3 methodology and data, section 4 result. Section 5 conclusion.

2. Literature review:

I. Empirical researches, that study FDI led growth hypothesis (FLGH), find that FDI will have a positive impact on the host country by providing new technologies, skills, creating new jobs, increase domestic opportunities, challenges, and expanding access to worldwide marketing networks. According to Wang and Blomstrom et al. (1992), study FDI and its effect on the host country, his results show that developed countries benefit more from FDI that non-developed countries. Borensztein et al (1998) study FDI and its effect on economic growth, he finds that the effectiveness of FDI depends on the human capital in the host country, regardless of what positive spill will FDI have on the host country. Another study by Carkovic and Levine (2002) indicates that years of school do not have a critical effect on FDI with economic growth. Darrat et al. (2005) analyze the impact of FDI on economic growth in Central and Eastern Europe (CEE) and the Middle East and

North Africa (MENA) regions. They find that FDI affects economic growth in EU countries, while there is no impact or even negative impact of FDI on economic growth in MENA and non-EU. Hisarciklilar et al. (2006) study the impact of FDI in some less developed countries and he finds no causality relation between FDI and GDP for most Mediterranean countries (Algeria, Cyprus, Egypt, Israel, Jordan, Syria, Morocco, Turkey, and Tunisia for the duration between 1979-2000). Alia and Dcal (2003), study the effect of export-led growth hypothesis (ELGH) and FDI led growth hypothesis (FLGH) in turkey, they find a positive spillover from ELGH, but no spillover effects from FDI to GDP. Rahman (2007) study the impact of export FDI on real GDP for Asian countries (Bangladesh, India, Pakistan and Sri Lanka) using the bounds testing approach (ARDL) technique for cointegration for the period of 1976-2006. The result confirms the cointegrating relationship between variables in all countries. Overall, they find that FDI always affects real GDP. Jallab, Gbakou, and Sandretto (2008) study the relation in MENA countries, they use a dynamic panel procedure for the period of 1970- 2005. For their testing they use GMM and 2SLS estimators, they find that there is no independent impact of FDI on economic growth, and the growth-effect of FDI does not depend on trade openness and income per capita. On the other hand, macroeconomic stability played a huge role in the positive effect of FDI on economic growth. Hassan, Sanchez, and Suk Yu (2011) study the role of financial development (accounting) on economic growth. Their result shows that there is a positives relationship between financial development and economic growth in OIC developing countries. Adhikary (2011) study the relation between Labor, FDI, Capital Formation, Trade, and economic growth in Bangladesh for the period between 1986 to 2008. He finds a negative relation with trade and it decreases economic growth. Belloumi (2014) examines the causal relationship between, economic growth, FDI, trade, labor, and capital investment in Tunis for the period 1970-2008. The author uses the ARDL model of cointegration to investigate the long-run relationship, the result reveals that variables are cointegrated when FDI is the dependent variable. Trade openness and economic growth promote FDI in the long run. Budiharto, Suyanto, Pratono (2017) study the relation between FDI, Trade, Labor, Capital Formation, and economic growth in Indonesia. They use annual Time series data from 1985 to 2015 using Autoregressive distribution lag ARDL. Their result reveals that labor is an important source to attract FDI

and to improve the invention scale for trade activities. Furthermore, FDI reveals to be the main sponsor for capital formation injection. They also, suggest that Investors and liberalization should be promoted to open the gate for more new investors in Indonesia, which is regarding what labor force can adopt from the technological spillover derived from FDI. Safitri (2014) Study the effect of trade, FDI on economic growth and they find a positive relation with economic growth. The emphasis that countries with more open trades or less restrictive regulation to the world would increase their economy due to the accumulation of physical and technological transfer. Further, openness will increase the capital inflow of the country and therefore, strengthening the economic growth as defined by endogenous growth theory. Romer (1986) finds that a more open trade economy allows the country to have comparative advantages and therefore, increase capital accumulation as it enhances the level of export. Lucas, (1988) finds the trad and FDI have inverse relation an increase in one may lead to a decrease in the other one. GLevine (2002) argues that there is no relation between FDI and economic growth, but the relationship between trade and economic growth may vary. Levine and Carkovic (2002) disagree with the argument that FDI has a positive growth effect in countries with the developed financial markets because FDI flow does not have an impact on growth in financially developed countries. On the other hand, Roland-Holst, Mensbrugghe (2006) find that trad and FDI may be complementary to one another, like an increase in FDI will result in technological spillover and increase the export level (trade), as the increase in FDI will increase trade. Yucel (2009) study the relationship between financial development, trade, and economic growth in Turki, the result shows that trade has a significant impact on economic growth. Capital formation is also, one of the determinants that affect economic development, Romer (1990) indicates that poverty may slow the development of the country because of low income and therefore low saving, and low investment. However, he also, indicates that the ability to invest does not depend only on saving but also, on the ability and willingness to invest. Berthelemy and Demurger (2000), study the relation between FDI and economic growth in China. They include human capital which is proxy for the education level (primary and secondary). They indicate that as the share of education level increase the positive effect of FDI on economic growth will increase. They also, find a positive relation between Economic growth and FDI.

II. Levine and Zervos (1998), and Beck and Levine (2004) emphasize that stock market development plays an important role in predicting future economic growth. So, we study the relation between FDI and stock market development, and try to answer the question of whether FDI a complement or substitute for the stock market? Hausmann and Fernández-Arias (2000) study the relationship between FDI and the stock market development in Latin America, and they analyze whether FDI is good or bad cholesterol? they conclude that FDI is nothing more than a substitute to the stock market, and that bad effect of FDI comes from exchange rate expectation and interest rate for the short run. Further, they observe that countries who are riskier, more distant, financially underdeveloped and institutionally weaker have a higher inflow of FDI. In light of their statement we can say that FDI correlates negatively with the development of stock markets. Stijn Claessens, Daniela Klingebiel, and Sergio L. Schmukler (2001) study the relation between FDI and stock market development in 77 countries. They found FDI is a complement for stock market development. Jeffus (2004) analyzes the issue of FDI and stock market development in four Latin American countries. They hypothesize that FDI has a positive relation with stock market development, they find that there is a positive and significant correlation between FDI and stock market development. They also, indicate that FDI is a predictor for stock market development. They also, argue that listing the company in the stock market will lead to an increase in the capital of the firm, and increase the development of the local stock market. Ben Naceur et al. (2007) study the macroeconomic determinants of stock market development in some MENA countries. Using unbalanced panel data from 11 MENA countries for the period 1979-1999. Applying fixed and random effects specifications, they found that saving rate, credit to the private sector, the ratio of the value traded to GDP and inflation change are the important determinants of stock market development. Rhee and Wang (2009), they study the relation between FDI and stock market development in Indonesia, for the years of 2002 to 2007. They find a negative correlation between FDI and Liquidity stock market, and that will affect the future of Stock market development. Sekhri and Haque (2015), examined the relationship between FDI and stock market development in India. They find a positive relation between FDI and stock market development. They conclude that FDI improves the Indian stock market, which is due to the increase in

technology application, new skills and experience, which lead to an efficient industry. Ho and Iyke (2017) investigate the determinants of stock market development by studying the existing literature. They find that there are two groups that determent the stock market development these two major groups are; macroeconomic factors and institutional factors. First the macroeconomic factors, real income has a positive relationship on the stock mark, while inflation and exchange rate harm stock market development. However, the banking sector, interest rate, and private capital flow they had a different argument about them some studies argue that they have a positive relationship while others argue that they have a negative effect on the development of the domestic stock markets. Looking at institutional factors, such as protection of investors, governance stability, financial liberalization and trade openness all have a positive influence on the stock market development.

Table 1-Summary of the empirical study on stock market development:

Author	Country	Methodology	Finding
Kunofiwa Tsaurai et al (2018)	22 Emerging markets, for the period 1994 to 2014.	Applying Pooled OLS fixed and random effects approach	They find that FDI, savings, economic growth, trade openness, exchange rates, banking sector development and stock market liquidity had a positive impact on stock market development in emerging markets.
Ben Naceur et al. (2007)	Using unbalanced panel data for 11 MENA countries for the period 1979-1999.	Applying fixed and random effects specifications.	They find that saving rate, credit to the private sector, the ratio of the value traded to GDP and inflation change are the important determinants of stock market development.
Cherif and Gazdar (2010)	Using data for 14 MENA countries from 1990 to 2007	Using both panel data and instrumental variable techniques	They find that income level, saving rate, stock market liquidity, and interest rate influence stock market development. Further, the result shows that banking and the stock market sectors are complementary instead of being substitutes

Continue Table 2-Summary of the empirical study on stock market development:

Raza, Iqbal, Zeshan Ahmed, Mohammad Ahmed, and Tanvir Ahmed (2012)	Using the Pakistan region for the period 1988-2009.	Using Ordinary Least Square (OLS) method.	They use FDI, saving, EX, and inflation. They find a positive significant impact of FDI, and domestic savings on Stock market development in Pakistan. While the exchange rate has a negative significant impact, and inflation does not impact stock market development.
Hausmann and Fernández-Arias (2000)	Using the Latin America region up to 1999.	using cross-section Ordinary Least Squares.	They use GDP, POS, Privet credit, saving, distance, Openness. The major finding is that FDI is nothing more than a substitute for the stock market.
Yusoff & Guima (2015)	Using 3 MENA countries (Egypt, Saudi Arabia and Tunisia) from 1992 to 2012.	Using Correlation Analysis.	They find that factors such as oil rent, income per capita, domestic savings, interest rates, exchange rates and inflation have an impact on stock market development in the MENA region.
Acquah- Sam (2016)	Using Ghana for the period between 1991 to 2011.	Linear regression analysis	He finds that FDI and inflation do not influence stock market development whereas treasury bill rates negatively affected stock market development in Ghana. Economic growth and gross capital formation affect the stock market positively and significantly.
Malcus, Persson (2018)	Using Swedish quarterly data observed between 1982 and 2017.	Time-series regression analysis	They find No significant relation between FDI and stock market development and that FDI is more of a substitute for the stock market in the short run.

3. Data and Methodology:

Our sample runs from 2001 to 2017 annual basis for MENA countries (Algeria, Bahrain, Egypt, Iran, Iraq, Jorden, Lebanon, Morocco, Oman, Tunisia, United Arab Emirates (UAE), Kingdom of

Saudi Arabia (KSA). We constructed our data from the World Bank database, the following equation represents our long-run relation.

$$LnY_{it}=\beta_0 + \beta_{1i}K_{it} + \beta_{2i}LnL_{it} + \beta_{3i}LnFDI_{it} + \beta_{4i}lnT_{it} + \beta_{5i}lnINFCPI_{it} + \beta_{6i}lnPOS_{it} + \varepsilon_{it} \quad (1)$$

Where the subscript i=1, ..., N denotes the country (in our study, we have 12 countries) and t=1, ..., T denotes the time period (our time frame is 2001–2017). Y is the GDP Per capita, which is proxy for economic growth, K is the capital formation, and its Average annual growth of gross fixed capital formation which used as a fund for national development programmer in the country. L is the labor force, involving people who supply labor for the production of goods and services during a specified period. Changes in the Labor force is measured by taking the labor/GDP (2018) Fernando Martin. FDI is net inflow and measured as % GDP. T is trade Openness measured by the percentage of the total sum of export and import value from GDP. INFCPI is the Inflation consumer price index used as a proxy for macroeconomic stability. Jallab, Gbakou, Sandretto (2008) use Inflation as a proxy for macroeconomic stability, they indicate that the positive impact of FDI on economic growth depends on macroeconomic stability. The impact of inflation is measured by the annual percentage change in consumer prices. POS is political stability use as a measure of politically motivated violence and terrorism.

The following section will explore the effect of FDI, on stock market:

$$lnFDI = \beta_0 + \beta_{1i}LnGDP_{it} + \beta_{2i}LnStock_{it} + \beta_{3i}LnPOS_{it} + \beta_{4i}SAVING_{it} + \beta_{5i}lnINF_{it} + \beta_{6i}lnEXCHANGE_{it} + \beta_{7i}lnbank_{it} + \beta_{8i}lnLiquidity_{it} + \varepsilon_{it} \quad .(2)$$

Where the subscript i=1, ..., N denotes the country (in our study, we have 10 countries) and t=1, ..., T denotes the time period (our time frame is 2001–2017).

Where, Foreign direct investment, Net FDI (% of GDP). POS: political stability an institutional factor, where an increase in political stability will motivate the FDI to invest in the host country. Macroeconomic factors: are GDP is the Income level and it's usually positive and significant with FDI. Stock market development, Stock market capitalization (% of GDP) expect to have a negative relation with FDI. Banking sector development, Domestic credit to the private sector by banks (% of GDP) it measures the role of a bank in providing long term financing to a private corporation. Gross savings, Gross domestic savings (% of GDP) usually it has a positive relation with FDI.

Inflation consumer prices (annual %) rate, supposed to have a negative relation with the stock market. The stock market liquidity, the Stock market traded value (% of GDP) We expected to have a positive impact on FDI.

Table 3-Variables used, theory Intuition and Priori Expectation:

Variable	**Theory intuition**	**source**	**Expected sign**
Capital formation	Capital formation is important for any country to become self-sufficient and less dependent of foreign resources, it increases job opportunities, make better use of natural resources, gain high-quality goods, and increase in economic growth and living standard in the long run for the people.	Cohen and Levinthal (2012);	+
Labor	Labor is used as indicators to attract FDI and increase scales for trade activities.	Budiharto, Suyanto, Pratono (2017	+
Trade	study the relation between FDI, Trade, Labor, Capital Formation, and economic growth in Bangladesh for the period of 1986 to 2008. He finds a negative relation with trade and it decreases economic growth. Other papers say that trade might have a positive relation with economic growth.	Adhikary (2011)	+/-
FDI	Indicates that FDI increases technological spillover and brings positive spillover to the host country and therefore increases their economic growth. Other paper indicates that FDI does not have a positive spill to the host country.	Pugel (2007); Hanson (2001)	+/-
Political stability	improvement in political risk will positively affect Economic growth and attract more FDI inflows into a country.	Cuyvers et al (2011)	+

Continue Table 4-Variables used, theory Intuition and Priori Expectation:

Inflation	Indicates that there is a negative relationship between inflation and financial development. In high inflation people tend to hold money in balance to protect the value of their assets.	Boyd et al. (2001)	-/+
GDP	Increase in GDP the income level is correlated with the size of the stock market and an increase in the FDI.	Sharef et al (2010)	+
Stock	There are high chances that FDI inflow end up listing their shares on the stock exchange of the host country.	Shahbaz & Rahman (2010)	+/-
Savings	The larger the saving rate the higher the flow of capital in therefore more investment.	Kalim & Shahbaz (2009)	+
Liquidity	A liquidity stock market will allow the investor to access their savings and therefore, be able to invest in FDI, also, the investors' confidence in the stock market will increase.	Yartey & Adjasi (2007)	+
Bank	Bank help to increase the amount of investment by using the saving and reduce the liquidity risk.	Ndikumana (2005)	+
Nominal Exchange rate	Changes in the currency will affect the foreign profit and stock market and therefore the attraction of FDI.	Sharef and Gazdar (2010). Ogunmuyiwa (2011)	+/-

Methodology:

The empirical study is divided into two steps, first: pairwise correlation between the variables. We apply the unit root test to see if the variable contains a panel unit root to confirm the stationary of the variables. Since we have unbalanced data we will apply the LM-Pesaran-Shin, and Fisher-type unit-root test, other tests like Levin–Lin–Chu (2002), Harris–Tzavalis (1999), Breitung (2000 and

2005), and Hadri Lagrange multiplier LM (2000) require a strong balance data set. Then, applying the panel cointegration using Pedroni (2004) and Kao (1999) to establish a cointegrating long-term equilibrium relationship between money demand and its factors the Pedroni test must have a maximum of 7 variables, therefore, in consuming the FDI with stock we use only Kao. Further, we use pooled OLS, and Fixed effects, as well as random effects models, were considered in this study. We use the Hausman test to select the appropriate estimator, the most suitable estimation would then be the fixed effects with year control.

4. Empirical Result:

In this section we start by providing the summary statistic and the correlation. By using the 12 MENA countries. We restrict our self to annual data because of the availability of the data on an annual basis for the period between 2001 and 2017. The results were grouped and presented in three sub-sections: (a)the determinant of growth, (b) FDI and stock market development.

I. Pairwise correlation:

We present the Pairwise correlation for12 MENA countries between the years of 2001to 2017.

We have unbalanced data with a maximum of 204 observations and a minimum of 189 observations. The FDI and stock regression we had to drop 2 countries (Algeria, and Iraq) due to lack of stock market traded value, and liquidity.

Pairwise correlation:

We perform two pairwise correlation for our variable, first, growth and its relationship with FDI, trade, KF. The other pairwise correlation is with FDI and stock. We can see that all variables are positively correlated with Growth except Inflation. Capital formation is positively correlated with labor, FDI, and inflation. and negatively correlated with trade. Labor it's positively correlated with all variable except inflation. Trade is positively correlated with political stability. Trade is negatively correlated with inflation.

Table 5-The pairwise correlation for growth, FDI, trade, Labor, and capital formation:

	Growth	KF	Labor	Trade	FDI	POS	Inflation
Growth	1.0000						
KF	0.0111	1.0000					

Continue Table 6-The pairwise correlation for growth, FDI, trade, Labor, and capital formation:

Labor	0.8266*	0.2587*	1.0000				
Trade	0.6760*	-0.3962*	0.4935*	1.0000			
FDI	0.1794*	0.5755*	0.2523*	-0.0293	1.0000		
POS	0.4131*	-0.0423	0.2636*	0.2600*	-0.0130	1.0000	
Inflation	-0.2662 *	0.2251*	-0.2095*	-0.2482*	0.1224	-0.4644*	1.0000

Table 7-pairwise correlation with FDI and stock:

	FDI	Stock	Bank	Liquidity	Savings	EX	Inflation	POS	GDP
FDI	1.0000								
Stock	0.1209	1.0000							
Bank	0.0133*	0.1772	1.0000						
Liquidity	0.4181*	0.6722*	-0.1789*	1.0000					
Savings	0.0848	0.0946	-0.4408*	0.1134	1.0000				
EX	0.1596*	-0.0248	-0.0255	-0.0656	0.0158	1.0000			
Inflation	0.2889*	-0.3070*	-0.2668*	-0.0076	0.0584	-0.2864*	1.0000		
POS	-0.1826*	0.2071*	-0.1740*	0.2060*	0.4212*	0.2238*	-0.4126*	1.0000	
GDP	0.4838*	-0.1179	-0.2753*	0.2647*	0.2379*	-0.1371	0.3065*	-0.0842	1.0000

Second, FDI is positively correlated with all variables except political stability. Stock is positively correlated with liquidity and POS, while it is negative with inflation. The Bank is negatively correlated with all variables. Liquidity and saving are positively correlated with POS and GDP. The nominal Exchange rate is positively correlated with POS, while it is negative with inflation. Lastly, inflation is positively correlated with GDP and negatively with POS.

II. The unit root test and panel cointegration test:

We apply the LM person shin and fisher (ADF) unit root test for our unbalanced data. The hypothesis assumes that all panels contain a unit root, while the alternative hypothesis is some cross-sections do not contain a unit root (stationary). The null hypothesis was rejected for the variables with a p-value smaller than 0.05. Taking the first difference of the highly persistent variables is a method to deal with non-stationarity. We apply the first difference to Trade, Political stability, bank and savings. The result indicates that the series is more likely to have a panel unit root in their levels means nonstationary panel. Appendix B.

Table 8-Unit root stationary test for LM Pesaran and Fisher (ADF).

Variable	LM Pesaran shin			Fisher-type unit-root test		
	Lag (0)	Lag (1) level	First different:	Lag (0)	Lag (1) level	First different:
GDP per capita	Stationary**	Stationary***		Stationary**	Stationary***	
Capital formation	Stationary***	Stationary***		Stationary***	Stationary***	
Labor	Stationary***	stationary ***		Stationary***	stationary *	
Trade	Not stationary	Stationary*	Stationary***	Not stationary	Stationary*	Stationary***
FDI	Stationary***	Stationary***		Stationary***	Stationary***	
Political stability	Stationary**	Not stationary	Stationary***	Stationary**	Not stationary	Stationary***
Inflation	Stationary***	Stationary**		Stationary***	Stationary**	
Nominal exchange rate	Not stationary	Stationary***		Not stationary	Stationary***	
GDP	Stationary**	Stationary***		Stationary**	Stationary***	
Bank	Not stationary	Not stationary	Stationary**	Not stationary	Not stationary	Stationary**
Saving	Not stationary	Not stationary	Stationary**	Not stationary	Not stationary	Stationary**
Stock	Not stationary	Stationary***		Not stationary	Stationary***	

III. cointegration test:

After checking the integration of our variable at order one, we follow by applying the cointegration test. Pedroni (2004) and Kao (1999) test are performed to verify the presences of the long-run relationship between the variable the test results are displayed in table 6 Pedroni and Kao cointegration test revealed that all the variable rejects the null hypothesis of no cointegration at the 1% level and 5% level. For FDI we can only use the Kao test because it has more than 7 variables and Pedroni has to have a maximum of 7 variables. We can conclude that long-run relationship exists for the panel where all the variables are cointegrated, based on the table below we have 2 cointegrated models.

Table 9-Cointegration test for Pedroni and Kao:

Ho: No cointegration
Ha: All panels are cointegrated

Variable	Pedroni	Kao
Growth	Cointegrated***	Cointegrated**
Augmented Dickey-Fuller	0.0000	0.0402
FDI		Cointegrated***
Augmented Dickey-Fuller		0.0000

IV. The pooled OLS:

In this section we will perform the Pooled OLS for the variables (economic growth, capital formation, trade, and FDI), the results are present in the table (3). Economic growth as a dependent variable all the variables will have a positive and significant relation, an increase in economic growth will result in increased all the variables except capital formation they have a negative relation. Economic fluctuation creates difficulty in obtaining finance and leads to the chronic diminishing of national resources and financial instability. We can see that in panel analysis trade and FDI are a compliment to each other consistent with Roland-Holst, Mensbrugghe (2006).

Next, we run the Hausman checking for the appropriate estimate, the result shows that Growth will use Fixed effect with year control with probability (0.0000). Economic growth has a positive and significant relation with capital formation and labor, an increase in economic growth will result in increased capital formation, and labor force. FDI is also, positive but not significant, that could be due to Arab spring where the flow of FDI dropped sharply in the period between 2011 and 2012 in Arab countries, that could affect the significant result, however, Some GCC countries benefit from that like KSA by increasing the inflow of FDI according to Naser Abumustafa et al(2016). While, trade and inflation CPI have negative relations. An increase in economic growth may impose new regulation for trade or increase the quote for export and import that may cause the negative relation consistent with Budiharto, Suyanto, Pratono (2017) another reason is the drop of the oil price by the end of 2014 and according to Simeon Nanovsky (2015) where it drops from 100s to 50s, as the oil price fall trade become more dispersed, so to accommodate Trade the oil

price must be controlled. Further, economic growth has a negative relation with inflation consumer price index which indicate that government cannot keep up to make all the necessary income adjustments needed for people to maintain a good quality of life because their cost of living increased too fast, stead growth can offset the negative impacts between GDP growth and inflation according to Carmen Grant (2017).

Table 10-Pooled OLS and Fixed effect growth for long run relation:

VARIABLES	Pooled OLS Growth	Fixed effect Growth
KF	-0.161***	0.130**
	(0.057)	(0.048)
Labor	0.876***	0.488***
	(0.068)	(0.086)
Trade	0.112***	-0.257*
	(0.042)	(0.130)
FDI	0.675***	0.022
	(0.154)	(0.012)
POS	0.131***	-0.041
	(0.042)	(0.029)
inflation	0.008	-0.003*
	(0.006)	(0.002)
Constant	-1.587	1.659
	(1.227)	(1.422)
Observations	168	168
R-squared	0.788	0.943
Number of ids	12	12
country FE		Yes
Year FE		Yes

*** indicate significant at 1% level, ** indicate significant at 5% level, * indicate significant at 10%.

Checking for multicollinearity, we apply the variance inflation factor according to Hair et al, (2010) and Ringle et al, (2015) indicate that if VIF < 4 then we will have a low probability of Multicollinearity. Based on the result from the table we can see that we will have a low probability of multicollinearity all the variables are less than 4.

Table 11-Variance inflation factor:

Variable	VIF
KF	3.18
Trade	2.75
Labor	2.10
FDI	1.78
Inflation	1.29
POS	1.28
Mean VIF	2.06

This section presents the relation of Education level with Growth:

The education level proxy for human capital is the number of people who have completed primary or secondary education according to Berthelemy and Demurger (2000).

$LnY_{it}=\beta_0 + \beta_{1i}K_{it} + \beta_{2i}LnL_{it} + \beta_{3i}LnFDI_{it} + \beta_{4i}lnT_{it} + \beta_{5i}lnINFCPI_{it} +$
$\beta_{6i}lnPOS_{it}+\beta_{7i}Primary_{it} + \beta_{8i}Secondary_{it} + \varepsilon_{it}$

Running Hausman test to check for the appropriate application, the result shows that Growth will use a Fixed effect, with year control the probability as follow (0.0000). The following table will present the Pooled OLS and Fixed effect. First the pooled OLS economic growth as a dependent variable all the variables will have a positive and significant relation, an increase in economic growth will result in increased all the variables except primary education it has negative relation. The second column is economic growth fixed effect as dependent it has a positive and significant relation with labor, capital formation, primary education, and it's positive with FDI but not significant an increase in economic growth will result in increased capital formation, and FDI. while trade, inflation, and secondary education have negative relation. An increase in economic growth may impose new regulations for trade or increase the quote for export and import that may cause a negative relation. Further, economic growth has a negative relation with inflation consumer price index which indicate that government cannot keep up to make all the necessary income adjustments needed for people to maintain a good quality of life because their cost of living increased too fast, stead growth can offset the negative impacts between GDP growth and inflation according to Carmen Grant (2017). The secondary education is negative significant at 10%, that

could be due to the low ratio of people who complete this stage comparing to the growth level. However, other results are consistent with our previous results.

Table 12-Pooled OLS and Fixed effect growth for long-run relation and education:

VARIABLES	(Pool OLS) Growth	(FE) Growth
KF	0.092	0.200**
	(0.063)	(0.069)
Labor	0.468***	0.490***
	(0.074)	(0.070)
FDI	0.062	0.003
	(0.040)	(0.013)
Trade	1.056***	-0.373***
	(0.153)	(0.092)
POS	0.031	-0.043
	(0.045)	(0.029)
inflation	0.009	-0.009***
	(0.007)	(0.001)
primary	-0.048***	0.009***
	(0.005)	(0.003)
secondary	0.014***	-0.004*
	(0.004)	(0.002)
Growth		
Constant	-0.190	0.340
	(1.318)	(1.748)
Observations	122	122
R-squared	0.868	0.958
Number of ids		12
country FE		Yes
Year FE		Yes

*** indicate significant at 1% level, ** indicate significant at 5% level, * indicate significant at 10%.

Stock market development and its influence on FDI:

From the previous section we can say that FDI might have more influence on economic growth. Therefore, in this section we analyze the role of stock market determinant on FDI of the host country. So, we investigate whether FDI is a complement to the stock market of the host country or substitute?

To do so we use FDI along with stock market capitalization, savings, exchange rate as a measure of microeconomic stability, bank as a financial intermediary, liquidity stock market traded,

inflation as Macroeconomic stability, Political stability, and Income level. We begin our analysis by looking at the FDI as the dependent variable. The first column represents the pooled OLS and second is the Fixed effect after applying the Hausman test the probability is (.0816), so we reject the null and the Fixed effect is applied. The result shows that there is a negative relation between FDI and Stock at the 10% level, this indicates that FDI is more of a substitute than complement, consistent with Hausmann and Fernández-Arias (2000) and Rhee and Wang (2009).

Another reason could be due to the Arab spring. Where countries that are financially underdeveloped FDI is more of a substitute than complement. Liquidity and saving have positive and significant relation with FDI consistent with our prediction sign. Singh (1997) indicates that FDI can bring a positive spillover to the host country by creating of job and enhancement of technology transfer, and therefore, raise the domestic savings in that country. Liu & Garcia (1999) claimed that as the domestic saving increase there will be a higher amount of capital inflows. From that we can say that increase in saving will result in increased capital inflow that can be used in investing in FDI. Sharef and Gazdar (2010) indicate that the more liquidity is the stock market the more investors can use their saving through stock markets. From that I can say that the more liquidity in the stock market, the more investors can access their savings and therefore can use their capital to invest in FDI. The exchange rate has also, positive relation with FDI. Unstable exchange rate will result in changes in the stock market price, as the currency of the host country changes, it will be less likely to attract foreign investors in the host country due to currency risk. Political stability is positive and significant with FDI. More stable countries will attract more FDI. Jun and Singh (1996) and Dupasquier and Osajwe (2006) support that political stability will enhance the investment decision. Cuyvers et al (2011) indicate that an improvement in political risk will positively affect FDI inflows into a country. GDP level of income has a positive relation with FDI increase in the level of income will increase the attraction of FDI Moosa and Cardak, (2006) Fedderke and Romm, (2006). Further, both bank and stock markets are complements, which is consistent with theoretical and empirical literature Sharef and Gazdar (2010).

Table 13-Poole OLS and a fixed effect for stock market development and FDI:

VARIABLES	(Pooled OLS) FDI	(FE) FDI
stock	-0.413**	-0.451*
	(0.208)	(0.218)
bank	1.218***	-0.059
	(0.340)	(0.552)
liquidity	0.641***	0.526***
	(0.111)	(0.150)
saving	0.019***	0.043**
	(0.006)	(0.016)
EX	-0.147	0.920***
	(0.341)	(0.249)
Inflation	0.009	0.035
	(0.018)	(0.041)
POS	-0.722***	0.413*
	(0.167)	(0.207)
GDP	0.195***	0.137**
	(0.062)	(0.058)
Constant	14.512***	9.011*
	(2.851)	(4.842)
Observations	144	144
R-squared	0.503	0.690
Number of ids		10
country FE		Yes
Year FE		Yes

*** indicate significant at 1% level, ** indicate significant at 5% level, * indicate significant at 10%.

Looking at the regression from the stock perspective and applying Hausman test the result indicate the Random effect is appropriate (.7389). The result shows that stock and FDI are negative but not significant, Bank is positive and significant which provides long-term financing to private corporations. Liquidity also, has a positive relation with stock market development. Further, both bank and stock markets are complements, which is consistent with theoretical and empirical literature Sharef and Gazdar (2010). Lastly, political risk has no significant effect on stock market capitalization.

Checking for multicollinearity, we will apply the variance inflation factor according to Hair et al, (2010) and Ringle et al, (2015) indicate that if VIF < 4 then it will have a low probability of

Multicollinearity. Based on the result from the table we can see that we will have a low probability of multicollinearity all the variables are less than 10.

Table 14-The variance inflation factor for stock and FDI:

Variable	VIF
Stock	3.36
Liquidity	3.27
POS	1.85
Inflation	1.71
Bank	1.69
Saving	1.66
GDP	1.60
EX	1.13
Mean VIF	2.03

5. Summary and Conclusion:

This paper contributes to the existing literature by providing a relation between FDI, trade, capital formation, and economic growth in MENA countries; And whether FDI is a substitute or a complement to the stock market capitalization? Previous research in MENA countries shows the determinant of stock market development, however, they did not show the effect of FDI on the stock market, and how the stock market determinant can be related to the inflow of FDI.

Therefore, in our analysis We use the panel of pooled OLS and a fixed effect for the long-run relation. Our result indicates that FDI has a positive relation with economic growth. As the economic growth increase, the FDI will also increase, which they support the attraction of FDI, due to the positive spillover that will occur for the host country. However, trade has a negative relationship with economic growth that could be due to a change in the quota of export and import which result in negative relation. Political stability did not have any significant result with our model, while the inflation consumer price index has a negative relation with growth which indicates that the government needs to increase the effort to make all the essential income adjustments for people to retain a good quality of life. The capital formation which is the government support increase as the economic growth increase, and labor also, increase as the

economic growth increase. Further we add another section with education level as a proxy for human capital our result we support what we have.

Lastly, we look at the effect of FDI on stock market development. Our results show, that FDI and stock market development are substitutes, where countries that are riskier and financial underdevelopment have a negative relationship between the stock market and FDI. Further, liquidity and saving have a positive relationship with FDI. The more the stock market is liquid the more the investors can access their savings and therefore invest in FDI. A stable nominal exchange rate will have less currency risk and therefore attract more FDI. Lastly, GDP and political stability have a positive relationship with FDI. An increase in the level of income will increase the attraction of FDI, and the more the country is stable the more the inflow of FDI.

Chapter 2:

Money demand function and its Stability in MENA countries.

1.Introduction:

Recently economists present a lot of interest in studying the money demand function, and its stability, in the long run, whether at the country level or a group of countries. Fisher (1911) discusses the quantity theory of money that implies an increase in the money supply will increase the price level correspondingly, the speed of money must be stable. The speed is proxied by the linear combination of the money supply, the price level and the level of output, that establish the stability of money demand[1]. That referred to the quantity theory of money which highlights the importance of money demand stability. Since the Nobel laureate Mundell (1963) argues that the exchange rate affects the demand for money. Economists subsequently followed this argument and include the exchange rate in their money demand function, further, they try to explain why the exchange rate can affect the demand for money. Arango and Hence (1981) introduce the wealth theory they argue that depreciation of domestic currency will increase the domestic currency value. If this increase account as an increase in wealth, the domestic resident could increase their consumption by demanding more money. On the other hand, Bahmani and Pourheydarian (1990), argue that depreciation in the domestic currency will result in a decrease in the domestic currency value and therefore, depreciation in demand for money.

Following Mundell and the other pioneer worker, we aim to investigate the importance of the Money demand function and its stability in MENA countries, and whether Import and Export can play a role in the demand for money. MENA is referred to the Middle East and North Africa) countries, according to James Chen (2019) MENA region account for approximately 6% of the world population growth, 60% of the world oil reserve, and 45% of the world natural gas reserve, therefore MENA region is the foundation of global economic stability.

In our sample, we included 15 countries (Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and United Arab Emirates) We choose those countries because they share the area around the Persian Gulf. They also, share historical, geographical and ethnical characteristics. Furthermore, there is a very limited

[1]The money market is at equilibrium when the money demand and money supply are at the same quantity.

number of empirical studies that investigate the money demand function in monitory policy in MENA countries. Therefore, we try to fill the gap by introducing a methodology that would address the money demand function. We use panel autoregressive distribution lag (ARDL) and we test for cointegration, then applied the error correction model, and the pooled mean group estimator (PMGE) by Watson (1993). Further we test the stability by applying the CUSUMSQ (CUSUM squared). Our empirical result shows a cointegration between the variable, also, strong and stable long-run money demand for MENA countries.

The remainder of the paper is organized as follows: Section 2 provides a literature review, Section 3 methodology and data description, Section 4 result, Section 5 conclusion.

2.Literature review:

Many studies estimate that the demand for money is affected by the Exchange rate. Mundell (1963) study the effectiveness of monetary policy and fiscal policy and how they are affected by the exchange rate, and therefore, he made the argument that exchange rate has an effect on the demand for money and he claims " The demand for money is likely to depend upon the exchange rate in addition to the interest rate and the level of income; this would slightly reduce the effectiveness of a given change in the quantity of money, and slightly increase the effectiveness of the fiscal policy on income and employment under flexible exchange rates, while, of course, it has no significance in the case of fixed exchange rates". Bahmani and Pourheydarian (1990), applied Mundell's theory by including the exchange rate in the money demand specification for Canada, Japan, and the United States of America. They argued that when domestic currency declines or foreign currency rises, domestic residents are expected to hold more foreign currency and less domestic currency, this called 'expectation effect' can reduce the demand for money. In other words, a depreciation in the currency may have a negative impact on the demand for money. Hassan (1992) study the relation between credit constraint, foreign interest rate, currency depreciation, domestic income, and inflation on the demand for money in Bangladesh. The result reveals that Bangladesh is not the open economy, and interest rate, currency depreciation does not play a major role in the demand for money Mcgibany and Nourzad (1995) examine the exchange rate volatility in the US money demand for the period of 1974 to 1990. They find the exchange rate volatility has a negative effect on the demand for money M2. Hassan, Choudhury, and Waheeduzzaman (1995) examine the black-market exchange rate on the demand for money in Nigeria. They find that inflation, real

income (GDP), and opportunity cost variable the determinant of demand for money in Nigeria. Also, a decrease in the block market will result in depreciation on the demand for money. Bahmani and Chi Wing Ng (2002) examine the long-run demand for money in Hong Kong using an autoregressive distributed lag (ARDL), and the CUSUM (cumulative sum) and CUSUMSQ (CUSUM squared) they use a quarterly data for the period of 1985 to 1999. The result shows the M2 is cointegrated with the variable and the money demand is stable. Bahmani and Rehman (2005) examine the stability of money demand in 7 Asian countries (India, Indonesia, Malaysia, Pakistan, the Philippines, Singapore, and Thailand). In their study, they use the CUSUM (cumulative sum) and CUSUMSQ (CUSUM squared) tests into cointegration analysis, their results show that real M1 or M2 monetary aggregates are cointegrated with their determinants, and therefore the estimated parameters are unstable. Another study was done by Bahmani and Gelan (2009) study the demand for money in 21 African countries using quarterly data from 1971 to 2004. In their study they apply the bounds testing approach to cointegration and error correction modeling. Also, following his paper he adds the CUSUM and CUSUMQ test to the residuals of the error correction model. The result shows that the M2 is stable in most 21 countries, which means the demand for money is stable. Bahmani (2013) study the exchange rate volatility and how it can affect the demand for money in 15 non-developed countries for the period of 1980 to 2009 by using annual data. In her study she used the bound testing approach, error correction model. She finds that exchange rate volatility has a short-run effect on the demand for money M2. Long and Bui Hien (2016) study the determinants of money demand in Vietnam between 2003 to 2014 by applying monthly data. They apply the unit root test, cointegration techniques, fully modified ordinary least squares, the dynamic ordinary least square, and the CUSUM and CUSUMQ. The result shows that the demand for money is stable in Vietnam. Nchor and Adamec (2016) examine the demand for broad money and its stability in Ghana using a time series data from 1990 to 2014. They apply the cointegration approach and the Error correction model and the CUSUM. The result reveals that variables are cointegrated and non-stationary, and the interest rate has a short-run effect on demand for money, while GDP has a long-run effect. Further, the demand for money was stable in that period. Mohsen Bahmani, Haliciogl and Sahar Bahmani (2017) study the demand for money in Turkey by assuming that exchange rate changes have an asymmetric effect on the demand for money. They use quarterly data, and they find that the exchange rate has a short and long-run asymmetric effect in the M1 demand for money. Bahmani and Nayeri (2017) use

nonlinear models and policy uncertainty in studying the demand for money in Australia. They found that there is a significant long-run asymmetric effect on the demand for money. Bahmani, Halicioglu and Sahar Bahmani(2017) study the demand for money in Turkish by using the nonlinear ARDL model, and they show that exchange rate changes do have a short and long-run asymmetric effect on the monetary aggregate M1.Aworinde and Toye (2018) examine the asymmetric effect of the exchange rate on demand for money by using linear and nonlinear autoregressive distribution lag (ARDL) approach using quarterly data from 1960 to 2017. The result reveals that exchange rate changes have short and long-run asymmetric effects on demand for money in Nigeria.

The literature has presented many studies and empirical work for the money demand, however, there are very few studies that address the demand for money in some of MENA countries. Some of these studies Darrat and Mutawaa (1996) study the Money demand function for the United Arab Emirates, and they use the non-oil GDP to obtain quarterly data and estimate the error correction model by OLS. They use the log of M1 to the log of non-oil GDP, the log of foreign interest rates, the log of the inflation rate and nominal exchange rate plus an error correction term. The result of the study supports the use of M1 as an intermediary target for monetary policy, also, the parameters are stable and have their expected signs. Hassan and Aldayel (1998) study the stability of the demand for money in 13 countries. They use two different financial system one is the Islamic financial system while the other is a western system. They find that interest-free money is more stable than interest-bearing money. Khatib and Towaijari (1999) use OLS to estimate Saudi Arabia's money demand function. They regress the log of real M1 on the log of non-oil GDP, interest rate, inflation rate, and real exchange rate from1977-1997 they use the residuals to estimate an error correction model. They conclude that the interest rate is low and statistically non-significant.

Harb (2004) use a panel for six Gulf Cooperation Council (GCC) to study the effect of the exchange rate on the demand for money, from 1979 to 2000. He uses Pedroni's cointegration test, and group means cointegration vectors are estimated using FMOLS and Modified FMOLS. the result shows that variables are not stationary and cointegrated. Also, he finds M1 to show better performance than M2. Another study that had been done for the same period by Lee et al (2008) applied the likelihood-based cointegration test in heterogeneous panels. He finds that at least two

cointegrated correlation in the four-dimensional vector error-correction model for the variables of the real money balance, the real scale variable, the nominal interest rate, and the exchange rate. Basher and Fachin (2012) examine the long-run demand for money in the GCC countries for the period of 1980 to 2009 using panel technique. The result shows that there is stability in the money demand for the long run. Helmi, Said, and Sbia (2015) they estimate the money demand function for six Gulf cooperation council countries. They use quarterly data from 1980 to 2011 they apply panel cointegration tests. They use the fully modified least square and Dynamic ordinary least square in their analysis. They find that the variables are cointegrated and money demand is stable in the long run.

3. Data and methodology:

Data:

We use yearly data, due to the limitation of the quarterly data. The source we obtain most of our data is the world bank database. Following Mundell (1963) the noble prize we examine the exchange rate to see its effect in demand for money. we add the import and export in our model to see if it affects demand for money. Following the pioneering works of demand for money (Bahmani and Chi Wing Ng,2002; Sahar Bahmani, 2013; Long and Bui Hien, 2016; Dennis Nchor, and Valcav Adamec, 2016; among others)

The long-run money demand model is expressed as follows:

$$LnM_t = \beta_0 + \beta_1 LnY_t + \beta_2 LnEx_t + \beta_3 LnIMP_t + \beta_4 LnIXP_t + \beta_5 I_t + \varepsilon_t \qquad (1)$$

Where M2 is a monetary aggregate in real term (M2); Y is the real GDP; Ex is nominal exchange rate; IMP, and EXP are import and export; I the inflation rate. The Real GDP function as a record of the country's economic health and evaluate the economic development of the country and its proxy for country income. The exchange rate account for the possibility of currency substitution, Bahmani and Chi Wing Ng (2002) indicate that as the currency depreciates the demand for domestic currency will decrease. For example, as the number of the MENA currency, appreciate people are expected to hold more MENA currency, while if the MENA currency depreciate people will hold less MENA currency, which leads to a decrease in the demand for money. The Inflation rate measure for price changes, it used as a proxy for the opportunity cost of holding money according to Sara Bahmani (2011) in less developed countries the interest rate is fixed by the government, so it's not a market-determined, therefore, using inflation will have a better result. In an open economy, if a country imports more than it exports, there is relatively less demand for its

currency, so prices decline. That results in currency depreciation or lose value, as the currency depreciates the demand for money decreases. And the opposite is true in case they export more, the currency well appreciates and therefore demand for money will increase. M2 is a calculation of the money supply that includes checking deposits, cash, money market securities, savings deposits, mutual funds, and other deposits. The Ln is the natural logarithm. Appendix A has variables explanations.

The short-run effect of demand for money is distinguished from the long-run effect. To do so, we apply the autoregressive distribution lag (ARDL) cointegration procedure. The ARDL was introduced by Persiaran and shin(1999) and Pesaran et al(2001) this model has couple advantages, first, it does not need for all the variable must be Integrated of the same order it can be applied when the variable is of order one, zero, or fractionally integrated. Lastly, the result of the ARDL is unbiased estimates for the long run. To test for the null of no cointegration against the long-run relationship regardless of whether the underlying variables are I (0), I (1), or fractionally integrated. Therefore, Equation (2) specified an error correctio model representation of the ARDL model. Following Pesaran et al (2001) bound testing approach we write (1) as (2):

$$\Delta LnM_t = \beta_0 + \sum_{i=1}^{n1}\beta_i \Delta LnM_{t-i} + \sum_{i=0}^{n2}\delta_i \Delta LnY_{t-i} + \sum_{i=0}^{n3}\varphi_i \Delta LnEx_{t-i} + \sum_{i=0}^{n4}\omega_i \Delta LnEXP_{t-i} + \sum_{i=0}^{n5}\omega_i \Delta LnIMP_{t-i} + \sum_{i=0}^{n5}\eta_i \Delta I_{t-i} + \rho_0 LnM_{t-1} + \rho_1 LnY_{t-1} + \rho_2 LnEx_{t-1} + \rho_3 LnEXP_{t-1} + \rho_4 LnIMP_{t-1} + \rho_5 I_{t-1} + \varepsilon_t \quad (2)$$

The short-run effects are then inferred by the coefficient estimates attached to all of the first-differenced variables which are the estimates of βi, δi, φi, ηi and ωi. The long-run effects are inferred by the estimates of ρ1 -ρ5 that are normalized on ρ0. However, for the long-run coefficients to be meaningful, we test for cointegration, and we must justify the joint significance of lagged level variables as a sign of cointegration. Pesaran et al. (2001) propose using the standard F test for the joint significance of lagged level variables. By assuming all variables to be non-stationary, or I (1), and/or to be stationary, I (0), therefore they provide an upper bound critical value and lower bound critical value. If the computed F-statistic falls above the upper bound critical value, then the null of no cointegration is rejected. But if it falls below the lower bound then the null cannot be rejected. For joint significance that establishes cointegration among the variables, the calculated F-statistic should be greater than the upper bound critical value. From that

we can estimate the long-run coefficient of money demand function and the ARDL error correction model.

Methodology:

The empirical study is divided into steps, first: after the summary statistic, and the pairwise correlation between the variables, we apply unit root test to see if the variable contains panel unit root to confirm the stationary of the variables. Since we have unbalanced data, we will apply the LM-Pesaran-Shin, other tests like Levin–Lin–Chu (2002), Harris–Tzavalis (1999), Breitung (2000 and Das 2005), and Hadri Lagrange multiplier LM (2000) requires a strong balance data set. Second, applying the panel cointegration using Pedroni (2004) to establish a cointegrating long-term equilibrium relationship between money demand and its factors. Then I will test multicollinearity, pooled OLS, Hausman test, fixed effect with year control. Lastly the ARDL model with error correction and the diagnostic test, white test, LM test, RESET test, and stability test CUSUMQ.

4.Empirical Result:

In this section we will start by providing the summary statistic and the correlation. By using the annual data for the period between 2002 and 2016 for 15 MENA countries. We restrict our self to annual data because of the availability of the data on an annual basis, further, we only use a 15 country because Syria and Yemen, due to the war in their country the data was not documented after 2009 which causes missing data, therefore elimination is best.

A. The summary statistics:

We present the summary statistic for15 countries between the years of 2002 to 2016.

As we can see in the table, we have unbalanced data with a maximum of 225 observations and a minimum of 221 observations. The GDP has the highest mean followed by inflation. Inflation has the highest stander deviation followed by GDP; a high standard deviation of the variable may imply that variables vary among the nations.

Table 15-summary statistics:

Variable	Obs	Mean	Std. Dev	Min	Max
M2	221	4.673386	.3111746	2.77368	5.289307
GDP	223	25.17364	1.040356	22.9832	27.35177
NEX	224	4.656862	.1871461	3.597586	6.129116
Inflation	225	6.122725	11.12634	-26.86571	35.56745
Import	225	3.685883	. 396129	2.865529	4.545393
Export	225	3.818836	.4375484	2.336548	4.652121

B. The correlation analysis:

Table 16-Pairwise correlation:

	M2	GDP	NEX	Inflation	Export	Import
M2	1.0000					
GDP	0.5805*	1.0000				
NEX	0.1146	0.0676	1.0000			
Inflation	0.4455*	0.6941*	-0.0516	1.0000		
Export	0.1656*	0.1499*	0.1383*	-0.0170	1.0000	
Import	-0.1560*	-0.2025*	0.1330*	-0.3086*	0.4353*	1.0000

- The significant at 5% level

The table shows that GDP is correlated positively with M2. inflation is correlated with M2, and GDP. Export has a positive correlation with M2, GDP, and nominal exchange rate. lastly Import is correlated negatively with M2, GDP, Inflation, while positively with the exchange rate, and Export. An Increase in imports will increase exporting means a more open economy.

C. The pooled OLS & fixed effect:

The study proceeds to estimate the pooled OLS estimator in table 3. Where M2 is the dependent variable, while GDP, nominal exchange rate, inflation, Export and Import as an independent variable.

Further to overcome the biases of the OLS test we apply the Husman test to see which model is appropriate whether the random effect or fixed effect. The Hausman test result reveals that the fixed effect better estimates with Prob>chi2 0.0192. applying fixed effect with control for year and country to control for autocorrelation and heteroskedasticity. The table below represents the long-run relationship using pooled OLS and the Fixed effect result.

Table 17-Pooled OLS and fixed effect of long-run relation for the demand for money:

$$LnM_t=\beta_0 + \beta_1 LnY_t + \beta_2 LnEx_t + \beta_3 LnIMP_t + \beta_4 LnIXP_t + \beta_5 I_t + \varepsilon_t$$

VARIABLES	(Pooled OLS) LM	(FE) LM
GDP	0.881***	0.396***
	(0.156)	(0.084)
NEX	0.101	0.062
	(0.128)	(0.231)
inf2	0.003	0.002
	(0.002)	(0.002)
EXP	0.110**	0.307
	(0.047)	(0.383)
IMP	-0.097*	-0.660*
	(0.054)	(0.355)
Constant	4.043***	5.633***
	(0.566)	(1.266)
R-squared	0.364	0.679
Number of ids		15
country FE		Yes
Year FE		YES

*** indicate significant at 1% level, ** indicate significant at 5% level, * indicate significant at 10% level

The first column is the pooled OLS, the result shows that there is a positive and significant relation for GDP, and export, while import has negative relation, which indicates that these variables affect the demand for money positively. GDP reflects the health of the economy increase in GDP would require an increase in demand for money. Export has positive relation while import has a negative

relation, indicating that as the economy opens its doors for trade exporting good will increase the demand for money, how? By exporting goods, the value of the currency will increase, therefore appreciate the demand for money. On the other hand, importing will reduce the values of the currency, and therefore depreciated the demand for money. The exchange rate has positive but not significant as the exchange rate appreciates people will hold more of the currency and the demand for more money. The second column show, the result of the fixed effect where GDP is positive and significant the nominal exchange rate is positive but not significant. Import has a negative relation the more they import the value of the currency would depreciate and therefore decrease the demand for money.

Checking for multicollinearity, we will apply the variance inflation factor according to Hair et al, (2010) and Ringle et al, (2015) indicate that if VIF < 10 then we will have a low probability of Multicollinearity. Based on the result from the table we can see that we will have a low probability of multicollinearity.

Table 18-Variance inflation factor:

Variable	VIF
Export	1.35
Import	1.41
GDP	2.13
NEX	1.20
inflation	2.16
Mean VIF	1.65

In the following section we will do the ARDL model and its specification, first we will start with the unit root test followed by the cointegration test. We apply the cointegration test to see if the variables are cointegrated or not, if the variables are cointegrated then we apply the error correction model.

D. The unit root test and panel cointegration test:

We apply the LM Psarian shin for our unbalanced data. The hypothesis assumes that all panels contain a unit root, while the alternative hypothesis is some cross-sections do not contain a unit

root (stationary). The result indicates that the series are more likely to have a panel unit root in their levels means nonstationary panel.

Perform the LM person unit root test with (1) lag, and first different:

Table 19-Unit root test stationary:

LM Persian unit root test	Level	First different
M2	Not stationary	Stationary
Export	Not stationary	stationary
NEX	Not stationary	Stationary
INFLATION	Stationary	
GDP	Stationary	
Import	Stationary	

The result shows that M2 and nominal exchange rates are stationary after taking the first difference and 1 lag, while the Tarde, GDP, and inflation are stationary at the one lag level. Appendix (B)

E. The cointegration test:

After checking the integration of our variable at order one, we follow by applying the cointegration test. Pedroni (2004) and Kao (1999) tests are performed to verify the presence of the long-run relationship between the variable the test results are displayed in table 17. Pedroni and Kao cointegration test revealed that all the variable rejects the null hypothesis of no cointegration at the 1% level and 10% level. We can conclude that long-run money demand exists for the panel where all the variables are cointegrated. Appendix c.

Table 20-Pedroni and Kao cointegration test:

Pedroni cointegration test:	Statistic
Modified Phillips-Perron t	3.2039***
Phillips-Perron t	-10.0272 ***
Augmented Dickey-Fuller t	-7.9572 ***
Kao cointegration test:	
ADF	1.5090*

*** * indicate significant at 1%, 10% level.

F. The ARDL model:

Following the literature works of demand for money (Bahmani-Oskooee and Chi Wing Ng,2002; Sahar Bahmani, 2013; Long and Bui Hien, 2016; Dennis Nchor, and Valcav adamec, 2016; among others) we apply the Autoregressive distribution lag (ARDL) cointegration procedure by Persons (2001). The cointegration result of Padroni shows that the variables are cointegrated, and the relation of the long run exist, so we have to add an error correction term in the model.

Table 21-ARDL model short-run vs long-run relationship:

VARIABLES	Bahrain	KSA	Kuwait	Qatar	UAE	Oman	Jordan
ECT	-1.383***	-0.721***	-1.229***	-0.568***	-0.307	-1.579***	-0.927***
	(0.177)	(0.206)	(0.183)	(0.167)	(0.387)	(0.170)	(0.211)
D.LGDP	0.469	0.074	0.092	0.073	0.086	-0.396	-2.346***
	(0.330)	(0.489)	(0.218)	(0.239)	(0.467)	(0.344)	(0.649)
D.LNEX	2.377***	0.685	1.387**	1.131	-0.383	1.412***	1.454***
	(0.511)	(0.783)	(0.673)	(0.697)	(1.181)	(0.326)	(0.557)
D.inf2	0.005**	0.007**	0.000	0.001	0.005	-0.002	0.009*
	(0.002)	(0.003)	(0.002)	(0.002)	(0.006)	(0.002)	(0.005)
D.LEXP	1.106**	-0.467	0.223	0.122	-0.236	0.499***	1.196
	(0.528)	(0.591)	(0.467)	(0.351)	(0.769)	(0.185)	(0.738)
D.LIMP	-0.978**	0.055	0.682***	-0.651***	-0.527	0.363***	-0.646
	(0.426)	(0.225)	(0.208)	(0.213)	(0.415)	(0.095)	(0.440)
Constant	16.492***	8.798***	14.691***	6.741***	3.790	18.807***	11.545***
	(2.247)	(2.524)	(2.537)	(2.062)	(4.826)	(2.078)	(2.624)

Panel B: long run for each country and diagnostic:

GDP	0.455	0.400	-0.302	1.276**	0.572	-0.018	-3.310**
	(1.089)	(0.868)	(0.510)	(0.432)	(0.629)	(1.528)	(1.321)
LNEX	1.000	-0.141	-0.424	-0.444	-1.221***	-0.507	0.055
	(0.592)	(0.779)	(1.165)	(0.656)	(0.301)	(0.961)	(0.409)
inf2	0.004	0.001	0.009	-0.007	-0.005	0.005	0.030**
	(0.013)	(0.011)	(0.010)	(0.005)	(0.008)	(0.014)	(0.012)
LEXP	1.695	0.425	0.116	-0.198	-0.464**	0.468	0.531
	(0.904)	(0.247)	(0.361)	(0.238)	(0.135)	(0.412)	(0.312)
LIMP	-1.461*	-0.051	-0.517	-0.729**	-0.725**	-0.729*	-0.141
	(0.670)	(0.219)	(0.363)	(0.216)	(0.222)	(0.341)	(0.251)
R-squared	0.889	0.859	0.857	0.924	0.933	0.726	0.904

Continue Table 22-ARDL model short-run vs long-run relationship:

Panel C:

Diagnostic:							
White test	0.369	0.3738	0.3738	0.3738	0.3738	0.3738	0.3738
LM	0.4549	0.9534	0.0520	0.016	0.0653	0.0831	0.0482
RESET	0.9912	0.3828	0.3302	0.0357	0.2475	0.5526	.1282
CUSUMQ	stable	stable	stable	stable	stable	stable	Not stable

VARIABLES	Algeria	Egypt	Iran	Iraq	Lebanon	Libya	Tunisia	Morocco
ECT	-0.849***	-0.432**	-0.028	-1.777***	-0.606***	-0.211***	-0.779***	-1.456***
	(0.254)	(0.200)	(0.133)	(0.215)	(0.114)	(0.074)	(0.266)	(0.270)
D.LGDP	-0.925**	0.091	0.086	-1.017***	0.734**	0.714***	0.685	1.040***
	(0.414)	(0.590)	(0.409)	(0.321)	(0.292)	(0.123)	(0.720)	(0.400)
D.LNEX	1.908***	0.576	-0.131	0.081	1.072***	0.066	1.492	-10.075***
	(0.585)	(0.404)	(0.165)	(0.598)	(0.371)	(0.630)	(1.588)	(2.943)
D.inf2	0.007***	0.006	0.007	0.003*	-0.033***	-0.001	-0.027	-0.040*
	(0.002)	(0.008)	(0.006)	(0.002)	(0.004)	(0.002)	(0.024)	(0.023)
D.LEXP	-0.057	0.328	0.113	-1.007***	-0.366*	0.689***	1.695	0.328
	(0.795)	(0.428)	(0.545)	(0.386)	(0.195)	(0.228)	(1.452)	(0.617)
D.LIMP	-0.211	-1.194*	-0.132	-0.049	0.617	-0.058	-0.866	-0.215
	(0.365)	(0.644)	(0.430)	(0.115)	(0.386)	(0.201)	(1.429)	(0.536)
Constant	10.361***	5.281**	0.261	22.109***	7.347***	2.315***	9.395***	17.867***
	(3.069)	(2.467)	(1.591)	(3.256)	(1.415)	(0.892)	(3.238)	(3.888)

Panel B: long run relation:

GDP	-0.527	1.227	0.099	2.352	3.582	3.411	-0.030	0.137
	(0.380)	(1.396)	(0.497)	(1.818)	(3.486)	(2.782)	(0.604)	(0.591)
LNEX	0.277	1.355	0.490**	-0.820	0.512	18.415	0.506	-5.187*
	(0.604)	(2.007)	(0.175)	(1.221)	(2.219)	(13.744)	(0.660)	(2.639)
inf2	0.014*	0.009	0.004	-0.016	-0.057	-0.007	-0.006	0.000
	(0.006)	(0.023)	(0.007)	(0.013)	(0.047)	(0.018)	(0.029)	(0.034)
LEXP	0.230	-0.280	0.017	-0.546	-0.331	3.181*	0.498	-0.382
	(0.198)	(1.517)	(0.630)	(0.860)	(0.802)	(1.470)	(0.774)	(0.799)
LIMP	-0.006	-0.501	0.064	0.620	0.651	-1.624	-0.462	-0.426
	(0.206)	(2.305)	(0.458)	(0.550)	(1.677)	(0.907)	(1.002)	(0.421)
R-squared	0.858	0.541	0.565	0.899	0.653	0.943	0.678	0.694

Continue- Table 23-ARDL model short-run vs long-run relationship:

Panel C:

Diagnostic:								
White test	0.3738	0.3738	0.3738	0.3575	0.3738	0.3738	0.3738	0.3738
LM	0.6085	0.2953	0.0895	0.3672	0.4071	0.3976	0.0309	0.0029
RESET	0.8492	0.5935	0.1321	0.2751	0.0068	0.9969	0.8688	0.9113
CUSUMQ	stable	stable	stable	Stable	stable	Stable	Stable	Not stable

*** indicate significant at 1% level, ** indicate significant at 5% level, * indicate significant at 10%

Table 18 presents the short-run coefficient estimate, in most cases for each first different variable there is at least one significant coefficient estimate, implying that GDP, inflation, exchange rate, Export, and import do have short-run effects on the demand for money in most 15 MENA countries. Further, the error correction term (ECT) it is important to have a negative coefficient obtain for ECT which support the cointegration and reflect the adjustment toward the long-run equilibrium, further the ECT in the short run table denote that there is a long-run cointegration at 1% level, so any divination from the long run is corrected .868 for Bahrain and at .405 for Kuwait and the same for the rest of the countries. It is interesting to say that for Lebanon, Algeria, Bahrain, Kuwait, Oman, and Jorden the exchange rate is positive and significant in the short run. While its negative for Morocco that means in the short-run appreciation in the exchange rate will increase the demand for money, on the other hand depreciation will result in decreased demand for money. For GDP it's positive and significant for Libya, Morocco, and Lebanon; however, it is positive but not significant for the rest of the countries except, Jordan, Algeria, and Iraq is negative significant in the short-run, increase in GDP will increase the demand for money, so people can be able to meet the requirement of a good life. Inflation has a positive and significant results for Bahrain, KSA, Jordan, Algeria, and Iraq, while its negative for Lebanon and Morocco in the short-run increase in inflation will increase the demand for money. Export has a positive and significant relation with Bahrain, Libya and Oman, increase exporting the goods will support the value of the currency and result in an appreciation of the currency and increase the demand for it, its negative for Iraq and Lebanon. Import has a positive and significant relation with Bahrain, Qatar, and Egypt, while it's positive for Oman and Kuwait. An increase in the import of goods will weaken the value of the currency and therefore reduce the demand for money.

We can say that for the long run a percentage change in the exchange rate is associated with an increase in the demand for money in Iran, most of the other countries we can see a positive relation which indicates an increase in the exchange rate will increase the demand for money. While UAE and Morocco have negative and significant relation, have negative relation indicate that a percentage change in the exchange rate is associated with a decrease in the demand for money. The percentage change in inflation is associated with an increase in the demand for money Jorden and Algeria. Further Qatar has positive and significant results while other countries are positive only, an increase in GDP will increase the demand for money, except for Jorden has negative and significant Oman, Kuwait. Algeria, Tunis has a negative result with GDP. For exporting its positive and significant for Libya, while negative for UAE. Importing has a negative and significant relation with Bahrain, Qatar, UAE, Oman, and most of the countries has negative relation, which indicates the more they import goods from other countries the more they will weaken their currency value and therefore decrease the demand for money.

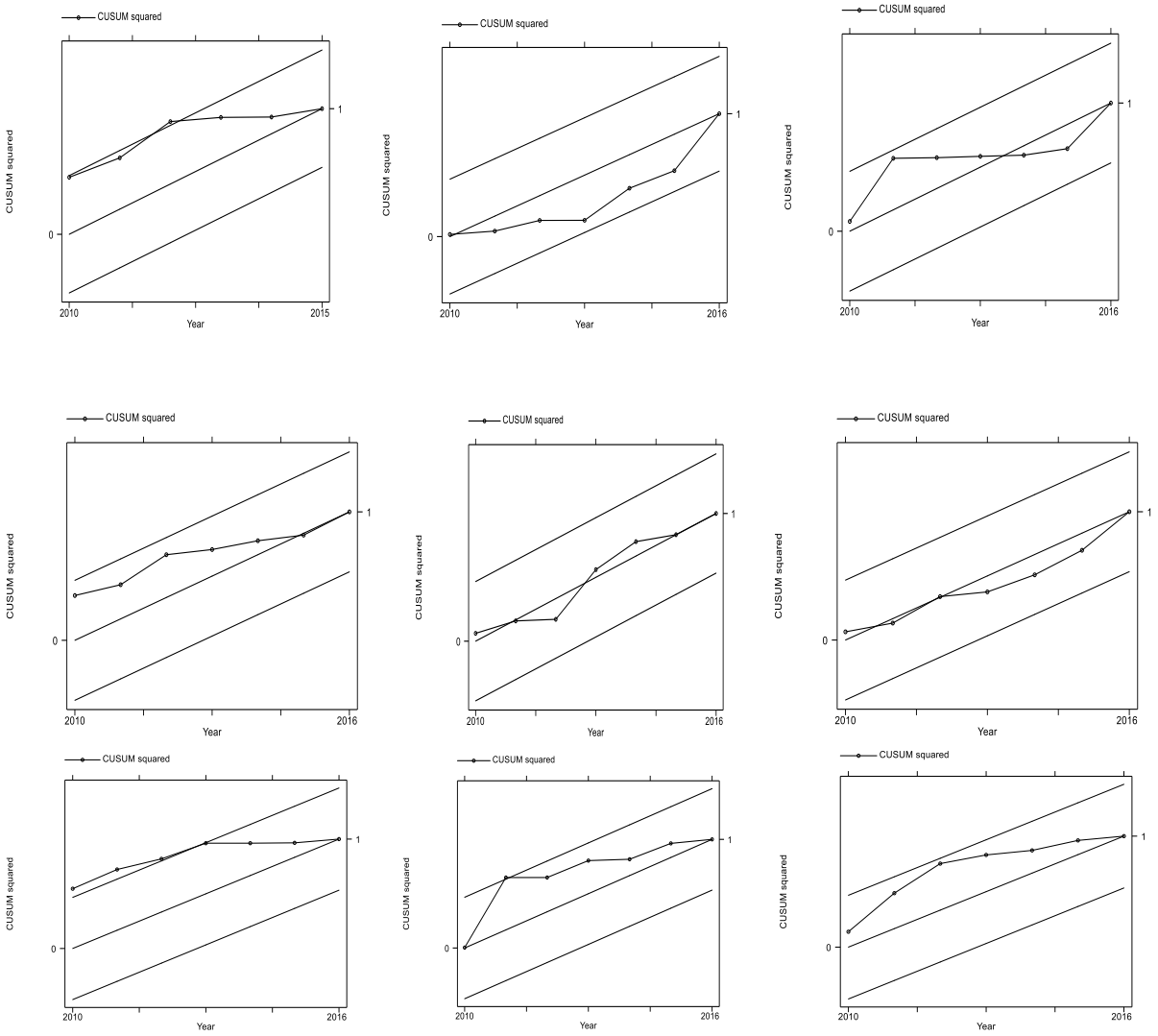
To answer the question of whether the short-run effect is permanent or transitory? we compare both panels. For GDP I can say the negative sign followed for Jorden, Oman, and Algeria. The inflation we can say that it was positive in the short run for Jordan, and Algeria. For import it cries for Bahrain, Qatar, and Oman. It is clear the short-run effect does not carry to the long-run effect especially the exchange rate and exporting goods and services.

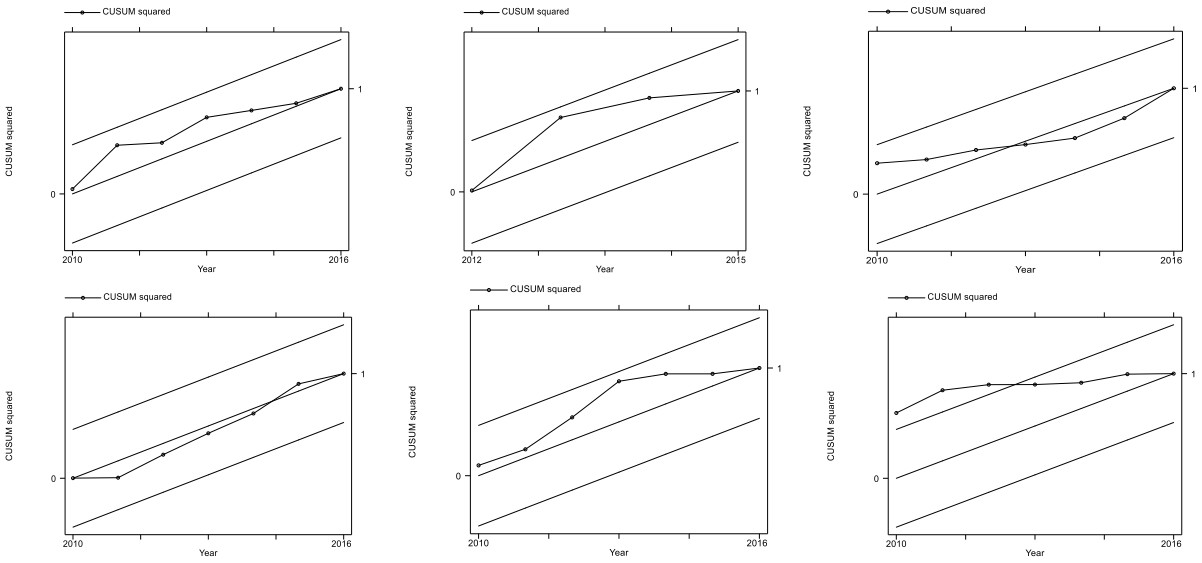
For the diagnostic test, it is necessary to test for cointegration to make sure that the variables are cointegrated, and the result shows that the variables are significantly cointegrated at the 1% level. Also, apply the ECT error correction term is important to have a negative and significant coefficient obtain for ECT which supports the cointegration and reflects the adjustment toward the long-run equilibrium.

Furthermore, we apply three other diagnostic statistics, the Lagrange multiplier LM test to test for the correlation (relation between the error correction and its values) the presences of autocorrelation, the Ramsey RESET suggest that the model is well specified, and white test for heteroscedasticity. Both of the first tests are distributed as one degree of freedom. The result in most cases they fail to reject the null hypothesis and the as can be seen in the diagnostic section in the table, implying free no heteroscedasticity, and a correctly specified model. For autocorrelation we can see there is an autocorrelation problem in most cases. Furthermore, following Bahmani's

papers, we apply the CUSUMSQ test to assess the parameter stability, the result reveals that most the country indicates the absence of any instability of the coefficient because the plot of CUSUMSQ statistic falls inside the critical band of the 5% confidential interval of parameter stability except for, Jorden and Morocco.

Figure 3- Represent the stability of the Money demand graph: (Bahrain, KSA, Kuwait, Qatar, UAE, Oman, Jourdan, Algeria, Egypt, Iran, Iraq, Lebanon, Libya, Tunisia, Morocco) respectively:





The graphs show the stability of the money demand in MENA countries as follows (Bahrain, KSA, Kuwait, Qatar, UAE, Oman, Jourdan, Algeria, Egypt, Iran, Iraq, Lebanon, Libya, Tunisia, Morocco) respectively.

For Jorden we can see that it was above the 5% boundary Before 2010 tell 2012, then it returns to be stable.

Morocco is, above the 5% boundary before 2010 up until 2012 then it returns to be stable.

The other countries like (Bahrain, Egypt, Iran, Jourdan, KSA Kuwait, Lebanon, Libya, Oman, Qatar, UAE) We can see that it is stable for the period.

5. Summary and conclusion:

It is well known by Mundell and others, that there is three important determinant for the demand for money, they are income (GDP), Interest rate, in our paper we replace it with inflation due to limitation of the interest rate were its fixed by the government and will not give an accurate result, and lastly exchange rate. We add to the literature by examining 15 MENA countries, from 2002 to 2016 using annual data. Further, in our paper we add Exporting and Importing goods. We were, interested to see if it affects in the long run, the result indicates that in the long run import has a negative and significant effect at 10% level for the Fixed effect, and pooled OLS. Which indicates in an open economy where the percentage of Import increase may result in a decrease in money demand, how? By favoring the product of the other country, which weakens the currency of the same country and therefore depreciation in the demand for money. In other words, if a country imports more than it exports, there is reasonably less demand for its currency, so prices should decrease. The case of currency depreciates or loses its value, the currency depreciates the demand

for money decline. GDP in Pooled OLS and Fixed effect models have a positive and significant result in the long run. GDP account for economic health increase in GDP (income)will result in an increased demand for money. Same for inflation, where it has positive relation only an increase in the price level will increase demand for money were citizens will require to increase their income to meet the changes in the price, and the opposite is right. For the exchange rate it is interesting to say that it is not significant in the Pooled OLS, or fixed effect but its positive an appreciation in the exchange rate will result in appreciation for the domestic currency. However, the result will vary from one country to another.

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Appendix:

chapter 1:

a) Variable explanation and sources:

Variable	Definition	Proxy	Resource
FDI	Foreign direct investment refers to direct investment equity flows in the reporting economy. Data are in current U.S. dollars.	FDI net investment	World bank
Trad Openness	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	Trade	World bank
Capital formation	Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Data are in current U.S. dollars. .	Government support	World bank
Labor force	Labor force comprises people ages 15 and older who supply labor for the production of goods and services during a specified period. Labor /GDP. To get the labor growth	Labor growth	World bank
GDP per capita	GDP per capita is gross domestic product divided by midyear population. Data are in current U.S. dollars.	Economic growth	World bank
Inflation	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.	Macroeconomic stability	World bank

Political Stability and Absence of Violence/Terrorism	captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.	Country stability	World bank
Liquidity	Stock market liquidity, how investors can access their saving.	Stock market traded value (% of GDP)	World bank
Savings	Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption).	Gross domestic savings (% of GDP)	World bank
Stock	Stock market development, value of listed shares as % GDP.	Stock market capitalisation (% of GDP)	World bank
Bank	Banking sector development, refers to financial resources provided to the private sector by other depository corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable	Domestic credit to private sector by banks (% of GDP)	World bank
GDP	Gross domestic product, market size and level of income	Level of income	World bank
Nominal exchange rate	Local currency against the United States Dollar (US $)	EX	World bank

B:
Stock market development as dependent variable:

	(Pooled OLS)	(RE)
VARIABLES	Stock	stock
Bank	0.805***	0.717***
	(0.127)	(0.179)
Liquidity	0.455***	0.477***
	(0.032)	(0.096)

saving	0.009***	0.008
	(0.002)	(0.007)
EX	-0.184	-0.041
	(0.138)	(0.145)
Inflation	-0.023***	-0.020
	(0.007)	(0.014)
POS	-0.177**	-0.150
	(0.071)	(0.195)
LGDP	-0.114***	-0.128***
	(0.024)	(0.033)
FDI	-0.069**	-0.106
	(0.035)	(0.065)
Constant	5.268***	5.742***
	(1.184)	(1.533)
Observations	144	144
R-squared	0.711	
Number of id		10

Chapter 2:

a) Variable explanation and sources:

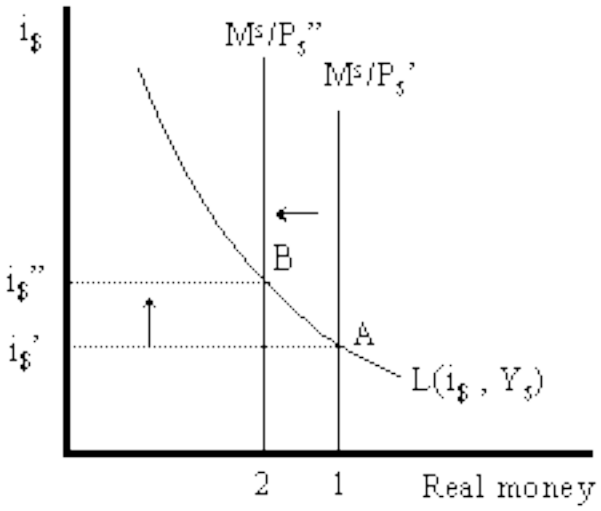
Variables	Definition	proxy	Source	
M2	a monetary aggregate in real term.	Proxy for the money demand	World Bank national accounts data, and OECD National Accounts data files.	
Export		.	World Bank national accounts data, and OECD National Accounts data files.	+
GDP	It's functions as a comprehensive scorecard of the country's economic health and evaluate the economic development of the country.	Proxy for country income.	World Bank national accounts data, and OECD National Accounts data files.	+

NEX	the number of units of the domestic currency that can purchase a unit of a given foreign currency	Proxy for currency substitution	World Bank national accounts data, and OECD National Accounts data files.	+
Inflation	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price level change in the economy as a whole.	Proxy for opportunity cost of holding money	World Bank national accounts data, and OECD National Accounts data files.	+

B) Explanation of variables on demand for money.

- Explanation for inflation: by Steven Suranovic (1996).

"Suppose the money market is originally in equilibrium at point A in the adjoining diagram with real money supply $M^S/P_\$'$ and interest rate $i_\$'$. Suppose the price level increases, ceteris paribus.



Again, the ceteris paribus assumption means that we assume all other exogenous variables in the model remain fixed at their original levels. In this exercise it means that the money supply (M^S) and real GDP ($Y_\$$) remain fixed. An increase in the price level ($P_\$$) causes a decrease in the real money supply ($M^S/P_\$$) since M^Sremains constant. In the adjoining diagram this is shown as a shift from $M^S/P_\$'$ to $M^S/P_\$''$. At the original interest rate, $I_\$'$, the real money supply has fallen to 2 along the horizontal axis while real money demand remains at 1. This means that money demand exceeds money supply and the actual interest rate is lower than the new equilibrium rate. Adjustment to the higher interest rate will follow the" interest rate too low" equilibrium story.

More intuition concerning these effects arises if one recalls that price level increases will increase the transactions demand for money. In this version, nominal money demand will exceed nominal money supply and set off the same adjustment process described in the previous paragraph.

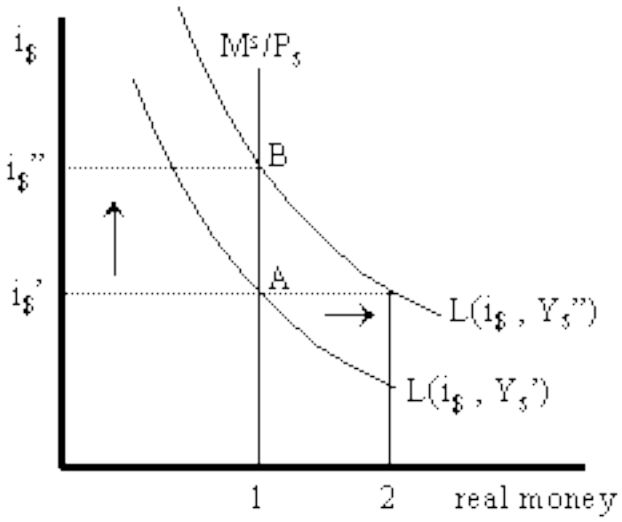
decrease in the money supply) will cause an increase in average interest rates in an economy and increase in interest rate will cause the demand for money increase. “

- Explanation for Exchange rate:

Bahmani and Chi Wing Ng (2002) indicate that as the currency depreciate the demand for domestic currency will decrease. Example, as the number of the MENA currency appreciate people are expected to hold more MENA currency, while if the MENA currency depreciate people will hold less MENA currency, which lead to decrease in the demand for money.

- Explanation GDP: by Steven Suranovic (1996)

“Suppose the money market is originally in equilibrium at point A in the adjoining diagram with real money supply $M^S/P_\$$ and interest rate $i_\$'$. Suppose real GDP ($Y_\$$) increases, ceteris paribus. It means that the money supply (M^S) and the price level ($P_\$$) remain fixed. An increase in GDP will raise the demand for money because people will need more money to make the transactions necessary to purchase the new GDP. In other words, real money demand rises due to the transactions demand effect. This increase is reflected in the rightward shift of the real money demand function from L ($i_{\$, Y\$'}$) to L ($i_{\$, Y\$''}$).



At the original interest rate, $i_\$'$, real money demand has increased to 2 along the horizontal axis while real money supply remains at 1. This means that real money demand exceeds real money

supply and the current interest rate is lower than the equilibrium rate. Adjustment to the higher interest rate will follow the “interest rate too low” equilibrium story.”

- Explanation for export and Import:

How can export and import affect the demand for money? in open economy if a country exports more than it imports, there is a high demand for its goods, and thus, for its currency. The supply and demand dictate that when demand is high, prices rise, and the currency appreciates in value. Appreciation of the currency will increase the demand for money. In contrast, if a country imports more than it exports, there is relatively less demand for its currency, so prices should decline. In the case of currency, it depreciates or loses value, as currency depreciate the demand for money decrease.

VITA

My name is Huda Alsayed I was born in Saudi Arabia. I obtain My Bachelor's degree in Accounting from King Abdelaziz University in 2008. I joined University of New Orleans in 2012 Accounting Graduate program. In 2015 I started My PhD in Economic and Finance.