



## INFLATION CAUSES IN PALESTINE AND THE ARAB COUNTRIES

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### **Abstract**

*This study aims to study the most important internal and external factors affecting the inflation in Palestine and the Arab countries, and measuring the impact of these factors on the inflation in Palestine and the Arab countries, and the variables in the estimated model is money supply in its board sense M2, real gross domestic products GDP, current expenditure, and the foreign exchange rate, and used of annual data during the period from 2000 until 2015.*

*This study used the applied methods of measuring the economic relations, using the cross – section data “panel data”, and used two techniques the pooled effect model and the fixed effect models to estimate this effect.*

*The study result finding there are a positive relation between the inflation and both of money supply and foreign exchange rate, and negative effect between the inflation and both of real GDP and current expenditure.*

**Keywords: Inflation, Panel Data, GDP, Money Supply M2, Foreign Exchange Rate, Pooled Model.**

### **Introduction**

Inflation is the most important economic problem facing most world economies, whether these economies developed or underdeveloped. Inflation effects extend to all sectors of the economy to any country suffers from it. Moreover, it is considered one of the controversial topics regarding the factors causing it, and thus the appropriate policies to overcome it. Inflation is affected by internal and external factors; those factors vary depending on the nature of the economy and the degree of openness to the outside world. In the small open economy, external conditions play an increasingly important role according to the degree of openness.

The Palestinian economy and other underdeveloped economies are suffering from price volatility, which affect all economic sectors. Knowing that the Palestinian economy has conditions make it different from the rest of the emerging economies, Palestinian trade balance faces a great deficit as a result of huge difference between imports to exports. Also, The Palestinian economy is exposed to the Israeli economy and this demonstrates that a significant rate of domestic inflation in Palestine comes from import prices, as well as a result of local currency Palestinian absence. There are three major currencies for trading on Palestinian economy (U.S. dollar, Israeli Shekel and Jordanian dinar), addition to European Euro which comes to Palestinian economy in the form of European aid.

This means that the Palestinian economy has no monetary policy controls the money supply of those currencies. The monetary policy role limits as an observer to the banking system without interfering in the exchange rates of those currencies and interest rates on loans of these currencies. Exchange rate fluctuate in the Palestinian economy lead to fluctuations in the purchasing power of the Palestinian people, as well as to differences in the price of imports, mostly family consumption of food and raw materials for Palestinian industry. Addition to this the political situation of Palestine and the Israeli procedures of blockade over Palestinian economy through closing border crossings and seizing Palestinian money affect domestic inflation rates.



### **Study Problem**

The Palestinian economy passes through unique circumstances differ from underdeveloped economies since there is no national currency, and the shortage in the trade balance and the relation with Israeli economy. All these factors have lead to imbalances in prices and emerge of inflation. The problem of the study can be illustrated by the main question:

### **What are the causes of inflation in Palestine and what similarities of underdeveloped countries?**

From this main question merges several questions:

1. Does the absence of Palestinian currency affect the domestic inflation in Palestine?
2. What is the impact of imported inflation on domestic inflation:?
3. Is there a relationship between money supply and inflation levels?
4. How does interest rate of different currencies in Palestinian economy affect domestic inflation?
5. Is there a role of the Israeli siege on the domestic prices in Palestine?

### **Study Hypotheses**

1. There is a relationship between money supply of currencies in the Palestinian economy and inflation in Palestine
2. Exchange rate fluctuations affect domestic inflation in Palestine
3. Israeli blockade over the Palestinian economy greatly affects the rate of inflation
4. High interest rates on loans affects inflation rate in Palestine

### **The importance of study**

1. Measure the economic factors that affect inflation in the short-term and long-term
2. Determine the percentage of each of the factors affecting inflation and the length of time it takes for this effect.
3. The search makes use of the time series from 2000 - 2013.
4. The absence of studies which addresses inflation determinants in underdeveloped countries, and the absence of a study on inflation determinants in Palestine.

### **Study objectives**

1. Cognition the causes of inflation in Palestine
2. Clarifying the effect of the Palestinian currency absence on inflation levels in Palestine.
3. Determining the impact of imported inflation on domestic inflation in small open economies.
4. Showing the impact of higher interest rates on bank loans on domestic inflation.

### **Review of the Related Literature**

Study Mansour (2010) entitled: inflation dynamics in Yemen

This study aimed to explain the inflation dynamics in Yemen during the time period (1990-2007) to this end, he used three distinct models: One-equation model, a model construction methodology, the error correction. The results of this study suggest that the inflation dynamics in Yemen affected by international shocks, and low exchange rates, and crises of domestic demand and monetary innovations. The price of imports is largely affected by world prices and low exchange rates. In the short term inflation is affected by external shocks, represented by international prices and calculates the exchange rate by a large margin, but in the medium term it is affected by shocks of domestic money supply and domestic demand.



### **Study (Nathan Porter, 2010) entitled: dynamics of prices in China**

This study aimed to look at the factors that increase the rate of inflation in the Greater China in particular, and note the movements in inflation is food for the compilation of demand factors, such as movements in the output gap and monetary conditions, as in the display, such as movements in input prices and world prices, and the occurrence of disasters natural fluctuations in production capacity, and also investigate the extent of the indirect effects of inflation over the provinces and the main land between the economies of Greater China through the use of form VAR. All of this for understanding the dynamics of inflation at the national level in China. The result of this study to a limited role of direct pressure on the demand for non-food inflation, and also rely on measures to measure the output gap, as there are difficulties in measuring the gap in production economies, rapid changes in the economy such as China.

### **Study Ibrahim Saif and David Dabartolo (2007) entitled: The impact of the Iraq War's Impact on Growth and Inflation in Jordan.**

Consider this study the impact of the Iraq war from 2003 on growth and inflation in Jordan and explore the business relationship Jordanian-Iraqi, and changes in the consumer price index in Jordan and Iraqi investment in Jordan, and try to indicate the difference between the economic challenges formed by the war in Iraq in general and by the Iraq is in Jordan are particular. This study resulted in that the main cause of inflation is the Iraqi presence as what other factors, including rising oil prices and an end to Government support for petroleum products and export food products to the market throughout the Gulf Jordan contributed to the rising prices. One of the most important findings of the study that inflation in the provinces greater than inflation in Oman, where a large proportion of Iraqis.

### **Characteristics of the Economies of Underdeveloped Countries, Leading to Inflation Specialization in the Production of Raw Materials**

The adoption of most of the economies of underdeveloped countries on the production of raw materials to the growing role of the export sector in the national economy, but the reliance on a single or limited number of goods produced by these economies for export, making them vulnerable to the vagaries of monetary and price, as a result of fluctuations in demand conditions and supply of those substances ,The occurrence of an increase in the exports of the underdeveloped countries of raw materials depends on the economic conditions of industrialized countries and increasing production, which depends on the size of the demand for their products, and supply conditions in underdeveloped countries is affected by many factors that weaken their ability to export, such as fluctuations in weather conditions that impact on revenues from agricultural production or natural disasters destroy crops or mining or resources may lead to cracks in the layers leading to leakage and depletion of oil wells.

In light of this, the underdeveloped countries face two kinds of problems that are related to production and export of raw materials, both in the short term or long-term, as these countries face in the short term problems related to the volatility of demand for its products in global markets for raw materials, which may occur due to increased competition synthetic substitutes produced by those countries or reduce its use in industrial processes, is also facing exports of the underdeveloped countries of the raw materials problems in the long term is to decrease the flexibility showcase their products and thus influence the size of its exports, and therefore the fluctuations in the exports of underdeveloped countries makes them vulnerable to waves of Non-monetary and price stability, on the grounds that these economies are highly sensitive to inflationary pressures because of their reliance on the export of raw materials that face fluctuations in their prices in global markets, which are determined by the forces of supply and demand for its products. We must distinguish between two cases:



### **Situation of Higher Export Prices**

Rising raw material prices in world markets, to increase exports of underdeveloped countries, which means increasing their foreign exchange earnings, and thus the high level of access that are often directed towards consumer spending, given To the low entry majority of individuals in those countries and low motives of savings they have, As for the rest of the individuals in those communities and that their incomes are rising, which is often directed towards investment spending or spending on luxury goods or entertainment. Therefore, the increase in the volume of cash income generated from the increase in export volumes often lead to inflationary pressures in the economy, which is due mainly to the low elasticity of the production in those countries and its inability to meet the increase in demand, due to limited production capacity and lack of increase in the short term. The increase in export earnings to pay the workers to demand higher wages, and which soon spread to the rest of the national economy, taking into account that the decline in export earnings do not result in lower.

### **Situation of Low Prices of Exports**

A decrease in export earnings in underdeveloped countries, whether the result of lower demand for its products, or lack of flexibility of its production of raw materials, or due to low competitiveness in international markets, expose these economies to the inflationary pressures caused by the decrease in revenues from foreign exchange which was used to finance consumption and investment spending and public spending in those countries, in addition to the proceeds went down the state taxes that were imposed on exports as well as the tax imposed on the entry of exporters, which weakens the ability of the state to finance imports, the financing of current expenditure and investment expenditure necessary, due to the inability of the state to control government spending in the short term, and the inability of the productive apparatus to meet the increase in aggregate demand, which is usually confronted by the increase in imports, thus contributing to increase the budget deficit, and that the inability of state revenues to cover its expenses, making those countries more vulnerable to inflationary pressures, due to the adoption of these countries to finance their budget deficits by borrowing from the banking system, which is financed through the new versions of cash, which works to increase inflationary pressures in the economy.

### **State Financial Machine Rigidity**

Are tax systems in underdeveloped countries Bj mudha, lack flexibility and change depending on the changes that occur in the economy, and reflects the stagnation and backwardness in the tax systems in underdeveloped countries how little effort the tax in those countries, and through the low proportion of tax revenues to GDP, which often form about 12% - 15% compared with developed countries, which will reach the percentage of the proceeds of harm's Vice to about 30% of GDP. Also constitute indirect taxes, a large proportion in the total tax proceeds compared to the direct tax, and characterized by indirect taxes, direct taxes and the abundance of easily collected revenues, as well as flexibility and translation of the economic situation. However, the control of the owners of private interest and control in guiding the tax legislation, not inconsistent with their interests, led to the stagnation of such legislation, and not to increase tax revenues needed to finance the economic development process, which forced the state in light of lower revenues from taxes to resort to borrowing from the banking system which is usually financed through monetary issuance, or reliance on Foreign loans to finance economic and social development, but the dependence on such sources of inflation that lead to increase the amount of money circulating in the economy lead to increased inflationary pressures, since the increase in the amount of money in circulation does not offset by an increase in real output, which drives prices upward However, the country's attempts to reduce the money supply by adjusting the public expenditure by restricting bank credit, which in turn leads to lower money supply at a lower rate than the rate of decline



in the volume of demand, which results in an economic recession will be followed by the inflation caused by excess demand in the economy, which in turn leads to what is known as the inflationary recession or stagflation.

### Methodology

The panel data sets used in this study have several observations, collected over time for a number of countries. They share properties with both time series data and cross-sectional data sets.

Panel data models are usually estimated using either fixed or pooled effect techniques. These two techniques have been developed to handle systematic tendency of individual specific components to be higher for some units than for others – the random effect estimator if the individual specific component is assumed to be random with respect to the explanatory variables. The fixed effects estimator is used if the individual specific component is not independent with respect to the explanatory variables.

### Pooled Model

This model is one of the simplest Pannell data models where it is estimated regression coefficients fixed for all time periods, in other words neglects the effect of the time dimension in this type of models, and are formulated regression equation of the pooled model to form the following:

$$y_{it} = \alpha + x_{it}\beta + \epsilon_{it}$$

Where  $i$  represents the state and take values from 1 to the number of countries,  $t$  represents time and take values from 1 to the number of time periods,  $\alpha$  vector constant term,  $\beta$  vector regression coefficients,  $x_{it}$  the values of independent variable of the state  $i$  in the time period  $t$ , and random error expressed as  $\epsilon_{it}$ . and this model is assumed in homogeneity of the limits variance random error among the countries in this studied, as well as the expected the limit random error value should be equal to zero, and also not found auto-correlation between the random error limits, meaning that the variation must be equal to zero, and using ordinary least squares (OLS) in the estimation of the model parameters.

### Fixed Effects Model

Use of fixed effects model aims to determine the behaviour of each group of cross-sectional data (the behaviour of each country) apart, by making the constant term in the model parameter vary from one country to another with the survival of the decline of independent fixed for each state variables transactions, due to the introduction of fixed effects for countries in the model to the presence of some unobservable variables that affect the dependent variable does not change with time as it is assumed that there is no change in these variables at least during the time period of the study and the fixed effects model formulated as following:

$$y_{it} = \alpha + x_{it}\beta + \sum_{i=1}^n \alpha_i D_i + \epsilon_{it}$$

Where  $D_i$  dummy variable for country  $i$  takes the value 1 if you want to know the hard limit for country destination and the value of zero if you want to know the constant term of the State of other value,  $\alpha_i$  slope dummy variable for country  $i$  coefficient, with attention because the random error term must follow a normal distribution with an average of zero and contrast fixed for all cross section data Views and there is no auto-correlation over time between each set of views cross section data in a specific time period. And called on the fixed effects model name of (Least Square with Dummy Variables Model-LSDV), where they are estimated using ordinary least squares.



### Random Effects

The random effects model to estimate appropriate in the case of a breakthrough in terms of the fixed effects model mentioned above, and the idea of random effects model to treat the constant term in the form of a random variable at a rate of  $\mu$  means that:

$$\alpha_i = \mu + V_i$$

Where  $V_i$  represents the error term in the cross section data set of the state  $i$ , and compensation at the constant term in the general synthesis model, we reach for the form to the following equation:

$$y_{it} = \mu + V_i + x_{it}\beta + \varepsilon_{it}$$

$$W_{it} = V_i + \varepsilon_{it}$$

It is during the previous equation we note that the form contains two variables for error random two  $V_i$ ,  $\varepsilon_{it}$  where  $W_{it}$  composite error which is equal to the sum of random error components, so called random effects model sometimes (Error Components Model), but this model the properties of sports is the equality of the averages of the components error to zero, and the stability of its variations.

To estimate the random effects model is used (Generalized Least Squares-GLS), as the ordinary least squares method (OLS) fail to estimate parameters of the model and capabilities give inefficient and her record is not correct errors.

Methods of choosing the appropriate model for time-series data “Panel Data” Through previous systematic presentation of the models Panel Data, show us the presence of three regression models can be estimated under the time-series cross section data analysis methodology, and therefore Researcher can estimate three models but more important is to identify the most suitable for the study data model. In order to determine the most appropriate place diagnosed in two phases statistical tests, the first phase of the model is the preference between pooled model and the fixed effects model, if the results indicated a preference and appropriate pooled model of the data we stop at this point and we consider the most appropriate pooled model is, while if the results indicated a preference and favourable fixed effects model on the pooled model, we turn to the second stage, a preference between the fixed effects model and random effects model.

And it is applied to the first phase of the evaluation between models using the limited (F) test who takes mathematical formula shown below:

$$F = \frac{(SSR_{pooled} - SSR_{LSDV})/(n - 1)}{SSR_{LSDV}/(nT - n - k)} \approx F_{n-1, n(t-1)-k}$$

Since the  $K$  number of estimated parameters,  $SSR_{pooled}$  the total Residual squares due to the appreciation of the pooled regression model,  $SSR_{LSDV}$  the total Residual squares due to the appreciation of the fixed effects model, and are judged on the result of the test through the potential value of the test (P-value) If the probability value is greater than 0.05 to be pooled model is the most suitable for the data, while if the value is less than or equal to the probability 0.05, the fixed effects model is most suitable for the study data.



As well as the application of the second phase of preference between the fixed effects model and random effects model, using the test (Hausman) proposed in 1978, and it is used to test the zero hypothesis that assumes an appropriate random effects model, as opposed to the alternative hypothesis that adequate assume model fixed effects of study data, and be the test formula as follows:

$$H = (\hat{\beta}_{FE} - \hat{\beta}_{RE})' [Var(\hat{\beta}_{FE}) - Var(\hat{\beta}_{RE})]^{-1} (\hat{\beta}_{FE} - \hat{\beta}_{RE})$$

Where is  $Var(\hat{\beta}_{FE})$  the variance of the parameters of fixed effects model and  $Var(\hat{\beta}_{RE})$  vector variance of parameters of random effects model, where approaching function (Hausman) of distribution Kay square degrees of freedom amount (k), and a fixed effects model most suitable model random effects if the value probability is less than or test equal to 0.05, while if it is greater than 0.05, the random effects model would be the most appropriate.

The researcher in this side was estimated panel Data regression, and used three types of panel data model to measure the impact of the variables, abroad money supply, real GDP, current expenditures, and the nominal exchange rate on inflation in the sample countries, and the results of the assessment were as follows.

### Pooled Model

Results in Table (1) has shown a statistical estimated result of the pooled model regression to study the determinants of inflation in Palestine and developing countries

### Pooled Model

Dependent variables: INF

R-Square = 0.23

Adj R-Square = 0.20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(EX)	0.189895	0.109384	1.736034	0.0845
LOG(CX)	2.383274	1.348393	1.767493	0.0790
LOG(GDP)	3.604823	1.786448	2.017872	0.0453
LOG(M2)	-4.919371	0.733642	-6.705408	0.0000
C	-5.011058	3.299555	-1.518707	0.1308

$$INF = - 5.011 + 0.189*LOG(EX) + 2.383*LOG(CX) + 3.605*LOG(GDP) - 4.919*LOG(M2)$$

### Fixed Effect Model

A result in Table (2) has shown a statistical estimated result of the fixed effect regression model, those results to study the determinants of inflation in Palestine and developing countries.

Dependent variables: INF

R-Square = 0.82

Adj R-Square = 0.80

Variables	Coefficient	Std. Error	t-statistic	P-value
Constant	<b>-30.79613</b>	<b>11.39274</b>	<b>-2.703138</b>	<b>0.0077</b>
LOG(EX)	0.667009	0.205958	3.238567	0.0015
LOG(CX)	-2.976758	1.484171	-2.005670	0.0467
LOG(GDP)	-0.321919	3.541769	-0.090892	0.9277
LOG(M2)	6.630675	3.384993	1.958844	0.0520
<b>Fixed Effects (for the countries)</b>				



<b>Jordan (Jor)</b>	<b>Sudan (Sod)</b>	<b>Syria (sy)</b>	<b>Libya (lybi)</b>	<b>Egypt (egy)</b>
<b>-2.336913</b>	<b>14.48020</b>	<b>-4.875237</b>	<b>-2.873673</b>	<b>-4.297411</b>
<b>Yamane (Yman)</b>	<b>Morocco (maro)</b>	<b>Mauretania (Muret)</b>	<b>Tunisia (Tun)</b>	<b>Palestine (pal)</b>
<b>9.504398</b>	<b>-10.42810</b>	<b>10.79108</b>	<b>-0.814154</b>	<b>1.777282</b>
<b>Bahrain (Bah)</b>	<b>Algeria (Alg)</b>			
<b>-1.835836</b>	<b>-9.788092</b>			
<b>R-Square = 0.80</b>				

$$INF = - 30.796 + 0.667*LOG(EX) - 2.977*LOG(CX) - 0.322*LOG(GDP) + 6.631*LOG(M2) + [CX=F]$$

### Selection of the Most Appropriate Model For the Study Data

The researcher usual dependence on coefficient of adjust R square as a main indicator to comparison between several econometric models, to make test of the study data, and usual chose the best adjust R square, but t in the panel data models cannot dependence on the coefficient of adjust R square to choose the appropriate data model, because the coefficient of adjust R square depends on the different standards in his account from model to another(1), so the researcher depends on the value of (F) test, to trade-off between the pooled model and models fixed effects model, and the test of (Hausman) to trade-off between the fixed effects model and random effects model, and Table (3) shows the results of tests to choose the most convenient model for the study.

<b>Redundant Fixed Effects Tests</b>			
Equation: EQ01			
<b>Test cross-section fixed effects</b>			
<b>Effects Test</b>	<b>Statistic</b>	<b>d.f.</b>	<b>Prob.</b>
Cross-section F	10.290723	(11,150)	0.0000
Cross-section Chi-square	93.337006	11	0.0000

Through the above table, we can see the result of (F) test, and this result is statistically significant at the level 0.05, where the probability value of the test is (0.0000), and this shows that the fixed effects models more convenient of the pooled model of the data, and through the result of (Hausman) test, and note that statistically significant test at the level 0.05, reaching probability value of the test (0.0000), and this shows that the fixed effects model is most suitable for the study data to study the determinants of inflation in Palestine and developing countries .

### Findings

1. There is an inverse relationship between both of inflation and real gross domestic product in the sample countries. This is consistent with the economic theory, where the rise of the prices in the sample countries leads to decreasing domestic demand for the goods and services. However,





when the domestic prices increase the citizen will search for alternatives goods and services, which have lower prices of the local products that lead to a decrease of the real gross domestic product in those countries.

2. There is a direct correlation between the inflation and the price index of imports, as rising of import price in the under developing countries including Palestine leads to higher product prices in these countries. That is when we know that most of the imports of these countries are raw materials, which participate in the industry, and material consumer food this applies to Palestine where as in Palestine imports represent 58% of real GDP in the study period. This means that the rise of import price will lead to increase the price in Palestine and emergence of inflation.
3. There is a positive relationship between both of inflation and the foreign exchange rate in those countries. This result is consistent with the economic theory and also coincides with the previous model. As the rising of foreign exchange rate will lead to decline in the value of the local currency, and then decrease in the purchasing power of the local currency resulting in increasing the prices in those countries.
4. There is an inverse relationship between the inflation and the current expenditures in the underdeveloped countries, this means that when there is inflation in a country, the prices will increase and therefore the purchasing power of the citizen will decrease. This also leads to increasing the current expenditures for obtaining goods and service, On the other hand when there is a decrease in the inflation, the purchasing power of citizen will increase, leading to lowering of the current expenditures.
5. There is a direct correlations between the inflation and board money supply ( $M_2$ ), and this is consistent with the economic theory, i.e., the rise of the broad money supply in the sample countries will lead to decrease in the purchasing power of the local currency in those countries, as a result of the low value of the local currency in circulation. This leads to increasing the prices and occurrence of inflation in those countries.

### **Recommendation**

1. The monetary authorities in the developing countries has to stabilize their exchange rate against foreign currencies, and to link their currencies to a fixed exchange rate with the currency of economically stable country so as not to lose their purchasing power of their currencies, leading to minimized losses in their economic.
2. The Palestinian monetary authority is recommended to issue a Palestinian currency, and link it to the currency of an economically stable country, so as not to lose the value of that currency; this can result in keeping Palestinian economy from such losses caused by not issue a Palestinian currency.
3. The developing countries have to encourage investment, and to provide the right opportunities for the investment by decreasing the taxes of the investment companies, and the providing industrial zones; leading on increase in the domestic supply of goods and services, thus contributing to a reduction in import.
4. Developing countries are recommended to have the policy for promoting local products and reducing taxes, on the other hand, it's recommended to increase the taxes of foreign products, on order to maintain the competitiveness of the local product.
5. The monetary authorities in developing countries have to work on not increase the issue of the currency, which in turn leads to the devaluation of its currency resulted from increased supply of money and thus losing their purchasing power. The monetary authorities are also recommended to encourage the citizens to save their money in the local banks, in order to increase investment activity, this leads to increasing the gross domestic products.



6. The developing countries have to encourage import substitution policy in order to solve the problem of the trading deficits, and inhibiting the ongoing increase in prices of the import products. Another advantage of such encouragement is to avoid imported inflation, which has direct impact on domestic inflation.

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