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Research Article

Analysis of the relationship between exchange rate fluctuations and per capita income: A statistical study

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Abstract:

This study investigates the relationship between exchange rate changes and per capita income, emphasizing its importance in the economy. Changes in exchange rates can profoundly affect a country's economy, impacting its balance of payments, inflation rates, and overall growth. Conversely, per capita income serves as a key indicator of economic performance, adjusted for population size. To study this relationship, an econometric study will be conducted, using statistical techniques to examine relevant economic data and develop forecasting models. The primary objective is to assess how fluctuations in exchange rates affect per capita income in a given country or group of countries over a specified period of time. Econometric techniques, including regression analysis, will be used to identify patterns and associations between the two variables.

1. Introduction

The state between Currency exchange rate variables and income is a matter of utmost importance in economics. The economy is greatly affected by changes in currency exchange rates., including the balance of payments, inflation rates, and overall growth. On the other hand, per capita income is a measure of a country's economic performance, taking into account its population [1]. An econometric study can be conducted to analyze this relationship. This type of study involves the use of statistical and mathematical methods to examine economic data and develop models that are used in forecasting or to inform policy decisions. The goal of this study is to assess the impact of exchange rate fluctuations on per capita income. The study will involve analyzing data related to exchange rates and per capita income in a particular country or group of countries over a specific period of time. Econometric methods, such as regression analysis, will be used to identify potential patterns or relationships between the two variables.

The results may have significant implications for decision makers and investors. By understanding the relationship between exchange rate fluctuations and per capita income, informed decisions can be made about monetary and fiscal policies that promote economic growth and stability. Investors can also use this information to make decisions about foreign investments and currency trading.

Concept of Exchange Rate

The exchange rate appears the no. of one currency relative to another. It indicates how much His currency can be replaced by another. Exchange rates are crucial in international trade and finance, impacting Cost of goods and services provided by nations and influencing capital flows.

Exchange rates can be determined through several mechanisms:

Free-Floating Exchange Rate: In this system, the exchange rate is dictated by supply and demand in the foreign exchange market.

Fixed Exchange Rate: Here, the government or central bank sets the exchange rate and maintains it

by intervening in the market to buy or sell currencies.

Managed Float Exchange Rate: This system allows the exchange rate to fluctuate within a specified range, with potential government or central bank intervention to stabilize it when necessary.

The exchange rate significantly influences a country's economy [2]. A strong currency can lower import costs but may also raise export prices, affecting the trade balance. Additionally, fluctuations in exchange rates can impact inflation rates, as changes in currency value can alter the prices of imported goods. Furthermore, shifts in exchange rates can influence capital flows, prompting investors to seek opportunities in countries with favorable exchange rates. In summary, exchange rates are vital to international trade and finance, closely monitored by governments, central banks, investors, and businesses.

Factors Affecting the Exchange Rate

Several factors can influence a currency's exchange rate:

Interest rates: There is a direct relationship between attracting foreign investment and interest rates, which increases demand for that currency and may strengthen its exchange rate.Inflation rates: There is an inverse relationship between high inflation and the value of the currency compared to other currencies, as it raises the cost of goods and services locally.Political stability: Political instability can create a state of instability, which undermines confidence in a country's economy and reduces demand for its currency, which may weaken its exchange rate [3].

Economic performance: A country's overall economic health, including GDP growth and employment rates, can affect demand for its currency and thus its exchange rate. Trade Balance: The difference between exports and imports, or trade balance, can influence currency demand. A trade deficit (where imports surpass exports) often weakens a currency. Intervention of authorities and bank management: Authorities may intervene in the foreign exchange market by selling as well as buying their currency to direct its exchange rate.

Speculation: Traders, including hedge funds and investment banks, can impact exchange rates through their trading practices, often betting on future currency movements. An econometric model is a statistical model that is used to analyze and estimate the relationship between economic variables. In the context of an econometric study on the relationship between exchange rate fluctuations and per capita income, a common model used is the linear regression model. The linear regression model assumes that there is a linear relationship between the dependent variable (in this case, per capita income) and one or more independent variables (such as exchange rate fluctuations). The model can be written as:

$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_k x_k + \varepsilon$

Where:

Y = dep. Var. (per capita income)

$X_1, x_2, ., x_k$ = ind. Var (in this case, exchange rate fluctuations)

$B_0, \beta_1, \beta_2, ., \beta_k$ = Reg. Coeff. are the ones that show the significance between the dependent and independent variables [4].

ε = error term that captures any unexplained variation in the dependent variable

The goal of the econometric analysis is to estimate the values of the regression coefficients ($\beta 0, \beta_1, \beta_2, ..., \beta k$) using statistical methods, such as ordinary least squares regression. Once the coefficients have been estimated, they can be used to interpret the relationship between exchange rate fluctuations and per capita income.

2. Iraqi currency against the dollar 2004-2018

The exchange rate of the iraqi dinar against the dollar from 2004 to 2018 was characterized by significant fluctuations due to various political and economic events during this period. Here are some key exchange rate movements:

2004-2005: the exchange rate was relatively stable, with the dinar trading at around 1,460-1,470 dinars per us dollar.

2006-2007: the exchange rate started to appreciate, with the dinar reaching a peak of around 1,180 dinars per us dollar in early 2007.

2008-2009: the dinar started to depreciate again, with the exchange rate fluctuating between 1,200 and 1,400 dinars per us dollar.

2010-2012: the exchange rate remained relatively stable, with the dinar trading at around 1,170-1,200 dinars per us dollar.

2013-2014: the dinar started to appreciate again, with the exchange rate reaching a peak of around 1,180 dinars per us dollar in mid-2014.

2015-2016: the dinar depreciated significantly, reaching a low of around 1,450 dinars per us dollar in early 2016. 2017-2018: the exchange rate remained relatively stable, with the dinar trading at around 1,180-1,200 dinars per us dollar.

It's worth noting that the above exchange rate movements were influenced by various factors, such as changes in iraq's political and security situation, fluctuations in oil prices (iraq's main export) and monetary policies. Similar works done and reported in the literature [5-7].

Table 1. *Some indicators of the federal budget in iraq for the period 2006-2018 (current prices - million iraqi dinars)*

Year	Expenses	Revenues	Deficit or surplus	Disability ratio%
2004	32117491	32982739	865248	2062
2005	26375175	40502890	141127715	34.9
2006	38806679	49055545	10248866	20.9
2007	39031232	54599451	15568219	28.5
2008	59403375	80252182	20848807	26
2009	525670025	55209353	2642228	4.744
2010	64357984	69521117	5169133	30.4
2011	69639523	99998776	3035920	24.4
2012	10687226	119466403	6894368	6.06
2013	83556556	113767395	21830397	20.7
2014	70397515	83556226	3627263	5.9
2015	67067437	70397515	1845840	23
2016	90341558	66470252	12658167	2.39
2017	75490115	54409270	1845840	28.7
2018	63159398	77335955	2560731	3.4

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