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THE IMPACT OF TRADE LIBERALIZATION ON INFLATION IN SELECTED MENA COUNTRIES

Olimjonova Malika Sadriddin qizi
Executive Assistant Westminster International University in Tashkent
ma.olimjonova@wiut.uz

Abstract

This study examines the impact of trade liberalization on inflation in selected Middle East and North Africa (MENA) countries. As globalization and economic openness have expanded, trade liberalization has become an important policy tool for promoting economic growth and integration into the global economy. However, its effect on inflation remains a subject of debate. Using theoretical and empirical evidence, this paper investigates the relationship between trade openness and inflation, while considering the role of control variables such as money supply and government expenditure. The findings reveal a significant positive relationship between trade liberalization and inflation in the selected MENA countries, suggesting that increased trade openness may contribute to inflationary pressures. In contrast, money supply and government expenditure demonstrate a negative association with inflation. The study concludes that policymakers should balance the benefits of trade liberalization with appropriate monetary and fiscal measures to maintain price stability and sustainable economic growth.

Keywords: Trade Liberalization, Inflation, Trade Openness, MENA Countries, Economic Growth, Globalization, Monetary Policy, Government Expenditure.

Introduction

In today's interconnected world, the notion of a developing country existing in isolation from the global economy is simply unsustainable. Extensive discourse within the literature highlights the advantages of adopting outward-looking policies to leverage the opportunities presented by international trade and capital flows. During the 1990s, concepts such as economic liberalization, globalization and openness became dominant themes, marking a discernible shift towards greater integration of the world economy. The trend has been towards greater opening up, indicating a shift away from the conventional closed economy structure observed in many developing nations.

The 1990s will also be remembered as the decade when average inflation was brought under control on a global scale. According to data from the International Monetary Fund (IMF), the average inflation rate in developed economies was 4.9% between 1982

and 1991, and decreased to 0.8% by the end of 1999, as measured by the GDP deflator. More remarkably, there was a significant reduction in average inflation in developing countries during the same period, dropping from 45.1% to 6.9% by 1999. In the meantime, the proportion of traded goods relative to PPP GDP increased from 21.2% in 1988 to 28.3% in 1998. This prompts an important question: is there a causal relationship between these trends? (Alfaro, 2002). Exploring this correlation stands as one of the foremost endeavors in current economic literature, with some scholars even characterizing it as one of the international macroeconomic puzzles (Temple, 2002).

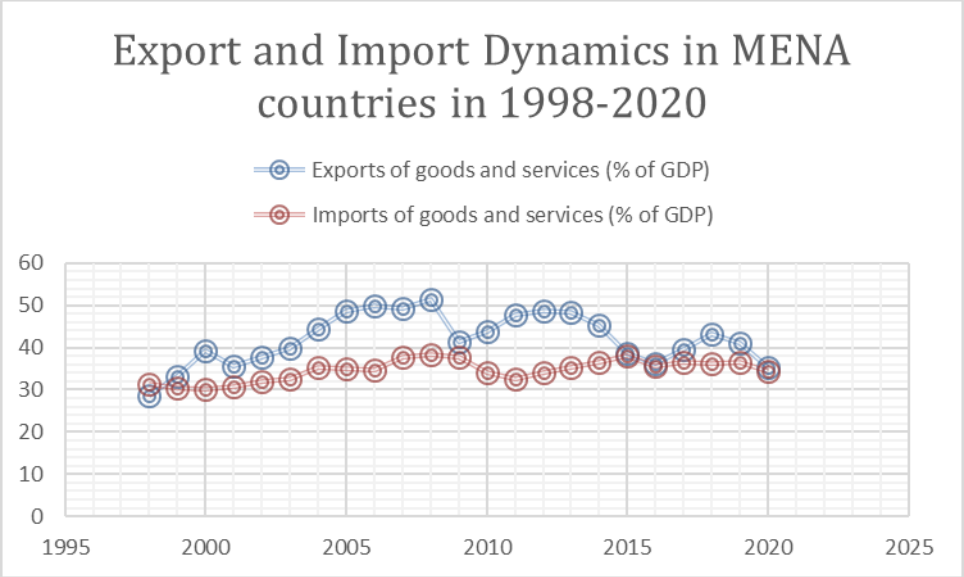

Figure 1. Export and Import Dynamics in MENA countries in 1998-2020
Source: www.databank.worldbank.org

The trade dynamics of the Middle East and North Africa (MENA) region have drawn considerable attention, especially given the region's significant export and import shares in gross domestic product (GDP) as per the latest World Bank (WB) statistics, standing at 35.5% and 34.5% respectively in 2020 (*see Figure 1*). Notably, it reveals significant fluctuations in both inflation and trade over the years, with inflation rates ranging from as low as 0.7% in 2009 to highs of 16.48% in 2008. Similarly, trade as a percentage of GDP varied from a low of 48.34% in 2020 to a high of 74.18% in 2005 9 (*see Figure 2*).

Moreover, the trade structure of the MENA region is of significant importance due to its high shares and strategic geographical location. Over the past thirty years, there has been a trend towards liberalization, driven by decreased transportation costs and advancements in information and telecommunication technologies. The MENA region has actively participated in this trend through various bilateral and regional trade agreements both within the region and with external partners. These agreements

include the Gulf Cooperation Council (GCC) formed in 1981, the Agadir Agreement established in 2001 among Egypt, Jordan, Morocco, and Tunisia, the Arab Maghreb Union (AMU) founded in 1989, and the Greater Arab Free Trade Area (GAFTA) initiated in 1997 to reduce tariffs significantly by 2005. Additionally, there have been collaborations with entities such as the European Union (EU) through agreements like the Euro-Mediterranean Association Agreements established in 1995, and with the United States (US) through initiatives such as the MEFTA initiative launched in 2003. Moreover, most of the countries in the MENA region, including Qatar, Kuwait, Bahrain, the United Arab Emirates, Oman, Saudi Arabia, Djibouti, Egypt, Jordan, Mauritania, Morocco, and Tunisia, are members of the World Trade Organization (WTO).

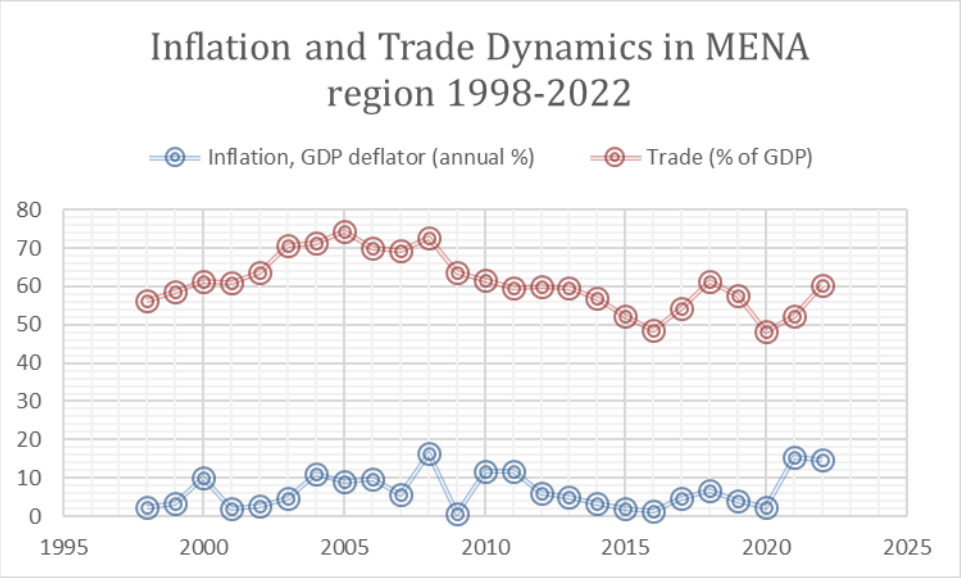

Figure 1. Inflation and Trade Dynamics in MENA countries in 1998-2022
Source: www.databank.worldbank.org

The paper will begin with a review of relevant theories and empirical studies on the influence of trade liberalization on inflation. We will then state our research questions and objectives. Following that, we'll provide a concise overview of the models, data, and variables utilized. Finally, we'll present and analyze our findings, offering policy recommendations.

Research Question and Objectives

This research paper aims to investigate the impact of trade liberalization policies on inflation in selected Middle East and North African countries. Specifically, it seeks to address the following research question:

How does trade liberalization influence inflation rates in selected MENA (Middle East and North Africa) countries over the past decade?

To address this question, the current research aims to achieve the following objectives:

I. Review existing literature and debates on the relationship between trade liberalization and inflation.

II. Assess the significance of the correlation between trade liberalization and inflation in selected MENA countries.

III. Examine the causal relationship between inflation and relevant control variables.

IV. Investigate whether increased trade activities in MENA countries can mitigate or exacerbate inflation.

Theoretical Background

Supporters of free trade argue that it leads to lower prices, reducing inflationary pressures, as suggested by the spillover hypothesis (Musa, 1974). According to the traditional perspective, countries with more openness tend to have lower inflation rates due to factors such as real depreciation caused by unexpected monetary expansions (Romer, 1993). Lane (1997) adds that imperfect competition and fixed prices in non-tradable sectors also contribute to this connection. New growth theory suggests that openness reduces inflation by boosting efficiency and attracting foreign investment (Jin, 2000). Cukierman et al. (1992) note that in smaller open economies, tariff revenues play a significant role in income, leading to lower inflation rates. Moreover, open economies tend to have more stable prices due to free trade, reducing distortions. Additionally, high openness makes it easier to convert domestic currency into foreign currency, which can help lower inflation rates. However, opponents of this view, following the cost-push hypothesis, argue that trade openness might not necessarily dampen inflation and could even worsen it. Evans (2007) suggests that openness could increase inflation due to the monopoly power of monetary authorities in international markets. Additionally, an open economy may import inflation from global markets through the prices of imported goods. Moreover, as economies open up, controlling inflation through traditional policy measures becomes more challenging for fiscal and monetary authorities.

Empirical Evidence

Over the past few decades, significant empirical research has delved into the connection between trade openness and inflation across developed and developing nations. Romer (1993) is recognized for pioneering research that laid the empirical groundwork for understanding the nexus between trade openness and inflation. Analyzing cross-sectional data from 114 economies during the Post-Bretton Woods era, Romer concluded a negative relationship between trade openness and inflation.

Subsequent to Romer's work, numerous authors have investigated this relationship, yielding diverse outcomes: some supporting Romer's hypothesis, others disputing it, and some finding no discernible link between the two variables.

Sachsida, Carneiro, and Loureiro (2003) supported Romer's findings, analyzing data from 152 countries spanning 1950 to 1992. They found a negative relationship between trade openness and inflation, utilizing fixed effects, random effects, and maximum likelihood estimation techniques. Additionally, Mukhtar (2010) studied Pakistan from 1960 to 2007, employing multivariate cointegration and finding a significant negative relationship between inflation and trade openness. Similarly, Samimi et al. (2011) tested Romer's hypothesis for Iran from 1973 to 2007, indicating a negative short-term effect of openness on inflation using the ARDL Bounds test. Moreover, Ojoko et al. (2014) examined Nigeria from 1970 to 2010, concluding a long-term negative relationship between openness and inflation using the VECM model. Furthermore, Sakanko and Joseph (2019) analyzed the Nigerian economy, finding a significant negative effect of trade openness on inflation through time series analysis. Lastly, Afzal et al. (2013) investigated Pakistan from 1970 to 2009, revealing a negative relationship between inflation and openness in both short and long runs using the ARDL model.

In contrast, numerous studies have identified a positive relationship between trade openness and inflation. For instance, Mehmet, Esener, and Darici (2009) investigated the impact of trade openness on inflation across 11 developing countries from 1980 to 2006, concluding that openness had a positive effect on inflation. Similarly, Zakaria (2010) utilized GMM with annual time series data from 1947 to 2007 for Pakistan, revealing a positive relationship between openness and inflation in the country. Likewise, Mahmoudzadeh and Shadabi (2012) explored the effect of openness on inflation in selected MENA countries, concluding that openness led to higher inflation. Thomas (2012) examined the relationship between inflation and trade openness for eight Caribbean countries from 1980 to 2009, finding a positive impact of trade openness on inflation. Lotfalipour et al. (2013) also collected unbalanced panel data from MENA countries between 1990 and 2010, revealing that increased trade openness in these oil-producing countries led to higher inflation rates. Similarly, Samimi and Ghaderi (2012) applied fixed and random effect models to MENA countries from 2000 to 2007, discovering a positive relationship between trade openness.

Methodology and Data

This study employs panel data analysis to investigate the impact of trade liberalization on inflation in selected MENA countries. Both fixed and random effects models are estimated using Ordinary Least Squares (OLS) regression. The sample consists of low

and middle-income countries from the MENA region based on the World Bank Classifications of 2023, chosen for their data availability and completeness. The study specifically focuses on Algeria, Egypt, Iran, Lebanon, Morocco, Syria, Tunisia, and Yemen, utilizing data ranging from 1998 to 2022, carefully selected for their availability and ongoing relevance to the research objectives. The primary data source is the World Development Indicators (WDI) database which is believed to contribute to the validity of the empirical findings.

The GDP deflator is selected as the dependent variable to measure inflation, following the approach of several previous studies (Lotfalipour et al., 2013; Thomas, 2011; Sachsida and Mendonça, 2015; Ashra, 2022). The independent variable representing trade liberalization is the Trade to GDP ratio, widely recognized as a proxy for trade liberalization (Bowdler and Malik, 2005; Jin, 2006; Shahbaz et al., 2007; Farvaque and Shah, 2009; Zakaria, 2010; Lotfalipour et al., 2013). Control variables, including Money Supply, GDP Growth, Government Expenditure, and Population, are integral for capturing additional factors that may influence inflation dynamics. These variables were selected based on previous research findings: Akinbobola (2012) identified a negative correlation between money supply and inflation in Nigeria; Mamo (2012) observed a negative relationship between inflation and economic growth across 13 Sub-Saharan African countries from 1969 to 2009; Mohammed et al. (2009) found a negative relationship between public expenditure and inflation in Pakistan; and Ozimek (2017) demonstrated strong evidence across 27 countries from 1962 to 2015 that population growth is inversely associated with inflation.

Table 1. Description of Variables

Variable name	Explanation of the variable	Data source	Variable type
Inflation	Inflation, GDP deflator (annual %)	World Development Indicators	Dependent
Trade liberalization	Trade (% of GDP)	World Development Indicators	Independent
Money supply	Broad money (% of GDP)	World Development Indicators	Control
Economic growth	GDP growth (annual %)	World Development Indicators	Control
Government spending	General government final consumption expenditure (% of GDP)	World Development Indicators	Control
Population	Population growth (annual %)	World Development Indicators	Control

The following equation represents the model used in the analysis:

$$INF_{it} = \beta_0 + \beta_1(TL)_{it} + \beta_2(MS)_{it} + \beta_3(GDP)_{it} + \beta_4(GE)_{it} + \beta_5(POP)_{it} + u_{it}$$

Where:

- INF_{it} is defined as inflation;
- TL_{it} is defined as trade liberalization in country i at time t;
- MS_{it} defined as money supply in country i at time t;

- GDP_{it} defined as economic growth in country i at time t;
- GE_{it} defined as government expenditure in country i at time t;
- POP_{it} defined as population in country i at time t;
- u_{it} is the error term capturing unobserved factors affecting inflation.

Estimation Methods and Techniques

Table 2 presents descriptive statistics, highlighting significant variability among the variables examined in this study. *Table 3* demonstrates minimal multicollinearity, with a mean VIF of 1.19, indicating independence among predictors. In *Table 4's* correlation matrix, weak correlations emerge, such as between inflation growth and trade (-0.2345) and broad money supply and GDP growth (0.0105).

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
InflationG~l	169	11.1175	16.47578	-11.1616	150.001
TradeofGDP	169	64.3883	19.21253	29.2282	114.344
Broadmoney~P	169	86.9414	55.78606	30.149	260.618
GDPgrowtha~l	169	2.41176	5.424527	-27.9946	10.2322
Generalgov~p	169	14.4733	3.225354	2.36014	21.6115
Population~l	169	1.59684	1.603967	-6.85212	9.97197

Table 3. Variance Inflation Factor Analysis for Multicollinearity Assessment

Variable	VIF	1/VIF
Generalgov~p	1.41	0.70823
TradeofGDP	1.34	0.74881
GDPgrowtha~l	1.07	0.93049
Population~l	1.07	0.93654
Broadmoney~P	1.06	0.94292
Mean VIF	1.19	

Table 4. Correlation Matrix

	Inflat~l	Tradeo~P	Broadm~P	GDPgro~l	Genera~p	Popula~l
InflationG~l	1					
TradeofGDP	-0.2345	1				
Broadmoney~P	-0.353	0.2308	1			
GDPgrowtha~l	0.0311	0.0245	0.0105	1		
Generalgov~p	-0.4367	0.4342	0.046	-0.2248	1	
Population~l	0.0745	-0.0481	-0.0046	0.0422	-0.2426	1

Hausman specification Test

After conducting Fixed and Random Effects estimations (*see Appendix 1 and Appendix 2*), we proceeded to select the most suitable estimation method by employing the Hausman Specification Test using Stata14:

	Coef.
Chi-square test value	11.39
P-value	0.0441

The Hausman test results indicate that the difference in coefficients between fixed effects and random effects models is systematic. With a p-value of 0.0441, which is less than the typical significance level of 0.05, we reject the null hypothesis. Thus, we should use the fixed effects model for estimation as it provides unbiased estimates.

Empirical Results and Discussion

Fixed Effects Model Output

	FIXED EFFECTS MODEL
VARIABLES	*InflationG~l*
TradeofGDP	.01834***
	(.055563)
Broadmoney~P	-.1140***
	(.039637)
GDPgrowtha~l	-.2303745
	(.176676)
Generalgov~p	-.2574***
	(.2855367)
Population~l	-.2574347
	(.4778872)
_cons	58.01321

	(5.321749)
Observations	169
Number of countrycode	8
R-squared (within)	0.1462

Note: the initial value standing next to each variable is "coefficient" while the one below that value (coefficient) is "standard errors"

The fixed-effects model analysis, conducted on a dataset comprising 169 observations across 8 different countries, reveals several significant findings and provides comprehensive insights into the relationships between the independent variables and the GDP deflator while accounting for country-specific effects. The model demonstrates a moderate fit, with within R-squared indicating that approximately 14.62% of the variance in the GDP deflator is explained by the independent variables within each country, and between R-squared suggesting that about 22.85% of the variance stems from differences between countries. The overall model is statistically significant ($F(5,156) = 5.34$, $p < 0.001$), underscoring the associations between the independent variables and the GDP deflator.

The analysis reveals a statistically significant relationship between inflation and our variable of interest, trade liberalization, with a coefficient of 0.1834. This suggests that a 1% increase in trade is associated with a 0.01834% rise in inflation. Similar positive associations between trade openness and inflation have been documented by Mehmet, Esener, and Darici (2009), Zakaria (2010), Mahmoudzadeh and Shadabi (2012), Thomas (2012), Lotfalipour et al. (2013), and Samimi and Ghaderi (2012) across various countries and regions, including MENA countries, Pakistan, Latin America, and the Caribbean. Our analysis confirms that increased trade liberalization (Trade to GDP ratio) is indeed linked to higher levels of inflation, consistent with these studies. This suggests that the positive relationship between trade openness and inflation is a robust empirical phenomenon observed across different time periods, geographical regions, and methodological approaches.

Conversely, there appears to be a negative association between inflation and money supply, with a coefficient of -0.1141. This implies that a higher proportion of broad money relative to GDP is associated with lower inflation. This finding aligns with Akinbobola's (2012) discovery in Nigeria, where he observed an inverse relationship between money supply and inflation. Additionally, the model suggests that government expenditure has a negative impact on inflation, with a coefficient of -0.7709. This

indicates that higher government spending relative to GDP is associated with lower inflation, consistent with the findings of Mohammed et al. (2009). However, GDP growth rate, population growth rate, and inflation-GDP deflator show no statistically significant relationship with inflation.

Conclusion

In conclusion, this study has successfully addressed the research question concerning the impact of trade liberalization on inflation in selected MENA countries and achieved its objectives effectively. The empirical results indicate a significant positive relationship between trade liberalization and inflation, consistent with prior research findings across various regions. This implies that as trade liberalization increases, so does inflation. Conversely, there is a negative association between inflation and money supply, as well as government expenditure, suggesting that higher money supply relative to GDP and increased government spending can mitigate inflation.

Based on these findings, policymakers in developing countries in the MENA region should carefully consider the potential inflationary consequences of trade liberalization policies. While trade openness can stimulate economic growth, it may also lead to inflationary pressures. Hence, policymakers need to adopt measures to control inflation, such as implementing prudent monetary policies to manage money supply and controlling government expenditure. Moreover, policymakers should focus on maintaining a balance between trade liberalization and domestic economic stability. This could involve implementing targeted policies to enhance productivity and competitiveness in domestic industries while simultaneously opening up to international trade. Additionally, measures to strengthen regulatory frameworks and enhance monetary policy effectiveness can help mitigate the inflationary impact of trade liberalization.

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