Research Paper: The Effects of Globalization on Saffron Production: A Focus on Iran's Agricultural and Rural Policy Framework

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ABSTRACT

Purpose: In the economies of developing countries, the agricultural and rural sector holds particular significance. Saffron is a high-value crop that not only commands global importance but also aligns well with Iran's climatic conditions and farming capabilities. This study aims to investigate the impact of globalization on saffron production within the context of Iran's broader rural and agricultural policy framework.

Methods: To achieve the research objectives, the Vector Error Correction Model (VECM) was employed. The data used in this study spans the period from 1979 to 2023 (corresponding to Iranian calendar years 1358–1402).

Results: The VECM analysis revealed a positive long-term relationship between exchange rate fluctuations and saffron production (coefficient = 2.08). As the exchange rate increases, saffron prices rise in importing countries, leading to higher domestic production and increased export volumes. In the short term, the exchange rate with one- and two-year lags shows a direct effect on saffron output—specifically, a 1% increase in the exchange rate leads to more than a 1% increase in saffron production.

Conclusion: Given Iran's agricultural and rural development policies, the process of globalization has had a beneficial influence on saffron production. Under globalization, investments in saffron cultivation have increased, while farmers have adopted new and cost-effective technologies and inputs. Moreover, the government plays a significant role in shaping the performance of the saffron sector through various policy areas such as trade regulations, financial systems, exchange rates, banking, foreign investment, insurance, labor laws, competition regulation, corporate governance, domestic industry support, technology transfer, education, health care, and social services. Ultimately, transitioning from a closed economic system to an open economy becomes feasible under these conditions.

Keywords:
Trade Integration Index, Trade Liberalization, Saffron Production, Vector Error Correction Model (VECM), Rural Sector Policies

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1. Introduction

The agricultural and rural sector possesses significant potential in terms of production, employment, food security, and other socio-economic dimensions. However, compared to other sectors of the economy, this sector has relatively low foreign exchange earnings due to its heavy reliance on domestic resources for production. Nevertheless, it accounts for a considerable share of total economic value added, which grants it a pivotal role in national economic growth and development (Nasabian & Jafari, 2016; Magacho et al., 2018).

The expansion of agricultural exports can significantly stimulate the development of the agricultural and rural sectors. Export growth not only directly affects agricultural output but also enhances productivity by improving the efficiency of labor and capital inputs, thereby contributing positively to the overall economic growth of the agricultural sector (Hatef & Sarvari, 2010; Mahmood et al., 2018). Among exportable goods, agricultural products hold particular significance. Countries may possess comparative advantages in producing certain commodities, which can serve as a strategic tool for expanding global market access. Through such expansion, not only are domestic needs addressed, but existing human and capital resources within the agricultural sector are better utilized (Moosavi et al., 2010; Verter & Becvarova, 2016).

Export-led development strategies have been widely adopted as effective tools for economic growth. Governments employ various instruments to promote exports, including tax exemptions, tariff reductions on imported raw materials, marketing support programs, export insurance, direct or indirect subsidies, and export guarantees (Ahmadian et al., 2015; Almasifard & Khorasani, 2017).

One of the central pillars of Iran's rural and agricultural policy framework is the enhancement of the country's share in international trade and its positioning within the global economy. Globalization encompasses the process of opening up the national economy through the liberalization of trade, investment, financial, and technological regimes, with a tendency toward their widespread adoption across countries. In essence, globalization refers to an accelerated increase in the volume of international trade in goods, services, and financial assets. It can be considered synonymous with trade liberalization, where barriers to the flow of goods, services, capital, and technology are systematically reduced (Mojtahed, 2002; Hai et al., 2018).

The KOF Globalization Index, developed by the Swiss Economic Institute (KOF) in a study conducted by Axel Dreher (2006), measures the degree of globalization across 123 countries from 1970 to 2000. This index incorporates 42 variables grouped into three main dimensions: economic, social, and political globalization. The latest data, based on information from 2015, indicate that globalization has had a positive impact on economic growth. Although Iran is the world's largest producer of saffron, it holds only a limited share in global export markets due to the prevalence of raw exports and the absence of a robust value chain. Saffron cultivation in Iran dates back over 3,000 years, yet current conditions—including sanctions, challenges in repatriating foreign exchange, and inadequate export infrastructure—have led to increased suitcase trading and saffron smuggling. According to customs statistics, during the first four months of the Iranian year 1402 (2023), saffron exports declined by 45.5%. To fully leverage Iran's monopoly-like advantage in saffron production, it is essential to support producers, eliminate export barriers, and develop new export markets. Iran enjoys a favorable position in agricultural and rural products in terms of both price and quality, largely due to its unique climatic conditions. Therefore, agriculture can serve as a vital source of foreign exchange revenue. According to customs reports, in the first quarter of the current year, Iran exported approximately 7.7 million tons of agricultural and food products valued at $4.6 billion. Of this, about $1.1 billion came from exports, while $3.5 billion was attributed to imports. Compared to the same period in 2021 (year 1400), the value of agricultural exports decreased by 13%, whereas import values increased by 3%. Agricultural and food exports accounted for 8.3% of total exports and 29% of total imports during this period. Furthermore, in the first quarter of 2022 (year 1401), agricultural exports experienced a decline of around 11% in value and 9% in volume compared to the same period in 2021. Meanwhile, import values increased by approximately 3%, while import volumes fell by 13% (Chamber of Commerce, Industries, Mines, and Agriculture of Tehran, Deputy Economic Inspectorate [CCIMA], 2022).

A comparison of saffron exports between the 12-month periods of 2021 (year 1400) and 2020 (year 1399) shows a 19% decline in weight and a 19.3% decrease in value. In 2020, approximately 324.8 tons of saffron worth $190.6 million were exported from Iran (The Association of Iranian Food Industry Societies, 2022). As the most valuable agricultural and medicinal crop globally,

saffron occupies a special place among Iran's industrial and export products (Zaraatkar et al., 2016). With high nutritional and commercial value, especially when produced under optimal quality standards, saffron generates substantial economic returns (Choopan et al., 2021). Currently, Iran is the world's largest saffron producer. Its wide range of applications and high value-added potential, combined with government policies aimed at boosting non-oil exports, have drawn increasing attention to saffron production, export, and marketing (Safai, 2010). However, despite its superior production capabilities, Iran has not yet achieved a dominant position in the global saffron market (Taziki, 2010). While Iran produces more than 90% of the world's saffron, countries such as Afghanistan, Spain, Greece, Morocco, Turkey, India, UAE, and China dominate branding and market presence despite producing less than 10% collectively (Borzabadi Farahani et al., 2021).

In line with Vision Document 1404 and the Strategic Development Plan for Non-Oil Exports, Iran aims to enhance its participation in global trade, achieve trade balance, diversify its economy, and increase the contribution of the non-oil sector. These objectives underscore the importance of non-oil exports in Iran's economic strategy (Mohammad Zadeasl & Mohammadi, 2012). This research seeks to examine the impact of trade liberalization on saffron production in Iran, following a review of relevant literature and empirical studies conducted both domestically and internationally. The primary hypothesis posits that agricultural exports have a positive and significant effect on economic growth. Using the Vector Autoregressive (VAR) model and time-series data spanning from 1979 to 2023 (Iranian calendar years 1358–1402), this study investigates both the short- and long-term effects of trade liberalization on saffron production. Therefore, examining these effects becomes crucial to mitigate any potentially suboptimal outcomes and to harness the full potential of trade liberalization in achieving national economic development goals.

2. Literature Review

International trade serves as a vital source of foreign exchange earnings, which can be utilized for investment and the adoption of new technologies aimed at enhancing a country's productive capacity (Abrishami, 1996; Bakari, 2017). Trade liberalization refers to any policy change that makes a country's trade regime more neutral or less discriminatory. A trade system is considered more discriminatory when its performance resembles what it would be in the absence of government intervention. The less a trade system deviates from a fully neutral path, the more discriminatory it is (Mikaeli, 1990).

Historically, international trade has always been a critical and complex issue for countries worldwide. Iran's foreign trade, in particular, has long been characterized by an overreliance on oil exports and heavy dependence on petroleum revenues (Akbari et al., 2003; Salari et al., 2017). To move beyond this situation and achieve economic independence—an essential goal of Iran's economic system—it is recommended to gradually reduce reliance on single-product income (oil) in the long term (Rahman, 1999; Salari et al., 2017).

The rural sector, as a commercial entity, offers significant advantages such as climatic diversity, suitable temperatures, land variety, low-cost labor, and the fact that most of the population engages in rural economic activities. Additionally, it is relatively less dependent on sophisticated technologies and possesses development potential. Therefore, it can serve as a key economic sector contributing to the growth of non-oil exports (Khalilian & Farhadi, 2002; Igbal et al., 2018; Salari et al., 2017). Among the most important outcomes of agricultural trade liberalization in rural areas are an improved national balance of payments and increased foreign exchange earnings, along with the inflow of knowledge and positive externalities associated with trade openness. Moreover, foreign exchange can positively influence imports, thereby enhancing societal welfare levels (Keho & Wang, 2017).

According to the foundations of international trade theory, including corrective exchange rate policies, currency devaluation (or real exchange rate appreciation) is a commonly used policy tool. Based on economic theory, implementing such a policy should increase the value of exports while decreasing the value of imports. Consequently, the combined effect of these two changes should lead to an improvement in the country's trade balance. Hence, one would expect a direct relationship between exchange rate fluctuations and a country's trade balance.

This idea was widely accepted in empirical studies on international trade until 1971. However, after 1971, the U.S. trade balance deteriorated despite the depreciation of the dollar, and similar worsening trade balances were observed in other countries following domestic currency depreciation, contradicting the predictions of the Marshall-Lerner condition. This led researchers to develop new literature focusing on the short-term and long-term behavior of trade balances.

In fact, researchers have pointed out that traditional theories only illustrate the long-term effects of currency depreciation on trade balances, without adequately analyzing the short-term impacts. They argue that in the short term, due to the lack of immediate flexibility in export and import volumes in response to exchange rate changes, the trade balance initially worsens. Over the long term, however, consumers gain time to recognize shifts in international competitiveness, and producers of export goods acquire the necessary time to expand capacity, procure new equipment, and secure raw materials, leading to an eventual improvement in the trade balance. In essence, this difference in the timing of trade balance responses to domestic currency depreciation gives rise to the so-called J-curve phenomenon (Ahmadi Shadmehri & Ahmadian Yazdi, 2012).

In general, if we focus solely on the reciprocal relationship between exchange rates and the trade balance, two main theoretical approaches can be identified: the Marshall-Lerner condition and the J-Curve approach. In the first approach, based on the Marshall-Lerner condition, a depreciation of the domestic currency is expected to improve the trade balance only if the sum of the price elasticities of exports and imports (in absolute value) is greater than one. If the sum of these elasticities is less than one, then an appreciation of the domestic currency may be a more effective policy to improve the trade balance. In this framework, the impact of currency depreciation on the trade balance depends directly on the responsiveness (elasticity) of export and import volumes to exchange rate changes (Qotmiri & Sharafatian Jahromi, 2007). In the second approach, known as the J-Curve effect, it is expected that following a currency depreciation, the trade balance will initially worsen in the short run (the downward leg of the "J"), before improving over the long run (the upward leg of the "J"). If the presence of a J-shaped curve is confirmed empirically, it implies that the Marshall-Lerner condition does not hold in the short term but becomes valid in the long term (Mohammadi & Ariabod, 2012).

Supporters of currency depreciation argue that the devaluation of domestic currency initially worsens the current account balance. This is because, at least in the short run, the real volume of exports and imports does not immediately change following currency depreciation. However, imports become more expensive in domestic currency terms, thereby deteriorating the trade balance. In fact, an increase in the exchange rate can directly affect the prices of imported goods, especially raising production costs for industries heavily reliant on imported raw materials. In markets where price adjustments occur rapidly, such as commercial markets, import prices tend to respond quickly to changes in the value of the domestic currency. In other words, exchange rate fluctuations may be fully or swiftly passed through to import prices. Over time, however, both producers and consumers begin to adjust their behavior in response to the weaker currency. Export and import volumes gradually adapt according to relative price changes, leading to an improvement in the trade balance. Hence, the impact of currency depreciation on the trade balance occurs with a time lag (Kazerooni & Mojiri, 2011). In recent years, agricultural trade in Iran has been under government supervision and control, which has led to various outcomes. First, Iranian agricultural products have maintained only a small share in international markets. Second, the trade of many agricultural and rural commodities has been monopolized by state-owned enterprises. Additionally, the application of tariffs and non-tariff regulations has further shaped these outcomes. Therefore, globalization can influence saffron production in various ways. Given the importance of trade-supporting policies and their significant impact on the growth and development of the agricultural and rural sectors, numerous national and international studies have been conducted in this field.

Borzabadi Farahani et al. (2021) conducted a dynamic modeling study to estimate the optimal hedge ratio for gold coins using saffron futures contracts. Their results, based on both static and time-varying approaches, indicated that the saffron futures market is capable of providing an effective hedge ratio for the spot gold coin market. This implies that investors can utilize the saffron futures market as a tool for risk hedging. Moreover, incorporating structural dependence using copula functions and wavelet decomposition improved the estimation of the optimal hedge ratio over medium- and long-term horizons.

Shahnoshi et al. (2014) investigated border policies concerning horticultural products in Iran and selected countries using the ARDL approach. The findings revealed that, compared to other studied countries, Iran employs fewer tools to promote the export of horticultural products.

Azizi et al. (2015) examined the impact of trade liberalization on the growth of agricultural subsectors using panel data from 1990–2010 (Iranian years 1371–1389). The results showed that the coefficient of exports to GDP was very small and statistically insignificant, whereas the import-to-GDP coefficient was highly significant and larger than that of exports.

Nasabian & Jafari (2016) analyzed the effect of saffron exports on agricultural sector growth in Iran and Spain over the period 1996–2011. Their results revealed a statistically significant and positive relationship between saffron exports, agricultural product exports, and agricultural sector growth in the studied countries.

Salari et al. (2017) explored factors influencing the trade of agricultural products with emphasis on oil revenues during 1971–2013 (Iranian years 1350–1392) using the Vector Error Correction Model (VECM). The findings indicated that agricultural output, oil revenues, and a dummy variable for the third development plan had a positive and significant long-term impact on both export and import patterns.

Sohrabi-Athar & Tizchang (2017) investigated the effects of selected macroeconomic variables and post-revolution development plans on the supply of agricultural exports during 1990–2012 (Iranian years 1369–1391), using the Autoregressive Distributed Lag (ARDL) approach. Their research found that GDP, export relative prices, domestic consumption, and development plans had a significant impact on agricultural exports.

Salatin et al. (2017) evaluated the impact of trade liberalization on the value added of Iran's agricultural sector during 1981–2013 (Iranian years 1360–1392) using Ordinary Least Squares (OLS) regression. Results indicated a positive and significant effect of trade liberalization on the value added of the agricultural sector.

Maugu et al. (2013) studied the determinants of export supply for major Kenyan agricultural commodities from 1963 to 2012. The results showed that exchange rates significantly influenced the export supply of tea and horticultural products, but no significant effect was observed on coffee exports.

Tuncay (2015) examined the effects of financial openness on total factor productivity (TFP) growth—a key structural indicator—over the long run in Turkey. The study found that financial openness positively influenced TFP growth. Other contributing factors, such as human capital, innovation, and foreign direct investment, also had a positive impact.

Bakari (2017) assessed the role of trade capacity in economic growth in Sudan over the period 1976–2015 using the VCEM model. Findings suggested that reforms and measures within economic strategies were still insufficient to strengthen Sudan's economy in terms of trade and domestic investment.

Keho & Wang (2017) investigated the effects of trade liberalization on economic growth from 1965 to 2014. Their findings revealed that trade liberalization had positive effects on economic growth in both the short and long term. Additionally, they found a strong positive correlation between open trade and capital formation in promoting economic growth.

Hai et al. (2018) explored the impact of exports on economic growth in Vietnam from 2000 to 2016. Results demonstrated that exports had a significant and positive effect on economic growth.

Mahmood et al. (2018) examined the relationship between agricultural exports and economic growth in Pakistan over the period 1970–2014 using the Engle-Granger cointegration test. Their findings indicated a weak positive relationship between agricultural exports and GDP growth, attributed to the export of raw or semi-processed agricultural goods.

Lenin & Kasilingam (2019) analyzed the information flow and causal relationship between the spot and futures markets for turmeric in India. They used econometric tools such as unit root tests, Johansen cointegration (JC), Vector Error Correction Model (VECM), Breusch-Godfrey test, CUSUM test, and Granger causality test. The Johansen cointegration results confirmed a long-run equilibrium between spot and futures prices. The Granger causality test further supported the efficiency of the futures market, indicating a unidirectional flow of information.

Miremadi et al. (2021) assessed the efficiency of the Negin saffron futures contract on the Iran Mercantile Exchange (IME). Their results indicated the existence of both short- and long-term relationships between futures and spot prices. Therefore, the effectiveness of saffron futures contracts in guiding spot price discovery was confirmed, consistent with previous studies.

Jalili et al. (2022) studied the relationship between the price volatility of saffron deposit certificates and futures trading volume on the Iran Mercantile Exchange. The results showed a linear causal relationship between the volatility of deposit certificate prices and futures prices, which was bidirectional. BDS test results on VAR residuals indicated the presence of nonlinear relationships between the variables. Nonlinear Granger causality tests based on neural networks revealed that futures trading volume caused fluctuations in saffron deposit certificate prices. Thus, in saffron trading on the Iranian Mercantile Exchange, information flows from the futures to the spot

market, and speculation in the deposit certificate market does not function as a stabilizing mechanism for futures pricing.

Paying attention to agricultural exports and implementing effective measures to improve them requires the creation of a competitive environment to promote such activities. This necessity, in turn, demands greater participation in global markets, particularly through membership in the World Trade Organization (WTO). One of the key products in Iran, which is considered a strategic crop for the country, is saffron. Among agricultural products with comparative advantages, saffron holds a prominent position globally due to its high value (Kochakzadeh & Karbasi, 2015). Regarding the importance of trade liberalization and exports in economic growth, opponents of globalization argue that with trade liberalization and the removal of trade barriers, the agricultural sector, as well as other economic sectors, will place excessive emphasis on export-oriented products. This shift, they believe, would lead to a reduced focus on the production and supply of other essential food items required domestically (Moosavi et al., 2010).

3. Methodology

The VAR methodology is quite similar to simultaneous equations, except that in simultaneous equation models, some variables are considered endogenous and others exogenous or predetermined, while in a VAR model, this distinction does not apply. The system of simultaneous equations was strongly criticized by Christopher Sims. According to his view, if there is simultaneity among a set of variables, this simultaneity is uniform across all variables. For this reason, he proposed the VAR model in 1980, in which all variables can be treated as endogenous (Dollar, 1992; Reham Hassan Nour Aldeen, 2017).

When estimating results using the VAR approach—and fundamentally in any system of equations—attention must be paid to the fact that the coefficients and the explanatory power of parameters do not carry the same importance as they do in single-equation estimation methods.

In the first stage, all variables were tested for stationarity using the Augmented Dickey-Fuller (ADF) test. All variables became stationary after being differenced once.

To apply the Johansen cointegration method, two key issues need to be resolved. First, the appropriate lag length must be determined such that the error terms in the Error Correction Model (ECM) are neither autocorrelated nor non-normal. To determine the optimal lag length, the Akaike Information Criterion (AIC) was used, and based on the resulting values, a lag length of two lags was selected.

To identify cointegrating vectors and subsequently establish long-run equilibrium relationships among the model's variables, the Johansen cointegration approach was employed.

The main reasons for adopting the Vector Autoregression (VAR) approach are as follows:

1. Simplicity of Implementation: The method is straightforward and does not require the researcher to distinguish between endogenous and exogenous variables. Except for the intercept, trend terms, and dummy variables that are sometimes included in the model, all variables are treated as endogenous.

2. Ease of Estimation: Estimating the model's coefficients can be easily done using Ordinary Least Squares (OLS). If each equation contains the same number of lagged variables, OLS estimates perform as well as system estimation techniques such as Two-Stage Least Squares (2SLS) or Seemingly Unrelated Regressions (SUR).

3. Superior Forecasting Performance: It has generally been observed that forecasts generated from VAR models tend to outperform those obtained from more complex simultaneous equation models (Gujarati, 2009).

Variables Used in the Study

Dependent Variable:

• Log of saffron production

Independent Variables:

• Log of gross national product (GNP)

Globalization index

• Log of real exchange rate

• Log of oil revenues

The data for these variables were collected from the Central Bank of Iran, the Ministry of Agriculture Jihad, and the FAO database, covering the period from 1979 to 2023 (Iranian calendar years 1358–1402).

4. Findings

Before examining the long-run relationship among variables, a unit root test was conducted on all variables to ensure that none of them were integrated of order two, I (2). This step was taken to avoid spurious results. The outcomes of the unit root tests indicated that all variables, except for Gross Domestic Product (GDP), were stationary at the level. Subsequently, a cointegration test was performed to examine the long-run relationship between globalization and saffron production. Based on this test, both the trace statistic and the maximum eigenvalue statistic confirmed the existence of one cointegrating vector at the 5% significance level.

Table 1 presents the long-run relationship estimated by the model, showing that globalization has a positive and statistically significant impact on saffron production in the long run.

$$LY=0.35LGNP+0.66LTROIL+2.08LR+2.08LIT$$

The exchange rate has a direct long-term relationship with saffron production. As the exchange rate increases, saffron prices in importing countries rise accordingly, which leads to higher domestic production and, consequently, increased saffron exports. This increase in saffron production contributes to the growth of Gross National Product (GNP). Additionally, rising oil revenues encourage greater investment in the agricultural sector, leading to increased production of agricultural goods, specifically, higher saffron output.

If the coefficient of the error correction term (ECT) is negative and its absolute value is less than one, it indicates that the system is converging toward its long-run equilibrium in the short run. Conversely, a positive coefficient would suggest divergence from equilibrium, meaning the system drifts further away from the equilibrium path by the magnitude of the coefficient in each period. In this study, the ECT coefficient is -0.66 (or -66%), indicating a negative and statistically significant adjustment speed. This coefficient reflects the speed of adjustment toward the long-term equilibrium.

Given that the coefficient is relatively small in magnitude, it suggests that convergence to equilibrium occurs gradually over time. However, despite the slow adjustment process, the trend remains stable and reliable. This model effectively links short-term fluctuations of the variables to their long-term equilibrium values.

Results from Table 2 indicate that, in the short run, the exchange rate has a direct effect on saffron production with lags of one and two years. In other words, a 1% increase in exchange rate growth leads to more than a 1% increase in saffron production. The variable LIT (log of international trade) also shows a direct and significant impact on saffron production at one- and two-year lags.

$$LY=0.44DLGNP(-1)+0.32DLGNP(-2)+2.32DLR(-1)+3.21DLR(-2)+$$
$$0.65DLTROIL(-1)+0.06DLTROIL(-2)+5.65DLIT(-1)+4.87\ DLIT(-2)$$

The variable Gross National Product (GNP), with lags of one and two years, has a direct and significant effect on saffron production. This study demonstrates that along the path of globalization, agricultural production must increase. Globalization indicators have a greater impact on the growth of saffron exports. However, real saffron production growth—being the most important internal systemic factor—plays a determining role in driving the expansion of saffron export growth.

Table 1. Determining the relationship between variables in the long run (Variable yield of saffron production, LY)

Variable	Coefficients	T Statistics
Gross National Product Logarithm $LGNP(-1)$	0.35	3.05
Globalization Index $LIT(-1)$	2.08	3.65
Real currency logarithm $LR(-1)$	2.08	3.11
Logarithm of oil revenue $LTROIL(-2)$	0.66	2.11
Constant factor C	2.08	-

Source: results of the study

Table 2. Short-term Estimates (The dependent variable)

Independent Variable	Coefficients	Independent Variable	Coefficients
Logarithm of GDP with a lag of one $D(LGNP(-1))$	0.44 (2.08)	Globalization Index with a lag of one $D(LIT(-1))$	5.65 (3.02)
Gross domestic product logarithm with two interruptions $D(LGNP(-2))$	0.32 (2.65)	Globalization Index with a lag of two $D(LIT(-2))$	4.87 (3.12)
The logarithm of the real exchange rate with a lag of one $D(LR(-1))$	2.32 (2.47)	Logarithm of oil revenue with a lag of one $D(LTROIL(-1))$	0.65 (1.87)
The logarithm of the real exchange rate with a lag of one $D(LR(-1))$	3.21 (1.11)	Logarithm of oil revenue with a lag of one $D(LTROIL(-2))$	0.06 (0.87)
Constant factor C	0.05 (2.11)	-	-

Reference: The findings of the study; the values of the parentheses are t-statistics

5. Discussion

In the process of globalization, investments directed toward saffron production increase, and new, cost-effective technologies and inputs are increasingly adopted by farmers for saffron cultivation. Moreover, the government exerts a significant influence on the performance of the saffron sector in the global economy through various policy domains such as trade regulations, financial systems, exchange rates, banking, foreign investment, insurance, labor laws, competition regulation, corporate governance, domestic industry development, technology transfer, education, health care, and social services—thereby shaping the trajectory of globalization.

Transitioning from a closed economic system to an open one is not feasible without incurring relevant costs on society. This study demonstrates that globalization has a positive impact on saffron production within the context of agricultural and rural sector policies. Therefore, marketing and export strategies for saffron hold particular significance. These findings align with the results of previous studies, including those by Nasabian & Jafari (2016), Keho & Wang (2017), Borzabadi Farahani et al. (2021), Azizi et al. (2015), and Shahnoshi et al. (2014).

Based on the findings, the following policy recommendations are proposed:

• Designing and implementing an export stabilization plan for saffron is essential to prevent fluctuations in export volumes. Achieving this goal requires long-term strategic policies, and relevant institutions must cooperate effectively to realize these objectives.

• Adopting appropriate trade and exchange rate instruments can enhance saffron exports and meet global market expectations regarding quality, safety, aroma, color, packaging, and taste standards for Iranian saffron.

• Price support mechanisms play a major role in increasing farmers' and rural producers' profitability while reducing the involvement of intermediaries. One effective tool is the implementation of contract farming agreements, which can at least cover the production costs incurred by farmers.

• Tariffs and non-tariff barriers significantly hinder export performance and trade efficiency—this also applies to saffron. Exporting saffron in packaged form increases its final price in destination markets, thereby reducing foreign consumer demand. On the other hand, bulk exports often lead to quality degradation and place the product in the hands of intermediaries who capture the majority of profits, leaving minimal returns for the country.

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Conflict of Interest

The authors declared no conflicts of interest.

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