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Exploring the Interface: Financial Crisis-Induced Exchange Rate Fluctuations and Implications for Iran's Current Account Deficit (1989-2022)

Seyed Fakhrddin Fakhrehosseini[1*], Meysam Kaviani[2]

[1] Department of Accounting, Islamic Azad University Tonekabon Branch, 468411167 Tonekabon, Iran
[2] Department of Finance, Management and Accounting, Islamic Azad University Karaj Branch, 3149968111 Karaj, Iran

[*] Correspondence: Seyed Fakhrddin Fakhrehosseini (f.fkm21@gmail.com)

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Abstract: Investigation into the nexus between financial crises and the current account deficit within Iran's economy was conducted, utilising time-series data spanning from 1989 to 2022. Augmented Dickey-Fuller (ADF) test validations endorsed stationarity of all variables upon first differencing. Through the deployment of Johansen's cointegration methodology, a long-term positive impact of real exchange rate oscillations on the trade deficit was discerned. Furthermore, the implementation of an error correction model (ECM) furnished additional perspectives regarding the dynamic interplay amongst the variables under consideration. The findings elucidate the repercussions of financial crises on Iran's current account deficit, revealing a palpable influence of exchange rate volatilities on economic stability and providing insights into the nuanced macroeconomic relationships amidst periods of fiscal turmoil. The research underscores the exigency for robust fiscal and monetary strategies to navigate the intricacies of economic vulnerabilities and fortify against ensuing financial perturbations.

Keywords: Financial crisis; Fluctuations; Exchange rates; Current account deficit

1 Introduction

An exploration into the multifaceted nature of financial crises has captivated economists across various ideological spectrums in recent years. As delineated by Minsky [1] and Kindleberger [2], financial crises are characterised not solely by elements such as inflation and deflation but also by phenomena including the implosion of pivotal financial and non-financial institutions, acute tensions within currency markets, and precipitous declines in asset prices, or a conjunction thereof. Furthermore, the manifold forms of financial crises - spanning balance of payments crises, currency crises, debt crises, banking crises, international reserves crises, and stock market crises - have been articulated [3].

Within the realm of national economies, the trade balance emerges as a paramount concern. Acting as a pivotal indicator of a nation's international stance and its economic interactions with external entities, the economic trade balance is fervently safeguarded by policymakers aspiring to uphold stability and facilitate sustainable economic expansion. A meticulous understanding of the dynamics intertwining the exchange rate and the trade balance facilitates more astute decision-making by governments, thereby mitigating the deleterious impacts of trade deficits upon national economies. An intentional depreciation of a nation's currency, although initially exacerbating the trade balance owing to escalated import costs, can enhance the competitiveness of its exports within global markets, ultimately harbouring the potential to ameliorate the trade balance in a temporal context [4].

Pertinent academic discourse concerning the relationship between the exchange rate and trade balance, particularly amidst the turbidity of exchange market disturbances and ensuing financial crises, underpins the formulation of efficacious trade policies. It is emphasised by international economists that the exchange rate regime, along with fluctuations therein, bears significant implications for sculpting the trade balance. As per prevailing economic theories, an augmentation in the value of a nation's currency relative to international currencies can ostensibly ameliorate the balance of payments and obliterate trade deficits by propelling exports, constricting imports,

stimulating domestic production, and bolstering export performance through the enhancement of competitiveness and the relative escalation of import costs.

Nevertheless, cautious deliberation is requisite in the implementation of exchange rate policies to circumvent inadvertent ramifications. Establishing equilibrium in exchange rate management and amalgamating complementary trade policies could fortify a positive trade balance, thereby consolidating the overarching economic posture of a nation. Following the dismantlement of the Bretton Woods system in 1973 and the ensuing shift towards a floating exchange rate, empirical inquiries have revealed that the traditional stratagem of refining the trade balance through national currency devaluation may inadvertently catalyse a deterioration of the trade balance, particularly within short-term periods.

In light of the aforementioned, the discernment of correlations between exchange rates and trade balances equips governments with the capabilities to judiciously navigate trade deficits and ameliorate their potentially adverse repercussions upon national economies. Through meticulous management of exchange rate policies, contemplation of short-term consequences, and the enactment of congruent measures, policymakers can aspire to engender a more stabilised and equitable trade milieu, fostering enduring economic stability and proliferation.

Whereas conventional economic theories regard devaluation as an efficacious policy to contend with trade deficits, attributing an enhancement of the trade balance to increased exports and diminished imports as the costs of foreign goods burgeon for domestic consumers, it is imperative to acknowledge that the repercussions of devaluation on the national economy might transcend mere impacts upon the trade balance. The efficacy of exchange rate adjustments can be modulated by a plethora of factors [5], thus underscoring the principal objective of this investigation: to scrutinise the repercussions of financial crises upon the current account deficits of a nation. As financial crises cast profound implications upon both exchange rates and trade balances, this inquiry endeavours to illuminate how such economic developments impact commercial conditions and the overarching economic stability, providing invaluable insights that may assist policymakers in orchestrating strategies to navigate current account deficits amidst financial crises and prevailing uncertainties.

2 Literature Review

Upadhyaya et al. [6] investigated the influence of exchange rate volatility on exports within the ASEAN-5 nations, uncovering a positive correlation between alterations in both domestic and global production and export activities within these countries. Nevertheless, under deteriorating commercial conditions, this positive impact was observed to revert to a negative one. Moreover, export performance within the ASEAN-5 nations was found to be adversely impacted by exchange rate fluctuations. The elimination of these fluctuations, while unfeasible, was suggested by the researchers to be mitigable through the deployment of overarching economic policies by governments.

In pursuance of stabilizing exchange rates and establishing an environment that bolsters export activities, governments could potentially enhance trade performance, thereby nurturing economic development and stability within the ASEAN-5 region. Noteworthy insights were offered by the study for policymakers endeavoring to manage exchange rate volatility and support export-focused initiatives in their respective nations. The implementation of monetary policies and strategies by central banks, given the adoption of variable exchange rate systems by the ASEAN-5 nations, may work towards mitigating exchange rate fluctuations within the foreign exchange market, seeking to establish currency stability and minimize volatility. Thus, a more predictable environment for trade and economic activities could be fostered, while also employing measures to manage inflation and ensure price stability, which could subsequently influence exchange rates and trade outcomes.

A distinct perspective was offered by Kazerooni et al. [7], wherein an evaluation of the impact of oil revenue volatility on the relationship between the exchange rate and trade balance of Iran was conducted through a non-linear approach. The behaviour of Iran's trade balance was categorized into three discrete deficit levels: low, average, and high, elucidating distinct dynamics within these trade balance regimes that could empower policymakers to formulate effective, tailored strategies.

In all identified regimes, a surge in the exchange rate was identified to enhance the trade balance, albeit with variations. Specifically, the instability of oil income was revealed to negatively influence the relationship between the exchange rate and trade balance across all regimes, with particularly pronounced effects during periods of low and high trade deficits. Consequently, the destabilizing effect of oil income instability on the trade balance, particularly during periods of pronounced deficits, suggests a diminished capacity for exchange rate alterations to beneficially impact the trade balance.

Further, Panahi et al. [8] explored the impact of the exchange rate on Iran's tourism balance, discerning that a predominant driver of shifts in the export function was fluctuations in the exchange rate, accounting for approximately 89% of export function changes. In contrast, variations in the import function were primarily influenced by exchange rate fluctuations, accounting for an approximate 0.249 of variations in tourism imports.

The findings collectively underscore the pivotal role of exchange rate dynamics in shaping trade balances and a nation's comprehensive economic performance. Effective management of exchange rates, therefore, emerges as vital

in achieving a more stable trade situation and fostering economic stability. Further research may delve into specific strategies and tools that governments and central banks could employ to navigate the complex nexus of exchange rate management and trade balance optimisation, ensuring sustained economic stability and growth in the context of global economic intricacies and volatilities.

The research implies a diminished sensitivity of the tourism payment balance to fluctuations in national earnings, with a mere 0.395 of alterations in the payment balance being ascribed to variances in national earnings. Moreover, Haughton [9] discerned no significant correlations between real exchange rates and imports of construction goods or other imports in a study exploring current account subgroups and real exchange rate dynamics. Furthermore, no associations between real exchange rates and exported goods were identified. Such findings corroborate the premise that efficacious strategies to mitigate devaluation should pivot towards transmuting goods from primary production to secondary and tertiary processes via the formulation of export strategies, thereby seeking to garner elevated earnings through enhanced prices for the exported goods.

Conversely, Martin [10] ascertained, in an empirical investigation titled "Exchange Rate Regimes and Current Account Adjustment," that fluctuations in international relative prices and potential channel configurations are pivotal in responding to alterations in consumer prices. Such findings amplify the imperative of considering international price dynamics and channel structures in scrutinizing exchange rate regimes and their repercussion on current account adjustments.

In a separate exploration of current account dynamics, real exchange rate adjustments, and exchange rate regimes in emerging-market economies, Gervais et al. [11] discerned through an event-event analysis spanning 1975 to 2008, that exchange rate adjustments are instrumental in attenuating the current account balance. Thus, it is highlighted that exchange rate adjustments emerge as a robust mechanism for rectifying current account imbalances. Proficient management of exchange rates in emerging-market economies can, therefore, modulate trade flows and endeavour towards ameliorating current account positions. Such insightful revelations can shepherd policymakers in formulating strategies to bolster economic stability and nurture sustainable growth amid the perpetually shifting dynamics of international trade.

3 Formulation of Research Hypotheses

The focal intent of the present study encompasses an analytical examination of the interplay between real exchange rate fluctuations and the current account deficit within the economic framework of Iran. Consequently, the formulated research hypotheses are delineated as follows:

•A long-term relationship is posited between real exchange rate fluctuations and the current account deficit.

•A short-term relationship is anticipated between real exchange rate fluctuations and the current account deficit.

This study seeks to ascertain whether significant impacts upon the current account deficit are exerted by real exchange rate fluctuations, accommodating both longitudinal and immediate temporal frames. In scrutinising these relationships, insights of merit concerning the reciprocal impact between exchange rate fluctuations and the current account deficit in Iran's economic milieu are intended to be furnished.

4 Data and Methodology

This section succinctly delineates the experimental framework and elaborates upon the data and econometric estimation techniques employed. Annual time series data, spanning from 1989 to 2022, were utilized in the analysis. Several variables, including Current Account (CA), Logarithm of Consumer Price Index (LCPI), Logarithm of Average Gross Domestic Product relative to Iran's trading partners (LGDPF), Logarithm of Oil Income (LOIL), Logarithm of Liquidity (LM2), and Variation of Real Exchange Rate (VRER), were incorporated into the analysis.

4.1 Model Formulation

The present study enhances the model introduced by Mehraa and Moradi (2008), incorporating a crisis variable, specifically the variation of the real exchange rate. The foundational model utilized in the analysis is articulated as follows:

$$CA_t = \alpha_0 + \alpha_1 LCPI_t + \alpha_2 LGDPF_t + \alpha_3 LOIL_t + \alpha_4 LM2_t + \alpha_5 VRER_t + U_t$$

The real exchange rate (RER) was computed employing the formula:

$$RER = NER\frac{P^*}{P}$$

In this formulation, *P* denotes the CPI of the domestic country, P^* represents the CPI of the foreign country, *NER* signifies the nominal exchange rate (expressed as the price of the US dollar in units of the local currency), and *RER* indicates the real exchange rate. An amplification in the real exchange rate is indicative of a real appreciation of the domestic currency.

4.2 Application of the GARCH Model to the VRER

Within econometric explorations, Autoregressive Conditional Heteroskedasticity (ARCH) models are utilised to scrutinise and model observed time-series data, particularly when error terms within the series are postulated to exhibit distinct sizes or variances at specified points. It is assumed in ARCH models that the variance of the contemporaneous error term or innovation is contingent upon the magnitudes of preceding error terms, often encapsulating the squares of these prior innovations [12]. Notably, ARCH models, despite alternate shorthand monikers for specific model constructions, are prevalently employed in the modelling of financial time series, which display time-varying volatility clusters. This is exemplified through periods of turbulence followed by intervals of relative tranquility.

An essential clarification is that while ARCH-type models are periodically categorized within the family of stochastic volatility models, such a classification is not rigorously accurate due to the volatility being completely predetermined (deterministic) concerning prior values at time *t*.

If the error variance is conceptualized through an Autoregressive Moving Average model (ARMA model), the model is then transformed into a Generalized Autoregressive Conditional Heteroskedastic model (GARCH) as introduced by Bollerslev [13]. Specifically, the GARCH(p, q) model, where p signifies the order of the GARCH terms ${h_t}^2$ and q designates the order of the ARCH terms ε_t^2, is defined as:

$$\epsilon_t = v_t\sqrt{h_t}$$

$$h_t = \alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2 + \sum_{i=1}^{p} \beta_i h_{t-i}^2$$

With $\delta_v^2 = 1, \alpha_0 > 0$, and ϵ_t is modelled by:

$$\epsilon_t = v_t\sqrt{\alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2}$$

When addressing heterogeneity in econometric models, the White test is frequently acknowledged as the most suitable test.

4.3 Analysis via Unit Root Test

The attribute of stationarity, denoting a statistical steadiness in the mathematical properties such as mean and standard deviation of a process across time, necessitates careful scrutiny. Noteworthy is the realization that stationarity embodies not an absolute but rather a relative concept, typically manifesting within extensive sample sizes accompanied by high data frequency. To facilitate an assessment of stationarity within a model, unit root tests are habitually employed. Such tests are pivotal in discerning the univariate order of a variable, thereby informing the selection of pertinent techniques to delineate relationships amongst variables. In this research endeavour, both the ADF and Phillips-Perron (PP) tests have been utilised to examine the order of integration of variables[1].

The ADF test, probing the null hypothesis which posits that a time series y_t is I(1), contrasts it against the alternative hypothesis, I(0), whilst presuming that the data dynamics embody an ARMA structure. The test regression of the ADF test is formulated as:

$$\Delta y_t = \beta' D_t + \phi y_{t-1} + \sum_{j=1}^{p} \psi_j \Delta y_{t-j} + \epsilon_t$$

where, D_t denotes a vector of deterministic terms (constant, trend, etc.). The *P* lagged difference terms, Δy_{t-j}, serve to approximate the ARMA structure of the errors, with the *P* value configured such that the error ϵ_t is serially uncorrelated. Furthermore, homoskedasticity is presumed for the error term.

A variation to the above, the PP unit root tests, developed by Phillips and Perron [14], have garnered popularity in financial time series analyses. These PP unit root tests diverge from ADF tests predominantly in their approach towards serial correlation and heteroskedasticity in the errors. Specifically, while ADF tests employ a parametric autoregression to approximate the ARMA structure of the errors in the test regression, PP tests eschew any serial correlation in the test regression. The test regression for PP tests is articulated as:

$$\Delta y_t = \beta' D_t + \pi y_{t-1} + \epsilon_t$$

where, ϵ_t is I(0) and may exhibit heteroskedasticity.

[1]Dickey-Fuller tests are simulated under the assumption that the alternative is a random walk, with or without drift terms, and that the residual process is white noise. The test is quite sensitive to the presence of a negative (-1) MA(1) process. The KPSS test is zero, which is a fixed variable, I(1). The DF test is considered null when the variable is integrated. The KPSS test may be better if there is prior knowledge that maintains I(0) as a reasonable hypothesis. Perron's test has I(1) as the preserved hypothesis, as does the ADF test, but allows for segmented deterministic trends in the alternative. The alternative in the ADF test allows only for deterministic, linear, or quadratic trends over the sample period.

4.4 Employing Johansen Co-integration Tests

The utilization of Johansen tests, notably recognized as the maximum eigenvalue test and trace test, finds grounding in likelihood ratio tests. Two distinct tests have been discerned: firstly, the Maximum Eigenvalue Test, and secondly, the Traceability Test. Both statistical approaches initiate with the Johansen test, which scrutinizes the null hypothesis positing no cointegration, juxtaposed against an alternative hypothesis advocating for cointegration. Divergence between the tests emerges when evaluating their respective alternative hypotheses.

In a focused exposition, the Maximum Eigenvalue Test investigates whether the most substantial eigenvalue is zero, contrasting this with an alternative scenario wherein the subsequent largest eigenvalue is zero. The initial test seeks to ascertain whether the rank of matrix Π is zero. The null hypothesis propounds that rank(Π) = 0, while the alternative hypothesis positions that rank(Π) = 1. Sequentially, subsequent tests pivot on the null hypothesis that rank(Π) = 1, 2,... and the alternative hypothesis that rank(Π) = 2, 3,.... Explicitly, the primary test investigates rank(Π) = 0, whilst the alternative hypothesis proposes that rank(Π) = 1, employing the largest specific value. Should the matrix rank be zero, the largest eigenvalue likewise becomes zero, indicating no cointegration, and the tests conclude.

In scenarios where the largest eigenvalue λ_1 is not zero and the matrix rank is at least one, the possibility of additional cointegrating vectors is contemplated. Now, the validity of whether the second eigenvalue λ_2 is zero is tested. A zero eigenvalue at this juncture concludes the tests, affirming precisely one cointegrating vector. Conversely, if this eigenvalue is non-zero and more than two variables are present, the possibility for additional cointegrating vectors is explored. Subsequent iterations through additional eigenvalues (λ_3, etc.) proceed analogously, until an eigenvalue equal to zero cannot be rejected.

Pertinently, the method elucidates several advantages when compared to alternate methods, including 1. The capacity for comparison with explanatory and non-sensitive variables, and 2. The capability to discern more than one long-term relationship amongst variables.

5 Unveiling Findings

The investigation sought to employ the PP and ADF tests, aiming to scrutinise the existence of a unit root in the logarithm of specified variables. The underlying goal of employing both tests was to determine the stationary or non-stationary nature (presence of a unit root) of these variables.

Table 1. PP at the level and 1st difference

Variables	Level			1st Difference		
	Individual Intercept	Individual Intercept and Trend	Result	Individual Intercept	Individual Intercept and Trend	Result
VRER	-8.96	-8.85	stationary	-	-	-
CA	-1.74	-2.78	Non-stat	-7.47	-18.10	stationary
LGDPF	-1.63	-0.17	Non-stat	-3.90	-4.56	stationary
LINF	-0.61	-1.27	Non-stat	-3.7	-2.98	stationary
LOIL	0.07	-2.25	Non-stat	-5.31	-5.28	stationary
LM2	1.35	-1.20	Non-stat	-3.30	-3.82	stationary

Source: E views 7

Table 2. ADF at level and 1st difference

Variables	Level			1st Difference		
	Individual Intercept	Individual Intercept and Trend	Result	Individual Intercept	Individual Intercept and Trend	Result
VRER	-9.16	-9.13	stationary	-	-	-
CA	-1.94	-2.90	Non-stat	-6.75	-6.66	stationary
LGDPF	1.82	-0.17	Non-stat	-3.89	-4.58	stationary
LINF	-1.05	-1.67	Non-stat	-3.16	-3.21	stationary
LOIL	0.07	-2.19	Non-stat	-5.27	-5.25	stationary
LM2	1.63	-2.51	Non-stat	-3.24	-3.82	stationary

Source: E views 7

From the data presented in the aforementioned Table 1 and Table 2, non-stationarity at their original levels was

revealed in all variables, barring the VRER, as discerned from the outcomes of both ADF and Phillips-Perron tests. A shift towards stationarity for all variables was, however, observed once the first difference was applied.

Table 3. Estimation of the real exchange rate model

Variable	Co-efficient	t-statistic	Probability
Lrer(-1)	1.34	8.4	0.000
Lrer(-2)	-0.45	-3.2	0.001
c	0.95	1.51	0.138
F-statistic=88.05			R-squared=0.86

Source: E views 7

Upon application of the Schwartz-Bayesian and Akaike criteria, an autoregressive (AR) model with a two-lag structure was identified as the most befitting model to articulate the behaviour of the real exchange rate throughout the examined period, a justification for which is substantiated by Table 3.

According to the Schwartz-Bayesian and Akaike criteria, the most appropriate model to obtain the behavior of the real exchange rate during the studied period is the AR model with two lags. Table 3 supports the appropriateness of this model.

Table 4. ARCH-LM test findings

Variable	Co-efficient	Probability
F-statistic	3.81	0.05
Obs*R-squared	3.60	0.04

Source: E views 7

As depicted in Table 4, outcomes from the ARCH-LM test are presented. The null hypothesis, proposing equal variance of the residuals, is subjected to scrutiny. The rejection of this null hypothesis, as guided by the F statistic, suggests that an invariant variance among the residuals is not present, revealing conditional heterogeneity within the data. Such findings signal a shift in the variability of the residuals over the examined time period.

Table 5. Implementing the GARCH(1,1) test

Variable	Co-efficient	t-statistic	Probability
c	0.0002	5.56	0.000
RESID $(-1)^2$	0.25	2.94	0.002
GARCH (-1)	-1.01	-26.10	0.000

Source: E views 7

Table 5 presents the results of the GARCH(1,1) test implementation. The GARCH(1,1) model was identified as optimal, as per the Schwartz Bayesian and Akaike criteria. Within the GARCH(1,1) model, the conditional variance of the residuals was defined as an uncertainty index and incorporated a volatility variable, which was deployed to modify the real exchange rate variable. Renowned for its prevalence in the analysis of financial time series data, particularly amidst evidence of volatility clustering and variances in residuals, the GARCH(1,1) model, considering both uncertainty and volatility index variables, provides a perspicacious lens through which real exchange rate patterns and its concomitant uncertainty may be observed over time.

Johansen's co-integration test was subsequently implemented to ascertain the existence of a long-run relationship between variables with an identical integration order, i.e., I(1). This entailed the execution of two tests:

(1) The Rank Test

(2) The Maximum Eigenvalues Test

Displayed in Table 6 are the results from the maximum eigenvalue test. A maximal specific statistic of 0.93 precipitated the rejection of the null hypothesis. Concurrently, the second maximum eigenstatistic, documented as 0.77 and paired with a critical value of 69.79, dismissed the maximum hypothesis of 1*, a decision buttressed by a probability value of 0.000, signifying the null hypothesis's rejection. Furthermore, the third test's maximum specific statistic was noted as 0.68, and a probability value of 0.0001 similarly rejected the null hypothesis of at most 2* cointegration equations. However, the fourth test, exhibiting a maximum specific statistic of 0.59 and a critical value of 29.77, dismissed the hypothesis of at most 3* cointegration equations, with a probability value of 0.002 signalling rejection of the null hypothesis. In contrast, the test for cointegration equations at most 4* — with a maximum specific statistic of 0.35, a critical value of 15.47, and a probability value of 0.07 — accepted the null hypothesis. A consistency across the results highlights the presence of four cointegration equations, revealing a long-term relationship amongst the variables and providing robust evidence of enduring associations over time.

Table 6. Trace test satistics and maximum eigenvalue test

Hypothized No. of CE (s)	Trace Statistics	Maximum Eigen Statistics	0.05 Critical Values	Probability
None*	198.63	0.93	95.73	0.000
At most 1*	115.84	0.77	69.79	0.000
At most 2*	72.45	0.67	47.83	0.0001
At most 3*	40.19	0.59	29.77	0.002
At most 4*	14.15	0.35	15.47	0.07

Source: E views 7

To investigate the short-term relationship between economic variables, an ECM is employed. Initially proposed by Sargan and subsequently popularised by Granger and Engel, the ECM — articulated as $\Delta y_t = \beta_0 + \beta_1 \Delta \mathrm{X_t} + \pi \mu_{t-1} + \epsilon_t$, where π represents the error correction factor — permits exploration of how short-term variables' changes relate to their long-term equilibrium, which is influenced by the error correction term $\pi \mu_{t-1}$. Thus, the model serves as an instrumental tool for analysing the interplay between short-term adjustments and the long-term relationships amongst economic variables.

Table 7. Normalized coefficient

Variable	Co-efficient	t-statistic	Probability
VRER	7993460	2.22	0.036
LCPI	-18359	-3.1	0.005
LGDPF	28456	2.22	0.033
LOIL	2813	1.36	0.17
LM2	5028	0.57	0.55
C	-377058	-5.05	0.001

Source: E views 7

Table 7 elucidates a long-term positive relationship between the current account deficit and real exchange rate changes. The beta coefficient value indicates that a 1 percent increase in the real exchange rate change engenders an approximately 7,993,460 percent surge in the current account deficit. Furthermore, the t-statistic corresponding to the real exchange rate change coefficient, registering at 2.22, signifies its notable impact on the long-term current account deficit. In divergence, the beta coefficient of CPI approximates -18359, implying that a 1% ascent in CPI precipitates a decline of approximately 18369% in the current account deficit, with the coefficient's t-statistic (-3) affirming its significant influence over a long-term horizon. Similarly, a beta coefficient for GDP, noted as 28,466, reveals that a 1 percent GDP uptick correlates to a 28,466 percent increment in the current account deficit. Here, the t-statistic of the GDP coefficient (2.24) reinforces its substantial long-term impact on the current account deficit. However, results indicate that neither oil income nor M2 exert a significant impact on the current account deficit, with their beta coefficients recorded as 2,803 and 5,018, respectively, denoting no significant long-term effect.

Table 8. ECM

Variable	Co-efficient	t-statistic	Probability
VRER	7993470	2.22	0.036
DLCPI	-18359	-3.1	0.005
DLGDPF	28456	2.22	0.033
DLOIL	2813	1.36	0.17
DLM2	5028	0.57	0.55
ECM	-0.52	-3.04	0.005
R-Squared=0.45	F-stat.	F(5,24)	3.82[0.011]

Source: E views 7

As per the data in Table 8, the estimated coefficient of the error correction term demonstrates that the system in Iran corrects its previous period's equilibrium level within one year. With an error of -0.52, a 52% convergence from short-term to long-term is achieved through adjustments in variables such as the real exchange rate, GDP, CPI, oil income, and M2. The negative sign of the error correction term indicates an inherent system mechanism to self-correct and restore its long-term equilibrium following short-term fluctuations, with a convergence speed of 52% pointing to a relatively swift adjustment process, thereby assuring a stable relationship among the variables over an extended period.

6 Conclusion

The pervasive impact of the recent global financial crisis, which permeated economies through various channels contingent on their integration with global financial markets, has underscored multifaceted economic consequences. Economies intimately enmeshed with international financial markets witnessed direct repercussions, whilst others were peripherally impacted through trading activities. Trade flows, spanning both developed and developing countries, were subjected to the vicissitudes of this crisis via the regression of effective demand channels in the period between 1989 and 2022. Engendered economic ramifications included instability, curtailed growth, escalated unemployment, and recession, all converging to diminish trade activities.

Central to the enquiry of this research was an exploration into the persistent and transient relationship between the real exchange rate alterations and the current account deficit. Through the application of Johansen's cointegration regression, it was discerned that fluctuations in the real exchange rate and GDP exerted a positive influence on the current account deficit. An inference can thereby be drawn that nations encountering elevated exchange rate volatility tend to manifest more equilibrated current accounts, underlining the pivotal role of exchange rate fluctuations in steering savings and investment decisions.

Conversely, it was elucidated that the CPI inversely impacted the current account deficit, where heightened inflation resulted in diminished exports and augmented import consumption, concomitantly contributing to a decline in the current account. Moreover, whilst oil income and M2 were ascertained to positively influence the current account deficit, the impact thereof was not statistically significant. A surge in oil prices, extending from 1985 to 2018, facilitated an income redistribution from oil-importing to oil-exporting countries, thereby influencing their respective current account balances.

The application of the ECM elucidated transient relationships amongst the variables under consideration. Developing countries, in view of their inherently fragile financial structures and suboptimal financial market regulations, were observed to bear the brunt of the crisis to a more pronounced extent. To ameliorate the impact of financial crises on developing nations, fortification of the financial structure and the incorporation of judicious financial market regulations have been deemed imperative.

In light of the findings from the research, several policy recommendations have been propounded:

(1) Pursuit of policies aimed at stabilising the real exchange rate and other pertinent markets is imperative for attenuating the current account deficit.

(2) Mitigating fluctuations within the CPI emerges as crucial to curbing the current account deficit within Iran's economic framework.

(3) Modification of the compositional structure of the central bank's balance sheet may stimulate aggregate demand, facilitating economic recovery from recession.

(4) Attention from governmental and monetary authorities should pivot towards sustaining stability and liquidity within the financial system, thus minimising susceptibility to crises.

(5) The provision of financial assistance, through the deployment of support packages tailored for small and medium enterprises, families, and consumers, alongside support channels, may mitigate the deleterious effects of the financial crisis on production, consumption, and distribution.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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