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# Determinants of Current Account Balances: Evidence from OECD Countries and the European Debt Crisis

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## Abstract

**This study investigates the determinants of current account balances in 38 OECD countries between 2002 and 2022, applying a Difference-in-Differences (DID) approach to explore how the European sovereign debt crisis affected current account balances. The empirical model incorporates macroeconomic, fiscal, demographic, and institutional variables to identify key determinants of external balance. Findings reveal that the European sovereign debt crisis significantly improved the current account balances of Eurozone countries. Additionally, government expenditure and economic size negatively correlate with current account balance, while real effective exchange rate appreciation unexpectedly shows a positive relationship. Other determinants, such as trade openness, inflation, aging population, and political stability, show limited or insignificant effects. The findings highlight the importance of fiscal discipline and structural reform in managing external imbalances, particularly during crises.**

## Keywords

**Current Account Balance; International Trade; European Debt Crisis; Difference-in-Difference.**

## 1. Introduction

The balance of payments (BOP) is a statement of every international transaction undertaken by a country over a specified period. The current account balance (CAB) is a component of the BOP and is measured by the sum of goods, services, income, and current transfers. It serves as a vital economic barometer that provides a clear snapshot of the external equilibrium of an open economy. In the last decades, global current account imbalances have continued to become an important issue in the field of international economics. Despite the brief corrections triggered by the 2008 global financial crisis and the 2020 pandemic, structural imbalances remain widespread [1]. This phenomenon was caused by numerous factors, and many scholars have tried to interpret them from different perspectives. In addition, their consequences also become a concern: global economic imbalances are often cited as one of the main causes of the 2007-2008 global financial crisis (GFC), which subsequently triggered a global recession and a European debt crisis (EDC) [2].

Unlike the GFC, which had a synchronized global impact, the effects of EDC on countries are disproportionate due to the specific monetary union-specific mechanism. Against this backdrop, this research will take the EDC as a typical exogenous shock example to explore the determinants of current accounts, focusing on discussing the mechanism of the sovereign debt crisis on current account adjustments. This study aims to analyze the determinants of current account balances in OECD countries from macroeconomic dimensions and the empirical test to explore how the EDC shaped current accounts and provide valuable insights into policy-making on sustaining external equilibrium in an era of heightened economic uncertainty.

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## 2. Literature Review

Understanding the determinants of the current account has been a central focus of international macroeconomic research for nearly a century and the theoretical paradigms explaining current account imbalances have evolved substantially.

Early frameworks use Elasticity Analysis to explain the effect of currency depreciation on the current account with the price elasticity of demand for exports and imports [3]. Its core is the Marshall-Lerner condition, stating that a depreciation improves the current account only if the sum of export and import elasticities exceeds one. Although some scholars empirically support that currency depreciation may initially worsen the trade balance [4], it was criticized for its limited real-world applicability [5][6]. After that, by incorporating drivers of cross-border financial flows, the Absorption Approach proposed by Sidney Alexander replaced the Elasticity Analysis [7], modeling current account determinants views the balance as the difference between domestic saving and investment. Bošnjak et al (2018) highlight the role of domestic demand, real exchange rate, loans to the private sector, and monetary aggregates as determinants with this approach [8]. The Mundell-Fleming model (M-F Model) extended the traditional IS-LM framework into an open economy setting. However, it is difficult to analyze dynamic current accounts and rigorous welfare, because it ignores interim budget constraints and lacks a micro-foundation [9].

Until the 1980s, Sachs (1983) developed an intertemporal approach, extending existing models to incorporate relative prices, demographic shifts, consumer durables, asset market imperfections, and information asymmetry within a one-good framework [10]. It views the CAB as the result of the dynamic savings and investment decisions of rational economic persons based on future income and expenditure expectations. Empirical studies have confirmed the relevance of intertemporal factors, such as fiscal policy, demographics, and consumption smoothing in explaining current account dynamics [11][12]. Unfortunately, the intertemporal equilibrium analysis makes it difficult to explain the persistent current account imbalance and is challenged by the New Open Economy Macroeconomics (NOEM). Some scholars attribute current account movements to various temporary shocks, including interest rate parity shocks, technology, and preferences under the NOEM model [13][14].

Nowadays, the theory is developing and leading to new theoretical hypotheses to understand current account imbalances from the perspectives of savings surplus, financial development, financial inhibition, and population structure [9]. Among them, many scholars have discussed the twin-deficit hypothesis (TDH), which holds that the widening of fiscal deficits, driven by excessive government spending or reduced tax revenues, will increase domestic absorption and reduce national savings, thereby exacerbating the deficit in the current account due to higher demand for imports or foreign capital [15].

## 3. Hypothesis

External imbalances between the core and marginal countries of the eurozone continued to intensify before the EDC, with the deficits of the current account in marginal countries and the surplus of core countries, and they both improved after the crisis [16]. Therefore, it is reasonable to infer that the EDC had a more pronounced and direct impact on Eurozone countries, where the crisis originated. Based on the twin deficits hypothesis, aggressive fiscal policies directly influence external balances. The Eurozone coordinated crisis took centralized fiscal rules and structural adjustment programs to respond, which is likely to amplify its impact compared to non-Eurozone OECD counterparts. However, the influence may vary depending on the country's different characteristics. To be specific, more open economies experienced

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more temporary current account deterioration, and larger countries showed more significant worsening [17]. Accordingly, we propose:

**H1: The EDC is positively associated with the CAB.**

**H2: Fiscal surpluses are positively associated with the CAB.**

**H3: Government spending is negatively associated with the CAB.**

**H4: Economic size is negatively associated with the CAB.**

**H5: Trade openness is negatively associated with the CAB.**

**H6: Inflation is negatively associated with the CAB.**

Beckmann & Czudaj (2016) revealed that real effective exchange rate (REER) appreciation generally coincides with CAB worsening, and causality primarily runs from REER to CAB [18]. The less competitive nations' ability to compete in the EU is further undermined by the combination of endless pegging and heterogeneity, which causes REER appreciation [19]. The pricing of imported and exported items using the nation's currency will be impacted by changes in the actual effective exchange rate [20]. When the national currency depreciates, the relative price of domestic exports in the international market decreases and imports become more expensive, resulting in increased export competitiveness and reduced import demand, which ultimately leads to an improvement in the current account deficit. Furthermore, structural and institutional factors may influence the current account [20]. According to life-cycle theory, a rise in the old-age dependency ratio usually increases consumption and reduces savings, which in turn reduces the funds available for investment and negatively affects the CAB. Additionally, countries with high political stability tend to attract more Foreign Direct Investment, which boosts exports and improves the CAB. Based on the above analysis, we propose:

**H7: REER appreciation is negatively associated with the CAB.**

**H8: The old-age dependency ratio is negatively correlated with the CAB.**

**H9: Political stability is positively associated with the CAB.**

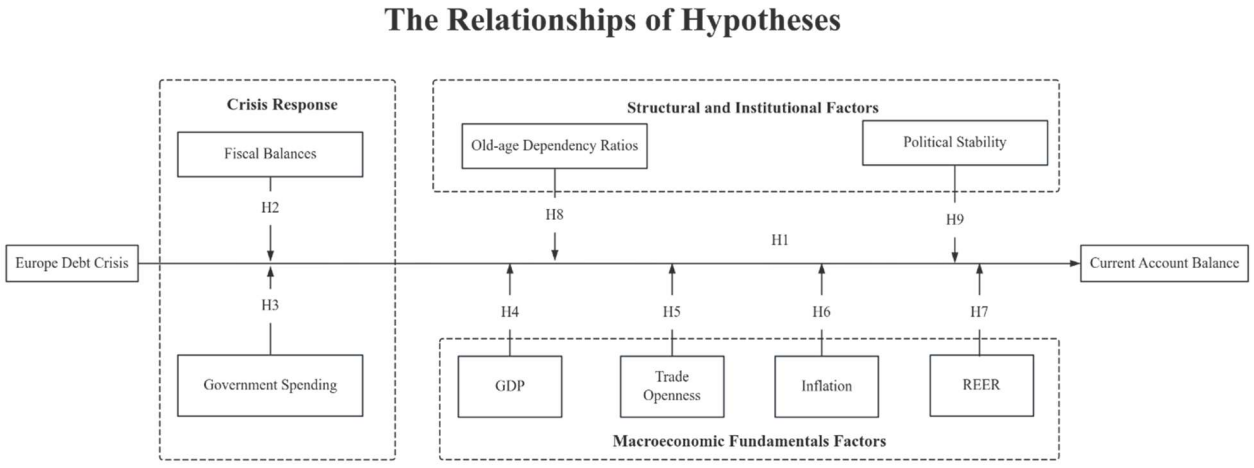


**Fig. 1** The Relationships of Hypotheses

## 4. Data

This paper uses panel data from 2002~2022 in 38 OECD economies, including 17 Eurozone countries and 21 non-Eurozone countries, to study the causal relationship between the EDC and other determinants of CAB. Except for REER from Bruegel, all other data are from the World Bank. For data cleaning, if the current account is missing for a particular year, the data for that

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year is excluded and the average filling is used to process other missing data, making it a balanced panel data. A detailed description of the variables is provided below:

**Table 1.** Variable Definitions

| Type | Variables | Measure |
|---|---|---|
| Dependent Variables | CAB | The ratio of a country's CAB to its GDP |
| Independent Variables | Eurozone×post | 1 for Eurozone countries in 2009 and beyond; 0 for otherwise. |
| | Government Expense | General government expenditure (% of GDP), excluding military capital spending |
| | Economic Size | Natural logarithm of GDP (current US$) |
| | Trade Openness | Sum of exports and imports (% of GDP), indicating trade integration |
| | CPI | Consumer Price Index with 2010 as the base year, proxy for macroeconomic stability |
| | REER | Real Effective Exchange Rate index, adjusted for inflation differentials |
| | Old-Age Dependency Ratio | Ratio of population aged 65+ to those aged 15-64 (per 100 working-age individuals) |
| | Political Stability and Absence of Violence/Terrorism | Index measuring perceptions of political instability and violence/terrorism risk |

## 5. Model

$$CAB_{it} = \beta_0 + \beta_1(Eurozone\times post)_{it} + \beta_2 Government\ Expense_{it} + \beta_3 Size_{it} + \beta_4 Trade\ Openness_{it} + \beta_5 Inflation_{it} + \beta_6 REER_{it} + \beta_7\ Old\ Age\ Dependency\ Ratio_{it} + \beta_8 Political\ Stability_{it} + \delta i + \varphi t + \epsilon_{it} \quad (1)$$

In this empirical analysis, the key identification difference-in-differences (DID) method exploits the differential exposure of Eurozone and non-Eurozone countries to the crisis. Specifically, EDC has caused a direct external impact on the Eurozone countries and led to a series of policy interventions to respond. Although other countries have been affected to some extent by the EDC due to financial globalization, the impact of non-eurozone countries has been relatively indirect and less severe, allowing for a cleaner isolation of the treatment effect. Thus, in this model, Eurozone countries are considered as treatment groups and non-Eurozone OECD countries are used as control groups. To control potential confounding factors, several macro-control variables were introduced the high-dimensional fixed effect (HDFE) estimation method was adopted to improve the accuracy of the estimation.

## 6. Results

### 6.1. Descriptive Statistics.

Table 2 shows descriptive statistics results. For the full sample, the mean value of the CAB is -0.108, indicating that the sample of countries as a whole has a slightly negative CAB. The median of -0.411 is smaller than the mean, suggesting that the data distribution is right-skewed and this may be because some of the countries in the sample have accumulated high current account surpluses. It could be concluded that there is broad national heterogeneity among the main explanatory variables. Besides, the statistical results for the other variables were generally consistent with existing studies and were within reasonable limits.

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**Table 2.** Descriptive Statistics

| Variables | Obs | Mean | Median | Std. Dev. | Min | Max |
|---|---|---|---|---|---|---|
| CAB | 792 | -0.108 | -0.411 | 5.56 | -22.939 | 29.837 |
| Government Expense | 792 | 19.046 | 19.248 | 3.841 | 9.838 | 28.071 |
| Economic Size | 792 | 26.604 | 26.592 | 1.604 | 22.721 | 30.889 |
| Trade Openness | 792 | 95.48 | 77.550 | 56.842 | 20.447 | 393.141 |
| CPI | 792 | 104.564 | 104.0135 | 25.061 | 45.373 | 542.439 |
| REER | 792 | 98.681 | 98.325 | 11.775 | 49.279 | 140.465 |
| Old-Age Dependency Ratio | 792 | 23.643 | 24.182 | 7.212 | 7.396 | 50.057 |
| Political Stability and Absence of Violence/Terrorism | 792 | 0.624 | 0.816 | 0.709 | -2.376 | 1.753 |

## 6.2. Pearson Correlation Coefficient.

**Table 3.** Pearson Correlation Matrix

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| (1) CAB | 1.000 | | | | | | | | |
| | | | | | | | | | |
| (2) Size | 0.185* | 1.000 | | | | | | | |
| | (0.000) | | | | | | | | |
| (3) CPI | 0.076* | 0.134* | 1.000 | | | | | | |
| | (0.033) | (0.000) | | | | | | | |
| (4) Openness | 0.216* | -0.462* | 0.047 | 1.000 | | | | | |
| | (0.000) | (0.000) | (0.190) | | | | | | |
| (5) Government Expenditure | 0.100* | -0.069 | -0.052 | -0.002 | 1.000 | | | | |
| | (0.005) | (0.051) | (0.147) | (0.956) | | | | | |
| (6) Old Age Dependenct Ratio | 0.219* | 0.201* | 0.069 | 0.070 | 0.494* | 1.000 | | | |
| | (0.000) | (0.000) | (0.051) | (0.050) | (0.000) | | | | |
| (7) Political Stability | 0.204* | -0.183* | -0.191* | 0.338* | 0.302* | 0.415* | 1.000 | | |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | | | |
| (8) Fiscal Balance | 0.388* | -0.136* | -0.059 | 0.113* | -0.065 | -0.088* | 0.265* | 1.000 | |
| | (0.000) | (0.000) | (0.095) | (0.002) | (0.068) | (0.014) | (0.000) | | |
| (9) REER | 0.056 | -0.065 | -0.144* | 0.037 | -0.085* | 0.074* | 0.055 | -0.031 | 1.000 |
| | (0.118) | (0.067) | (0.000) | (0.305) | (0.017) | (0.036) | (0.123) | (0.383) | |

## 6.3. Main Regressions.

Table 4 presents the main regression results. Column (1) only includes the country-fixed effects, and Column (2) only includes the year-fixed effects, and Column (3) incorporates both. From the results of the two-way fixed effects, the model explains 68.5% of the fluctuations in the CAB.

In column(3), the coefficient on the interaction term "Eurozone×post" is 1.541 and is significant at the 5% level of significance. It implies that after the EDC, the CAB of the Eurozone countries increased significantly by 1.541 units in 2009 and beyond, compared to other non-Eurozone countries in the OECD. This result supports H1, suggesting that the crisis triggered a stronger adjustment in external balances within the Eurozone.

Moreover, government expense is negatively and significantly associated with CAB, which is consistent with the TDH and supports H2 and H3. On the one hand, such fiscal adjustments increased public savings by lowering the budget deficit, thereby widening the national savings-investment gap and improving the CAB. On the other hand, reducing government spending

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depresses aggregate demand, which leads to a decline in domestic consumption and investment and a significant contraction in import demand, driving an improvement in the current account. Regarding macroeconomic fundamentals, the significantly negative coefficient on economic size indicates that larger economies tend to weaken the current account surplus due to higher capital demand or consumption expenditure. In particular, a 1% change in GDP will result in roughly a 5.405% opposite change in the CAB. However, trade openness and inflation show no statistically significant effect on the CAB and there are no sufficient reasons to support H6 and H7. Since the OECD belongs to high-income economies, this is consistent with existing empirical evidence [21]. Because the relationship between trade openness and the CAB varies by income group.

**Table 4.** Regression Result

| VARIABLES | (1) | (2) | (3) |
|---|---|---|---|
| | CAB | CAB | CAB |
| Eurozone | 0 | -3.806*** | 0 |
| | (-) | (0.761) | (-) |
| | | | |
| post | 2.770*** | 0 | 0 |
| | (0.546) | (-) | (-) |
| | | | |
| Eurozone×post | 1.695*** | 2.328*** | 1.541** |
| | (0.601) | (0.810) | (0.629) |
| | | | |
| Government Expense | -0.847*** | 0.126** | -0.929*** |
| | (0.151) | (0.0589) | (0.166) |
| | | | |
| Economics Size | -5.279*** | 1.238*** | -5.405*** |
| | (1.254) | (0.145) | (2.054) |
| | | | |
| Openness | 0.00310 | 0.0418*** | 0.0124 |
| | (0.0139) | (0.00397) | (0.0160) |
| | | | |
| CPI | 0.0238 | 0.0139 | 0.0246 |
| | (0.0156) | (0.00922) | (0.0161) |
| | | | |
| REER | 0.0918*** | 0.0424*** | 0.0982*** |
| | (0.0292) | (0.0161) | (0.0352) |
| | | | |
| Old Age Dependency Ratio | 0.211*** | 0.0838** | 0.118 |
| | (0.0472) | (0.0343) | (0.0821) |
| | | | |
| Political Stability | 0.516 | 0.762** | 0.544 |
| | (0.540) | (0.325) | (0.579) |
| | | | |
| _cons | 136.9*** | -46.55*** | 144.3*** |
| | (28.84) | (4.942) | (50.54) |
| R-squared | 0.672 | 0.265 | 0.685 |
| Country FE | Yes | No | Yes |
| Observations | 792 | 792 | 792 |

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Interestingly, the coefficient on the REER is +0.0982 and is significant at the 1% significance level, which seems to be contrary to theoretical expectations and H7. This may be because some OECD countries like Germany, Japan, and South Korea have strong competitive advantages in high-end manufacturing, pharmaceuticals, IT, and precision equipment. For those high-value-added products, the price elasticity of demand is relatively low, and it is difficult to substitute, resulting in current account surpluses even if the REER appreciates. For structural and institutional factors, there are no obvious evidence to support H8 and H9.

## 6.4. Further Regressions.

(1) The parallel trend test. We examine the dynamic impact of the EDC on the CAB of OECD countries using the second period before the EDC, namely 2007, as the base period to ensure the existence of parallel trends in the treatment and control groups. Fig. 2 shows that the treatment and control groups have similar trends before the EDC, which meets the parallel trend assumption, while the current account performance of the treatment group is significantly better than that of the control group after the onset of the EDC. It suggests that the positive effect of the EDC on the euro area's current account persists.

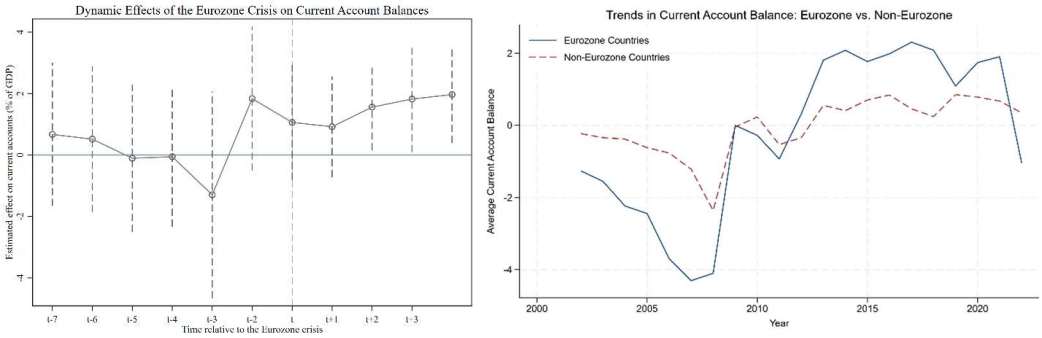


**Fig. 2** The parallel trend test

(2) The placebo test. Dummy explanatory variables are constructed using a dummy for the timing of the debt crisis in order to rule out the effects of chance. Specifically, the regression model is re-run by randomly replacing the values of the key variable Eurozone×post and recording the estimated coefficients after each replacement 1000 times. For each simulation, the regression is re-estimated and the new placebo coefficient $\hat{\beta}_{placebo}^{(j)}$ is recorded, where j=1,2,...,1000. This yields a distribution $\left\{\hat{\beta}_{placebo}^{(1)}, \hat{\beta}_{placebo}^{(2)}, \ldots, \hat{\beta}_{placebo}^{(1000)}\right\}$. Fig. 3 shows that this distribution is approximately symmetric and centered near zero. As a result, there is no significant effect when treatment timing is randomized. It is reasonable that the positive impact of the Eurozone crisis on CAB is real and not an accidental result of other factors.

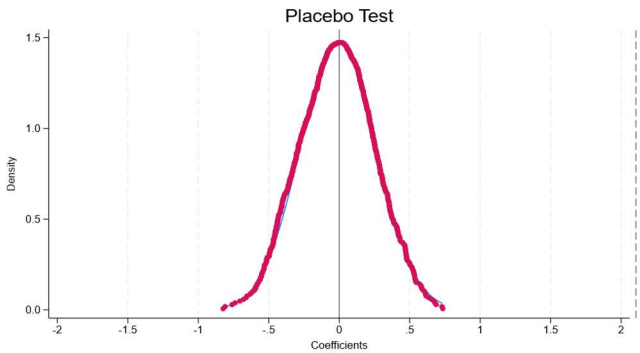


**Fig. 3** The parallel trend test

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(3) Propensity Score Matching(PSM). To mitigate the possible biases caused by heterogeneity in the covariates across countries, this study applies the PSM. Specifically, a logistic regression model is used to predict the probability of a country being in the Eurozone with a series of covariates. Based on the estimated propensity scores, successfully matched samples are used to re-run the double fixed-effects regression analysis. Fig. 4 and Table 5 prove that the core findings of this paper are highly robust.

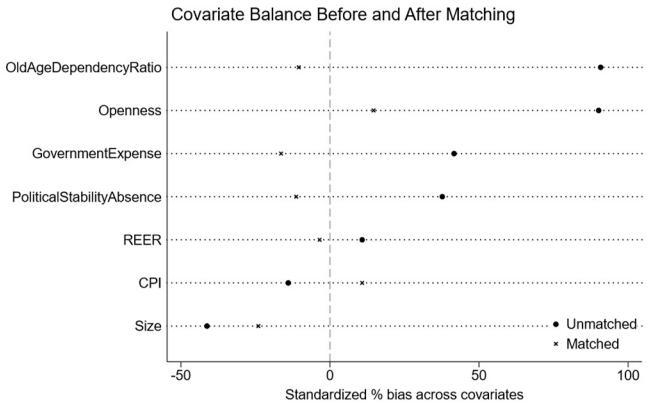


**Fig. 4** The PSM result

**Table 5.** PSM-Based Fixed Effects Regression Results

| | (1) |
|---|---|
| VARIABLES | CAB |
| | |
| Eurozone×post | 2.392*** |
| | (0.658) |
| Government Expense | -1.134*** |
| | (0.182) |
| Size | -8.028*** |
| | (2.637) |
| Openness | -0.00547 |
| | (0.0286) |
| CPI | 0.156*** |
| | (0.0439) |
| REER | 0.115** |
| | (0.0464) |
| Old Age Dependency Ratio | 0.226** |
| | (0.107) |
| Political Stability | 2.805*** |
| | (0.812) |
| Constant | 200.0*** |
| | (64.31) |
| | |
| Observations | 526 |
| R-squared | 0.736 |
| | (0.658) |

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## 7. Summary

This study provides empirical evidence on the impact of the European sovereign debt crisis on the CAB of OECD countries, considering the government crisis response, macroeconomic, demographic, and political stability determinants. The findings suggest that (1) the crisis led to significant improvements in the CAB of Eurozone countries; (2) there is a negative relationship between the government expense and the CAB; (3) the size of the economy has a strong and negative effect on the CAB; (4) Possibly due to the fact that OECD is an export-led country that maintains its export advantage even when the local currency appreciates, REER shows a positive relationship with CAB, contrary to traditional theories that suggest that an appreciating local currency weakens exports, expands imports, and thus worsens the current account. In short, debt crisis shock, fiscal balance, economic size, and REER are the determinants of CAB.

These findings provide valuable insights into the context of the debt crisis. First, external shocks can be an opportunity for structural reform and adjustment of imbalances. For other countries facing current account deficits, making moderate use of the crisis-forcing mechanism to improve international competitiveness through structural reforms is an effective path to improving CAB. In addition, large countries are more prone to trade deficits, revealing that large economies should attach great importance to the optimization of domestic demand structure and industrial structure, and enhance their savings rate and export competitiveness to prevent long-term current account imbalances. Finally, for export-oriented economies with high value-added, technological leadership or brand influence, the impact of price factors is likely to have been partially offset by structural competitive advantages. In formulating exchange rate and export policies, policymakers should perhaps focus on improving industrial competitiveness rather than relying solely on exchange rate depreciation to stimulate exports.

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