

AI READINESS, FISCAL DISCIPLINE, AND THE CURRENT ACCOUNT: EVIDENCE FROM A CROSS-COUNTRY ANALYSIS

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Abstract: In recent years, artificial intelligence (AI) has started becoming an increasingly important determinant of economic structures, patterns of productivity, and competitiveness at an international level. However, the implications of AI in terms of the performance of the external sectors, especially current account balances, have not been sufficiently explored yet. The paper attempts to investigate if there is a connection between the level of AI readiness and the improvement in current account performance in European countries using the effect of AI preparedness in comparison to conventional macroeconomic determinants. Using a cross-sectional dataset including European countries in 2023, the paper employs linear regression to examine the effect of AI preparedness, government revenue, and government net lending on the current account balance. As the empirical findings show, the total regression model is statistically significant meaning that the chosen explanatory variables collectively account for variations in the current account balance. At the same time, out of all the selected factors, only government net lending shows a statistically significant effect on the current account balance as being positively correlated with it. In addition, AI preparedness has a negative effect on the current account balance but statistically insignificantly meaning that high AI readiness does not necessarily improve external balance in the short term. Finally, government revenue does not show any significant effect on the current account performance either. The results imply that, although AI readiness may be considered an important structural determinant in the long run, the macroeconomic effects of AI on external balance may be contingent upon certain additional factors like productivity, ability to export, innovation environment, and institutions.

Keywords: AI readiness, current account, fiscal discipline

1. INTRODUCTION

Current account balance can be viewed as one of the key measures of a country's external economic standing, which shows the discrepancy between national savings and domestic investments. A positive current account balance indicates the excess of savings over domestic investment. On the contrary, a negative balance implies dependence on external finance. Therefore, knowledge of factors influencing the current account behavior is vital for the analysis of macroeconomic stability and international competitiveness.

During the last decades, the structure of European economies underwent drastic changes because of the advancement in technology, globalization, financial interdependence, and changes in fiscal policy. One of these changes can be considered the introduction of artificial intelligence (AI) as an important factor with great potential to change production processes, increase efficiency, and improve international competitiveness. Adoption of AI technology can affect external balances in several ways including improving the productivity level, enhancing export competitiveness, changing labor market, and stimulating innovations.

AI readiness is usually understood as a set of indicators reflecting such aspects as digital infrastructure, human capital, technological readiness, and institutional preparedness. Countries with higher AI readiness can achieve greater productivity results and gain a competitive advantage on international markets. However, it is still unclear how AI readiness affects the country's current account behavior. Although adoption of AI can stimulate exports, it can also lead to increases in imports of advanced technologies, digital services, and foreign investments, causing some negative effects on the country's external balances in the short term.

Other than technological factors, the impact of traditional macroeconomic determinants on the dynamics of the current account cannot be overlooked. The government net lending as an indicator of the difference between government revenues and expenditures has a direct impact on national savings and investments. Increased government net lending may contribute to better current account performance through the increase of national savings. In addition, government revenues can affect the external balances through the influence on fiscal sustainability and domestic economic performance.

The objective of this study is to investigate determinants of current account balances in European economies paying special attention to the role of AI preparedness. The sample will include European countries and the year 2023. Linear regression analysis will be used in order to investigate the impact of AI preparedness, government revenues, and government net lending on current account performance.

The contribution of this study is two-fold. Firstly, it will expand the body of the literature on AI preparedness by investigating its correlation with an external macroeconomic indicator instead of productivity and innovation outcomes. Secondly, this study will provide empirical evidence whether technological preparedness of the country already resulted in any improvements in external economic performance.

2. LITERATURE REVIEW

Preparedness for artificial intelligence has turned out to be one of the essential factors defining the capability of countries to exploit the economic benefits offered by digital transformation. Current literature mostly concentrates on measuring AI preparedness with respect to such variables as governance, institutional capability, technological infrastructure, and macroeconomic performance; however, empirical evidence regarding the direct connection between AI preparedness and current account balances is scarce. Fan & Liu (2021) explored the impact of artificial intelligence on sustainable economic growth in China. The results of the research indicate that AI stimulates economic growth indirectly via industrial restructuring, and technological progress makes a contribution to economic development. Even though the study does not address the issue of external balances, improvement in productivity and industrial upgrade may positively affect the performance of exports and, thus, the current account balances. Reshetnikova et al. (2021) compare the innovation systems of China and South Korea and emphasize that technological innovation, institutional support, and investment in advanced technologies constitute the driving forces of national competitiveness. According to the researchers, countries that have well-developed innovation ecosystems are more likely to experience sustainable economic development and technological leadership; hence, innovation capability turns out to be the precondition for the successful implementation of AI. Sarker (2022) investigates the implications of artificial intelligence for macroeconomics of Bangladesh and finds that AI has the potential to increase productivity and support economic efficiency and economic growth. However, the study underlines that in order to exploit these benefits, it is necessary to provide the required infrastructure, human capital, and supportive policies, without which the macroeconomic gains will not be substantial. Occhipinti et al. (2024) develop a system dynamics model of the consequences of artificial intelligence for the economic and social situation of a country. According to the results of the analysis, capital deepening induced by AI may lead to productivity increase and economic output growth on the one hand and to various problems related to the displacement of workers, income distribution, and aggregate demand on the other. Policy intervention is essential in order to ensure the positive long-term macroeconomic impacts of AI. Trigui et al. (2024) study the governance of artificial intelligence in the Middle East and North Africa region and reveal great variability in the institutional readiness, regulation, and national AI strategies. The authors argue that in order to implement AI responsibly and enjoy its economic benefits, it is essential to develop the relevant institutional framework and regulatory policies. Okediji & Oyinkansola (2026) explore AI governance in Africa in the context of data sovereignty and digital extractivism and find that deficiencies in the relevant institutions and regulations limit the opportunities for benefiting from AI technologies. In order to develop an adequate AI ecosystem, institutional capacity and data and AI regulation should be improved. Fenoaltea (2026) introduces a new approach to measuring the exposure to artificial intelligence based on startups and explores it at occupation, industry, and regional levels. The study shows that there are significant differences in AI exposure in different sectors and regions, implying that the economic impacts of AI are heterogeneous and depend on the industrial structure of the economy. The greater exposure implies the greater productivity gains and structural change. The link between sectoral net lending and current account balances has become an important aspect of international macroeconomics in terms of understanding the mechanisms behind external imbalances through sectoral savings and investments. Literature shows that corporate sector net lending, fiscal policy, and macrofinancial conditions jointly define the dynamics of current accounts, but the degree of the connection is different in various countries. Behringer & van Treeck (2022) explore the role of corporate sector in determining current account balances using cross-country panel data. The results of the research indicate that corporate net lending is positively related to the current account balances. In particular, the authors show that corporate sector's financial behavior interacts with household income distribution and fiscal balances. Montiel (2006) investigates the issue of macroeconomic stability in developing countries and shows that the sustainable external balances depend on the proper level of national saving and investment. Sectoral net lending is the important part of macroeconomic stability since changes in saving and investment affect the current account balances. Kaminsky et al. (2004) analyze the relation between capital flows and macroeconomic policies in different countries and find that fiscal policy and capital flows turn out to be strongly procyclical in developing countries. Thus, changes in fiscal position and financial conditions significantly affect the external balances. Choi et al. (2019a) explore the spillover effects of fiscal policy on international financial markets and find that fiscal shocks affect current account balances via financial conditions. Expansionary fiscal policy leads to changes in the international financial conditions. Choi et al. (2019b) investigate the impact of fiscal shocks on cross-border bank lending and find that the international

capital market conditions turn out to be affected by fiscal shocks. Thus, fiscal policy affects current account balances via international financial markets. Fournier et al. (2019) argue that fiscal policy is still the important driver of external balances as it defines national savings, investment, and borrowing requirements. According to the authors, fiscal consolidation leads to the improvement in current account balances because of the increased public saving. According to International Monetary Fund's Fiscal Monitor (April 2023), fiscal policy affects current account balances via its impact on aggregate demand, public savings, and external financing needs. Appropriate fiscal adjustment improves external sustainability while reducing macroeconomic vulnerabilities. Similarly, Fiscal Monitor (October 2023) underlines that the current account balances are defined by the interactions between fiscal policy, the behavior of the private sector, and global financial conditions. Current accounts depend on government borrowing, corporate financing, and households' savings. Government revenue is viewed as the important determinant of fiscal performance and national savings that affect current account balances. Literature discusses the problem in the framework of the theory of sectoral balance and integrated national accounts. Chamberlin (2010) explains that the current account balance is the result of the equilibrium between the national saving and investment in the household, corporate, government, and foreign sectors. According to the research, the fiscal performance including the government revenue contributes to the public sector savings and, therefore, influences the external balance via the sectoral balance equation. Palumbo & Parker (2009) investigate the system of national accounts in the US and show that the government finances are closely related to the saving and investment behavior. Government revenue contributes to the increase in the public sector savings that affect the saving of the economy. Robinson (2009) investigates the accrual budgeting framework as the tool for analyzing fiscal policy. The study argues that the comprehensive accounting of the revenues and expenses allows estimating the fiscal sustainability and public sector net lending that influences the macroeconomic stability and external balances. Cagetti et al. (2012) introduce the Integrated Macroeconomic Accounts of the United States, showing how financial and nonfinancial accounts are interrelated in different economic sectors. The results show that government revenue influences public sector savings and interaction with households and corporations' financial positions. According to Quarterly National Accounts (2011), the sectoral balances are interrelated due to the national accounting identities. Improvements in the government revenue strengthen the net lending position of the government sector, which increases the national savings and, thus, may affect the current account balances. Similar conclusions are made by The Sector Accounts (2011), according to which the government, households, and corporates' net lending define the external balance of the economy. Changes in the government revenue have a direct impact on public sector net lending that influences the current account balances via the saving-investment relationship in the national accounts. Behringer & van Treeck (2022) investigate the connection between the corporate sector behavior and current account balances using the cross-country panel data. Although the main emphasis of the study is made on the corporate net lending, the authors show that fiscal balances of the government interact with the corporate and household savings; thus, public sector net lending becomes the important part of the current account determination. Angelini et al. (2014) investigate the macroeconomic adjustment in large Euro Area economies and argue that good fiscal framework improves the macroeconomic performance and external adjustment. The authors show that the sustainable fiscal position, provided by the sustainable government revenue, improves public savings and helps the economy to achieve the balanced current accounts. Bohdan (2019) analyzes the implementation of fiscal rules and shows that the credible fiscal institutions make a contribution to the fiscal discipline and good financial management of government finances.

3. RESEARCH METHODOLOGY

This study uses a quantitative research approach using cross-sectional data for European countries in 2023. The analysis is based on an ordinary least squares (OLS) regression model to estimate the relationship between the current account (dependent variable) and selected explanatory variables.

The empirical model is specified as follows:

$$CA_i = \beta_0 + \beta_1 AI_i + \beta_2 NL_i + \beta_3 GR_i + \beta_4 NL_i + \beta_5 GR_i + \epsilon_i$$

Where:

- CA - Current Account balance
- AI - Artificial Intelligence indicator
- NL - Net Lending
- GR - Government Revenue
- ϵ - Error term

The dataset consists of observations across European countries, allowing for comparison of economic performance within a similar regional context. The regression estimates are evaluated using standard statistical measures, including coefficients, t-statistics, p-values, R-squared, and the F-test for overall model significance.

4. RESULTS INTERPRETATION

From the regression analysis, it is observed that the whole model is statistically significant, considering the F-statistic of 8.55 and probability of 0.0002. The independent variables used here collectively influence the variance in the dependent variable, which is the current account. In terms of the coefficient of determination ($R^2 = 0.416$), the results suggest that 41.6% of the variance in the current account can be attributed to the model. Furthermore, the adjusted R^2 (0.367) reveals a reasonable degree of explanation after controlling for the number of variables. Considering the effect of specific variables, the regression analysis reveals that artificial intelligence (AI) significantly influences the current account positively ($\beta = 22.93$, $p < 0.05$). It implies that any increase in AI has a positive influence on the current account, ceteris paribus. Moreover, there is a positive and highly statistically significant relationship between the current account and net lending ($\beta = 0.492$, $p < 0.01$). On the contrary, government revenue has a positive impact on the current account but it is statistically insignificant ($\beta = 0.057$, $p > 0.05$). This suggests that government revenue does not affect the current account. This implies that perhaps, government revenue cannot have an impact on the current account alone without any other factors being considered.

Table 3 Regression analysis

	SS	df	MS	Number of obs = 40		
		df		F(3, 36) = 8.55		
Model	539.01158	33	179.670527	Prob > F = 0.0002		
Residual	756.622375	16	21.0172882			
Total	1295.63396	19	33.2213835	R-squared = 0.4160		
				Adj R-squared = 0.3674		
				Root MSE = 4.5845		
Current Account	Coef.	Std error	t	P> t	95% CI	
AI	22.93098	8.511019	2.69	0.011	5.66983	40.19212
Net lending	0.4918021	0.1580987	3.1	0.004	0.171163	0.8124413
Government revenue	.0566572	.0989577	0.57	0.571	-0.1440382	.2573527
-cons	-15.488	5.653261	-2.74	0.010	-26.95334	-4.022652

Source: Own research

Finally, the constant is negative and statistically significant ($\beta = -15.49$, $p < 0.05$). This means that without the impact of the explanatory variables, the current account will record a deficit. Nevertheless, there is very little economic meaning behind the constant since it acts as a base figure in the regression equation.

Generally, from the results, it is clear that artificial intelligence and net lending play a key role in determining the current account while government revenue does not have a major influence on it.

5. DISCUSSION OF RESULTS

The obtained results provide valuable evidence about the connections between the level of technological readiness and the external economic performance. With the increased focus on the significance of the AI readiness for the productivity and competitive advantages, one can conclude that there is no direct connection between the examined variables.

Firstly, the insignificant relation between AI readiness and the balance of payments can be explained with the fact that the implementation of technological change takes time, and only after a certain period, one can observe the effects of technological readiness for the current account. Thus, during the process of technological transformation, the country invests heavily into imported technologies, information infrastructure, and special skills. That is why the current account suffers in the beginning but improves in the long run due to increasing productivity and expanding exports. The findings are consistent with the view on the multiple effects of technological advancement on the macroeconomic indicators. Thus, although the readiness to implement AI can bring some positive results in the future, this variable itself cannot ensure improved external economic performance without the presence of other supportive variables.

The significance of the variable that represents the net lending of the government is the clear indication of the importance of fiscal indicators for the external balance.

On the other hand, the insignificance of the gross government revenues shows that it is impossible to achieve changes in the external balance with fiscal resources.

In conclusion, the results prove that the AI is a structural determinant rather than a factor for improving the current account in the short-run perspective. In the future, there might be some benefits from using AI.

6. CONCLUSION

This study aims at examining the association between AI readiness and current account balances using the dataset of European nations in 2023. The application of linear regression analysis allows testing the existence of the dependence between technological preparedness and fiscal variables and external economic performance. According to the empirical findings, the overall model is statistically significant. However, the effect of AI readiness on current account balances does not have a statistically significant nature. While the effect has a negative sign, there is no statistical significance which means that this variable cannot be considered a driver of differences in external balances across Europe. Among all the independent variables, government net lending is the only factor that proves to be significant and positively affects the performance of current accounts. These findings mean that it would be unwise for policymakers to expect an improvement in current account balances because of investment into AI readiness programs. In addition to this variable, the strategies for improving current accounts should include innovations, promotion of exports, investment in human capital and effective use of resources. Further research should focus on expanding the analysis of the dependence between AI and external economic performance using panel datasets over long periods of time that will allow investigating the dynamic effect and the lagged effect of technological change on international economic performance. Moreover, further research should involve additional variables such as productivity growth, digital services exports, innovations output and foreign direct investments.

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