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The Role of Macroeconomic Stability in Current Account Balances

Makroekonomik İstikrarın Cari İşlemler Dengesindeki Rolü

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ABSTRACT
This study aims to find out the role of macroeconomic stability in current account balances. The analysis is completed for the period between 1980 and 2016 for 97 countries. The macroeconomic stability is represented by an index created with the countries' inflation rate (CPI), growth rate, unemployment rate, and fiscal balance data. It is found that macroeconomic stability is one of the important determinants of current account balances like institutional quality and financial development. It has negative and statistically significant relationships with current account balances for four different country groups: developing countries, all countries except industrial, all countries except industrial and African countries, and all countries. Results show that macroeconomic stability is a crucial determinant for developing countries rather than high-income countries.

Keywords: Current account balances, Macroeconomic stability, Panel data analysis
JEL Classification: C33, F14, F41, F62

ÖZ
Bu çalışma literatürde ilk kez makroekonomik istikrarın cari işlemler dengesindeki rolünün ortaya çıkarılmasını amaçlamıştır. Analiz, 97 ülke için 1980-2016 dönemi için yapılmıştır. Makroekonomik istikrar, tüm ülkelerin enflasyon oranı (TÜFE), büyüme oranı, tüm ülkelerin işsizlik oranı ve mali denge verileriyle oluşturulan bir endeks ile temsil edilmiştir. Makroekonomik istikrarın, kurumsal kalite ve finansal gelişme gibi cari işlemler dengesinin önemli belirleyicilerinden biri olduğu tespit edilmiştir. Dört farklı ülke grubu; gelişmekte olan ülkeler, sanayileşme dışındaki tüm ülkeler, sanayileşmiş ve Afrika ülkeleri hariç tüm ülkeler ve son olarak ta tüm ülkeler olmak üzere dört farklı ülke grubu için makroekonomik istikrar endeksinin, cari işlemler dengesi ile negatif ve istatistiksel olarak anlamlı bir ilişkiye sahip olduğu gösterilmiştir. Sonuçlar, makroekonomik istikrarın, özellikle yüksek gelirli ülkelerden ziyade gelişmekte olan ülkeler için daha önemli bir belirleyici olduğunu göstermektedir.

Anahtar kelimeler: Cari işlemler dengesi, Makroekonomik istikrar, panel veri analizi
JEL Sınıflaması: C33, F14, F41, F62

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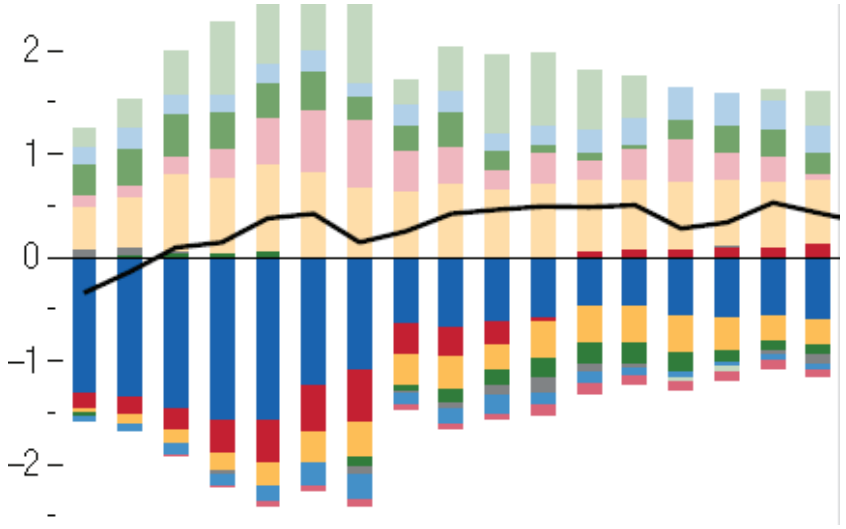
1. Introduction

Global imbalances exceeded 5% of the world GDP in 2008 from 2% in 1996. In 2018 it is still close to 3% of the world GDP (Figure 1). The most significant change was the USA's current account deficit increase. In 1997, it was less than 2% of GDP, and it increased to 5.8% in 2006. The current account deficit of the USA after the financial crisis decreased to 2.3% of GDP in 2009. The latest deficit of the USA is still 2.6% in 2019. The USA has been running current account deficits since 1992. China has been running for 25 years of surpluses since 1994. China's foreign trade increased quickly after the country's membership in the World Trade Organization in 2001. Total trade between the USA and China was nearly US$559 billion in 2019. However, the trade between the two countries was unbalanced. The USA started to run a huge trade deficit. The US trade deficit increased to US$375.6 billion in 2017 just before the start of the trade war. It was only US$103.1 billion in 2002. It increased to US$378 billion in 2018. Eventually, in 2019, it decreased slightly to US$345.6 billion.

Figure 1. Global Current Account Balance (Percent of world GDP)



Source: IMF World Economic Outlook Report (2019)

Unsustainable current account deficits can be one of the main reasons for the economic crises in many developing countries. As discussed, many developed countries also started to run current account deficits. Furthermore, some other developing countries which were able to run significant surpluses have become high-income countries. So, it is important to understand the determinants of current account balances for all country groups to avoid economic crises or to be able to accelerate the growth rates with the help of the production for export. Several studies in the literature have tried to identify the determinants of current account balances. These studies have been completed for different high-income and emerging country groups. Debelle and Faruque (1996), Freund (2000), Calderon, Chong and Loayza (2002), Chinn and Prasad (2003), Gruber and Kamin (2005), Aristovnik (2006), Chinn and Ito (2007), Legg, Prasad and Robinson (2007), Gruber and Kamin (2009), Cheung, Furceri and Rusticelli (2013), Chinn, Eichengreen and Ito (2014), Altayligil and Çetrez (2020) are some of the studies on the determinants of current account balances in the literature.

The latest studies show the importance of institutional quality and financial market development as the determinants of current account balances. These studies show that improved institutional quality and financial development increase current account deficits. The role of macroeconomic stability has not been considered as a potential determinant in these studies. This study tries to find out the role of macroeconomic stability in the current account balances and understand if there is an expanding effect of current account deficits similar to the financial development and the institutional quality.

The role of macroeconomic stability in current account balances is important. Especially for developing countries, macroeconomic stability will increase capital inflows, capital inflows will increase current account deficits, and external debts. In the mid-term, local currency has to be depreciated because of high external debts and current account deficits. As a result, the inflation rate will increase, the growth rate will decrease, and unemployment will increase. Capital inflows will slow down. High macroeconomic stability will end up with macroeconomic instability. If this scenario is true for some of the developing countries like Turkey,

macroeconomic stability will have a statistically significant negative relationship with current account balances. So that is why in this paper, the role of macroeconomic stability in current account balances is investigated. It is decided to use a macroeconomic stability index. It is not the growth rate, fiscal balance, unemployment rate, or inflation rate individually but the total macroeconomic environment that affects capital inflows. That is why macroeconomic stability is represented with an index in this study. So this study contributes to and extends the previous empirical studies by:

The role of macroeconomic stability with an index is investigated. The study is completed for 97 countries in six different country groups for 36 years. The study's main aim is to understand the role of macroeconomic stability in current account balances. The macroeconomic stability index is created and calculated for each country. Macroeconomic stability represented by a new index is added to the study. The importance of macroeconomic stability is mentioned by Bernanke (2005) as one of the potential determinants of current accounts. Macroeconomic stability represented by an index is identified as having a negative and statistically significant relationship with current account balances for four different country groups for the first time in a study. Macroeconomic stability is especially important for developing countries rather than high-income countries.
For the rest of the article, section 2 describes the content of the macroeconomic stability, section 3 discusses the data, and the methodology, section 4 shares the empirical results, and section 5 gives the conclusions.

2. Macroeconomic Stability

Macroeconomic stability means the balance of key economic variables. There is not a clear distinction between stability and instability. It is the evaluation of different combinations of key economic variables such as growth rate, inflation rate, fiscal balance, unemployment, debt level, and current account deficits that give information about macroeconomic stability. However, huge current account deficits financed by short-term borrowing, a high level of the unemployment rate, a high level of increasing public debt, two-digit increasing inflation rates, and

negative or declining GDP growth rates show a country's level of macroeconomic instability quite easily. Likewise, positive fiscal balance, current account balance surplus with decreasing debt levels, decreasing inflation rate in one digit, and increasing growth rate are the signs of macroeconomic stability (Ames, Brown, Devarajan and Izquierdo, 2001). Empirical studies also show a positive relationship between macroeconomic stability and FDI inflows.

2.1. Macroeconomic stability and FDI inflows

In several studies, growth rate, inflation rate, total debt divided by GDP, and exchange rate are some of the determinants of FDI inflows representing macroeconomic stability. Onyeiwu and Shrestha (2004) find that for the period between 1975 and 1999, economic growth and the inflation rate are some of the key determinants for FDI inflows for 29 African countries. Kok and Ersoy (2009) find out that for the period between 1976 and 2005, the economic growth in developing countries has a significant positive relationship with FDI flows, and the total debt service/GDP and inflation have a significant negative relationship with FDI inflows for 24 developing countries. Ranjan and Agraval (2011) study foreign direct investment inflow determinants in BRIC countries: Brazil, Russian Federation, India, and China between 1975 and 2009. They find that macroeconomic stability is one of the determinants of FDI. The Inflation rate is also used for macroeconomic stability in this study.

Chan, Hou, Li and Mountain (2014) find out that GDP growth is one of the determinants of FDI flows for China for the short and long term. Shah (2016) studies the determinants of FDI flows for 43 African developing countries between 1990 and 2015. In his study, inflation and direct exchange rates are used to proxy macroeconomic stability. The result shows slow, predictable, and steady exchange rate depreciation with a low inflation rate increase in FDI flows. These studies are mainly completed for developing countries. If macroeconomic stability is one of the determinants of FDI flows, it must affect current account balances. If capital inflows increase when macro stability increases, current account deficits must also increase. This study aims to understand the relationship between macroeconomic stability and current account balances.

2.2. Macroeconomic stability and current account balances

Macroeconomic stability is crucial for all countries, including developing countries. A low inflation rate, positive growth rate, positive fiscal balance, and low unemployment rate are desired for all countries. On the other hand, it is also known that macroeconomic stability increases capital inflows in many developing countries. As a result, if macroeconomic stability also increases current account deficits for these developing countries, in the mid-term foreign debts of these countries will increase. Eventually, macroeconomic stability will be lost because of unsustainable current account deficits and high foreign debts.

Altayligil and Çetrez (2020) explain that more capital inflows to fragile developing countries when political stability increases. They can finance their current account deficits easier. The real effective exchange rate generally effects to increase the current account deficit for these developing countries. They also explain that the local currency is overvalued with a high amount of capital inflows, affected by relatively high-interest rates, and current account deficits get larger and larger. Eventually, when political and macroeconomic stability and institutional quality worsen, developing countries with high current account deficits and external debts will have difficulties financing these deficits. So, macroeconomic stability will be lost because of high, unsustainable current account deficits and high external debts. Macroeconomic stability will increase capital inflows; capital inflows will increase current account deficits and external debts.

The local currency must be depreciated in the mid-term because of high external debts and current account deficits for some of the developing countries. As a result, the inflation rate will increase, the growth rate will decrease, and unemployment will increase. In other words, macroeconomic stability will be lost. So, that is why in this paper, the role of macroeconomic stability in current account balances is investigated. It is decided to use a macroeconomic stability index. It is not the growth rate, fiscal balance, unemployment rate, or inflation rate separately but the total macroeconomic environment that affects capital inflows. That is why macroeconomic stability is represented with an index in this study.

In appendix figure 1, the inflation rate (CPI), growth rate, unemployment, fiscal balance, FDI, CAB, and MSI values for Turkey can be seen between 2002 and 2020. It can be seen easily that macroeconomic stability increased after 2002. Inflation (CPI), unemployment, growth rate, and fiscal balance have improved significantly. The macroeconomic stability index also shows that improvement. With increased macroeconomic stability, FDI inflows increased, and current account deficits increased simultaneously. Especially, after 2012 macroeconomic stability started to worsen. The inflation rate, unemployment, growth rate, and fiscal balance became worse each year. FDI flows decreased, and current account deficits were narrowed. Eventually, 2019 ended with a current account surplus. The cycle ended with macroeconomic instability. In 2019 MS index is calculated as 1.11, where the inflation rate (CPI) was 11.84%, unemployment was 13.7%, the growth rate was 0.9%, the fiscal balance was -2.9% and the current account surplus has been seen for the first time since 2001. FDI inflows were 5875 million dollars which were 30% of 2007. The association identified between the MS index and current account balances for Turkey will be investigated for the rest of the countries of the world.

2.3. Macroeconomic stability index

In literature, there are different ways to define macroeconomic stability. For example, in the field of decentralization, price stability, which is measured by inflation as the proxy, is used for macroeconomic stability (Treisman, 2000; King and Ma, 2001; Neyapti, 2004; Shah, 2006; Thornton, 2007). Martinez-Vazquez and McNab (2006), and Iqbal and Nawaz (2009) suggest using the Misery Index, the combination of inflation and unemployment, to proxy for measuring macroeconomic stability. The misery Index (invented by Arthur Okun) is calculated by taking the sum of the unemployment and the inflation rate for a given period. Bilan, Raišienė, Vasilyeva, Lyulyov and Pimonenko (2019) uses the macroeconomic stability index, which combines five different factors in their study.

Macroeconomic stabilization is also an important subject for policymakers in all countries, irrespective of their level of development. Although the indicators

used to evaluate macroeconomic stability, are defined differently, it increases the ability of the countries to prevent and absorb different external and internal shocks. It increases economies' capacities to minimize their harmful effects. Macroeconomic stabilization is therefore estimated in different ways, depending on the purpose of analysis and the aim of the government's economic policies. These indicators should not be regarded separately, as they are highly interdependent. For instance, high foreign debt does not necessarily show low macroeconomic stability alone if the debt is used for investment purposes, increasing the growth rates. In most cases, macroeconomic stability is evaluated through five basic indicators (Zaman and Drcelic, 2009):

a) GDP growth rate shows the overall potential of the economies to sustain positive economic growth.

b) The unemployment rate shows the economies' capacity to fully utilize the human potential.

c) The inflation rate is generally measured by the Consumer Price Index (CPI), which shows the purchasing power of the citizens.

d) The fiscal balance (as a percentage of GDP) shows how public resources are allocated.

e) Foreign debt shows how many financial resources are borrowed from foreign countries.

In the previous section, it is seen that foreign direct investments are affected by macroeconomic stability. High growth rates, low unemployment, low inflation rate, and reasonable budget deficits will encourage capital in-flows, and this will affect and increase current account deficits. Each of these items is important. So, a macroeconomic stability index can be created to capture the combined effect. Bilan et al. (2019), Zaman and Drcelic (2009), and Kolodko (1993) have used similar macroeconomic stability indexes in their studies.

For macroeconomic stability, there must be a specific growth rate. The unemployment rate must be as low as possible. The inflation rate must be decreased to a level that does not cause any wealth or income redistribution. The government budget must be balanced, and if possible, there must be a budget

surplus. For our study, we will use a macroeconomic stability index combined with sub-indexes of the GDP growth rate index, the unemployment rate index, the inflation rate index, and the fiscal balance (as a percentage of GDP) index. The original values are recalculated on a scale between 0 and 1. For translating the original levels into the new scale, any initial point which is between the minimum value of and the maximum value of X_{min}, will have a correspondent X_{max} on the new scale.

$$Y_i = \frac{X_i - X_{min}}{X_{max} - X_{min}}$$

The original values of the consumer price indexes are generally converted in natural logarithmic terms. The effect of inflation cannot be considered linear. Inflation reduction from 400% to 40% is significantly less important than the decrease of inflation from 40% to 4%. Inflation is 10 times lower for both situations, but 400% and 40% are still high inflation rates. On the other hand, 4% of inflation can be assumed acceptable (Kolodko, 1993). We agree with this approach and use natural logarithmic terms for inflation.

The scale is reversed for three indicators, as a higher value for these indicators is equivalent to less stabilization. This is valid for the unemployment rate, the fiscal balance, and the inflation rate. The upper limit of 10% and the lower limit of 0% are selected for the growth rate. The upper limit of 25% and the lower limit of %4 are selected for the unemployment rate. The upper limit of 4.61 (ln 100) and the lower limit of 0.69 (ln2) are selected for the inflation rate. The upper limit of 2% and the lower limit of -10% are selected for the fiscal balance. The minimum values and the maximum values are selected considering the distribution of the variables for all countries.

Zaman and Drcelic (2009) preferred to use 2.5% inflation for the analysis of the Serbian economy for the lower limit. Since most of the central banks use an inflation target of 2%, so to cover all the countries (high-income countries had low inflation rates in the past) we use 2% instead of 2.5%. For the fractional component of unemployment, we use 4% instead of 5%. A lot of countries can reach that level

without a high level of inflation. Based on these upper and lower limits sub-indexes are calculated. Finally, by adding up these sub-indexes, the macroeconomic stability index is calculated for all countries. The maximum score for the macroeconomic stability index can be 4. Values will be distributed between 0 and 4. In Table1 calculated macroeconomic stability index values can be seen between 2016 and 2018.

3. Data and Methodology

It is aimed to find out the role of macroeconomic stability in current account balances in the study. The analysis is completed for the period between 1980 and 2016 in 97 countries. Macroeconomic stability is represented by an index that is created with the inflation rate, growth rate, unemployment rate, and fiscal balance data of all the countries.

3.1. Data and model

Altayligil and Çetrez (2020) current account balance model is used, and other parameters are also included as control parameters. 7 macroeconomic variables were added to the study; they are, growth rate, terms of trade, real effective exchange rate, trade openness, net crude oil export, fiscal balance, and relative income. Total private credit by the financial sector is the only financial variable used in the study. Macroeconomic and financial variables are added to the study starting from 1980.

6 institutional variables are included in the study. The legal system and property rights index has been available since 1980. Other institutional variables, voice, accountability, political stability, absence of violence, regulatory quality, control of corruption, and rule of law, are available starting from 1996. The sources of the data can be seen in appendix Table 1.

To determine the role of macroeconomic stability in current account balances, they are regressed onto a set of macroeconomic, financial, and institutional

Table 1. MS Index and CABs of the World Economies (2016 – 2018) (%GDP)

Years	Country	CAB	MS	Country	CAB	MS	Country	CAB	MS	Country	CAB	MS
2016		-2.71			4.00	2.58		-2.29	2.59		0.96	2.81
2017	Argentina	-4.85		Japan	4.17	2.79	USA	-2.26	2.65	Guatem.	1.12	2.82
2018		-5.25	1.42		3.55			-2.39	2.63		0.81	
2016		-3.40	2.82		6.53	3.27		0.59	2.16		-2.61	2.98
2017	Australia	-2.69	2.85	S. Korea	4.63	3.32	Uruguay	0.70	2.39	Hondur.	-0.76	3.04
2018		-2.04	3.00		4.50			0.09	2.28		-5.34	2.94
2016		2.73	2.82		1.43	2.71		-4.13	3.11		-0.53	
2017	Austria	1.53	2.94	Latvia	0.99	2.82	Cyprus	-5.00	3.08	India	-1.44	
2018		2.37	3.04		-0.61	2.98		-4.27	2.63		-2.42	2.62
2016		0.56	2.60		-0.80	2.93		3.95	3.17		-1.82	2.97
2017	Belgium	1.23	2.79	Lithuania	0.97	3.00	Hong Kong	4.58	3.38	Indonesia	-1.59	2.97
2018		-1.35	2.83		1.53	3.07		3.74			-2.94	3.07
2016		-3.09	2.76		4.87	3.34		3.80	3.46		-5.92	2.01
2017	Canada	-2.81	3.01	Luxemb.	5.20	3.06	Malta	10.59	3.65	Kazakhs.	-3.06	2.50
2018		-2.51	2.88		4.70	3.24		11.10	3.73		-0.12	3.09
2016		2.21	2.67		8.03	2.96		-12.96			-2.90	1.95
2017	Crotia	3.80	2.87	Netherl.	10.81	3.19	Afghan.	-16.31	2.47	N.Maced.	-0.86	1.84
2018		1.69	2.91		10.84	3.22		-20.00			-0.20	2.16
2016		1.55	3.14		-2.11	3.22		-7.59	2.48		-2.26	2.81
2017	Czech Rep.	1.46	3.35	N. Zealand	-2.71	3.21	Albania	-7.54	2.64	Mexico	-1.77	2.67
2018		0.49	3.17		-3.71	3.26		-6.67	2.71		-1.88	2.63
2016		7.76	3.06		4.00	2.93		-3.05			-4.05	2.31
2017	Denmark	7.80	3.07	Norway	4.57	3.23	Angola	-0.52		Morocco	-3.35	
2018		6.97	3.06		7.17	3.05		7.30			-5.26	
2016		1.67	2.94		-0.52	2.85		-2.06	1.74		-2.58	
2017	Estonia	2.69	3.16	Poland	0.02	3.15	Armenia	-2.99	2.53	Pakistan	-5.31	
2018		1.99	3.07		-0.99	3.34		-9.35	2.43		-6.00	2.64

Table 1. Continue

Years	Country	CAB	MS	Country	CAB	MS	Country	CAB	MS	Country	CAB	MS
2016		-0.74	2.73		1.17	2.54		-3.60	2.22		3.62	2.99
2017	Finland	-0.68	2.86	Portugal	1.38	2.71	Azerbai.	4.12	2.21	Paraguay	3.11	3.08
2018		-1.66	2.78		0.38	2.92		12.84	3.08		-0.17	2.78
2016		-0.49	2.36		1.92	2.15		0.42	2.99		-0.38	3.52
2017	France	-0.63	2.57	Russia	2.06	2.68	Banglad.	-2.40	3.00	Philip.	-0.65	3.40
2018		-0.68	2.56		6.81	3.12		-2.77			-2.53	3.09
2016		8.51	3.15		17.64	3.32		-5.62	2.50		-1.39	3.02
2017	Germany	7.84	3.18	Singapore	16.26	3.42	Bolivia	-4.93	2.51	Romania	-2.79	3.26
2018		7.42	3.14		17.18			-4.52			-4.35	2.82
2016		-1.67	1.95		-2.71	2.59		-1.35	1.34		-2.93	2.54
2017	Greece	-1.77	2.24	Slovak Rep.	-1.92	2.88	Brazil	-0.73	1.75	Serbia	-5.26	2.59
2018		-2.86	2.38		-2.61	2.99		-2.20	1.81		-4.86	2.93
2016		4.59	2.86		4.83	2.82		3.27	3.17		-2.82	1.23
2017	Hungary	2.31	3.03	Slovenia	6.15	3.14	Bulgaria	3.60	3.14	S. Africa	-2.55	1.37
2018		0.09	3.07		5.69	3.29		5.28	3.01		-3.63	1.34
2016		7.71	3.66		3.19	2.02		1.80			10.51	3.22
2017	Iceland	3.79	3.33	Spain	2.71	2.24	China	1.58	3.20	Thailand	9.63	3.16
2018		3.08	3.23		1.92	2.33		0.18	3.10		5.62	3.23
2016		4.77	2.94		3.51	2.99		-6.16	1.54		-3.11	2.28
2017	Ireland	1.01	3.50	Sweden	3.08	3.09	Egypt	-3.37	1.36	Turkey	-4.76	2.63
2018		10.69	3.57		1.74	2.99		-3.07	1.80		-2.69	1.99
2016		3.52	3.08		9.86	2.99		-3.67	2.79		-2.88	
2017	Israel	2.32	3.10	Switzerland	6.42	3.08	Fiji	-6.69		Uganda	-4.84	2.36
2018		2.50			8.21			-8.47			-7.02	
2016		2.58	2.39		-5.26	2.75		-12.45	2.37		-1.44	2.12
2017	Italy	2.62	2.46	UK	-3.49	2.79	Georgia	-8.05	2.52	Ukraine	-2.18	2.13
2018		2.47			-3.85	2.82		-6.78			-3.34	2.33

variables and macroeconomic stability indexes. First baseline results are estimated only based on the regression of macroeconomic factors. Then institutional and financial factors are included. Eventually, the macroeconomic stability index is added to the base model. Cheung et al. (2013), Chinn et al. (2014), and Altayligil and Çetrez (2020) have similar approaches. It is estimated as:

$$CA_{it} = \alpha_{it} + \beta M_{it} + \mu F_{it} + \theta I_{it} + \pi S_{it} + u_{it}$$

CA represents current account balances, M represents macroeconomic variables, F represents a financial variable, I represents institutional variables, and S is the macroeconomic stability variable.

3.2. Econometric methodology

The panel data analysis method is used to test the role of macroeconomic stability in current account balances. Annual data is used in the model. Legg et al. (2007) use annual data in their analysis. Chinn and Prasad (2003) use both non-overlapping 5-year averages of the data and annual data. We are not just concentrated on the mid-term determinants of current account balances. We also include short-term key variables like growth rate, and the real effective exchange rate to see the whole picture. So especially to capture the short-term effects better, our model comprises annual data. The panel data set is unbalanced.

Many panel datasets may show significant cross-sectional dependency. Cross-sectional dependency must be checked at the beginning of the analysis. In the study, the Pesaran test (2004) is used to check the cross-sectional dependency among all the variables. First-generation unit root tests must not be used when cross-sectional dependency among the variables. Most of the time, it is observed that there is cross-sectional dependency among them. Only second-generation root tests consider cross-sectional dependency. So, both second-generation Pesaran (2007) and first-generation Fisher (Choi, 2001) panel root tests are used to determine whether there is cross-sectional dependency or not.

Pesaran (2007) and Fisher (Choi, 2001) unit root tests show that the first differences of all the variables are always stationary. Unlike, most of the time, variables themselves are not stationary. OLS models are used with the first differences of the variables. F results confirmed the usage of OLS models. Gruber and Kamin (2005), Chinn and Ito (2007), and Cheung et al. (2013) express the variables as deviations from GDP-weighted averages. This is one way to control unobserved heterogeneity (or common errors) by using OLS estimation of transformed models (Gormley and Matsa, 2014). The other way is to use the first differences in OLS models (Wooldridge, 2002).

So only the first differences of all the variables are stationary. At the same time, we want to control for unobserved heterogeneity; we decide to use the first differences OLS model. Autocorrelation and heteroscedasticity for all the models are checked by using White (1980) and Wooldridge (2002) tests, individually. Only heteroscedasticity is identified in most of the models, and they are estimated by using Huber (1967), Eicker (1967), and White (1980) robust estimators.

4. Results

Before we add the macroeconomic stability index, we must create a baseline model with macroeconomic, financial, and institutional determinants. The first step, estimation results for the macroeconomic variables, are shown in Table 2. The last column shows the results of all countries. Institutional and financial variables are included in the model step by step.

4.1. Baseline: Macroeconomic institutional and financial determinants

A baseline model must be created before estimating the role of macroeconomic stability in current account balances. The growth rate, fiscal balance, terms of trade, real effective exchange rate, trade openness, crude oil export, and financial market development are estimated as the determinants of current account balances for different country groups for the baseline equation (Table 2).

Table 2. The Role of Macroeconomic Variables in Current Account Balances (1980-2016)

	Industrial Countries	High Income	Developing Countries	All Countries-Industrial	All Countries-Africa&Indust.	All Countries
Growth Rate	.1459 (2.01)**	-.1032 (-2.01)**	-.0774 (-1.82)*	-.1301 (-3.53)***	-.1768 (-4.13)***	-.1079 (-3.06)***
Fiscal Balance/GDP	.0857 (1.01)	.0421 (0.59)	.2376 (3.78)***	.2187 (3.86)***	.1213 (1.62)	.1969 (3.96)***
Terms of Trade	.0807 (2.66)***	.0283 (2.15)**	.0311 (2.80)***	.0242 (2.49)***	.0155 (1.51)	.0244 (2.57)***
Real Effective Exchange Rate	-.0749 (-1.76)*	-.0513 (-2.76)***	-.0071 (-1.81)*	-.0072 (-1.97)**	-.0411 (-2.79)***	-.0074 (-2.05)**
Trade Openness	-.0642 (-1.54)	-.0266 (-1.48)	-.1111 (-4.78)***	-.0511 (-3.10)***	-.0337 (-1.80)*	-.0495 (-3.15)***
Relative Income	-12.2301 (-0.90)	-10.4258 (-0.83)	-151.4218 (-2.90)***	-37.1469 (-2.31)**	-24.5204 (-1.56)	-18.9631 (-1.36)
Average Net Crude Oil	.2153	.2041	.7576	.6930	.8034	.6881
Export/GDP	(0.72)	(1.32)	(5.48)***	(5.77)***	(3.62)***	(5.90)***
R-sq	0.1014	0.0902	0.2644	0.2092	0.1847	0.1874
Number of Observations	336	696	1015	1375	1032	1711

Note: First differences of the variables are used. t- statistics are shown in parentheses. *, **, *** indicate significance level at 10%, 5%, 1%, respectively. The constants' estimations are not shown.

There are negative relationships between growth rates and current account balances for five different country groups. The current account deficits increase for all country groups except industrial countries when the growth rate increases. There is a positive relationship only for industrial countries, which means export supports growth rates for industrial countries. In line with expectations, there is a positive relationship between fiscal balance and current account balance, which means, when the public deficit increases, the national savings reduce. There is a positive relationship between the terms of trade. Results support Harberger (1950), Laursen, and Metzler's (1950) effect.

The real effective exchange rate has a negative sign. Results show that an increase in real effective exchange rates increases the current account deficit. Results support Marshall Lerner's condition. Based on the results, there is a

negative relationship between trade openness and the current account balances. When they are more open to international trade, countries will run higher current account deficits. Nevertheless, this factor is not significant for industrial and high-income countries groups.

The stage of economic development is found as another determinant of current account balances only for two country groups, developing countries, and a full sample without industrial countries. When the stage of economic development increases, the current account deficit increases for these country groups. These results support the validity of the Lucas (1988) Paradox for these country groups.

Results show that countries with huge crude oil export run higher current account balances; this relationship is not significant only for industrial countries and high-income countries. Financial market development is found to have overall negative and statistically significant relationships with current account balances for all country groups (Table 3).

Table 3. The Role of Financial Development in Current Account Balances (1980-2016)

	Industrial Countries	High Income	Developing Countries	All Countries-Industrial	All Countries-Africa&Ind.	All Countries
Growth Rate	.07470	-.0997	-.0963	-.1308	-.1714	-.1137
	(0.79)	(-2.33)**	(-2.22)**	(-3.54)***	(-4.03)***	(-3.24)***
Fiscal Balance	.07801	.0735	.2125	.2146	.1306	.1962
	(-2.55)	(0.96)	(3.41)***	(3.72)***	(1.68)*	(3.83)***
Terms of Trade	.0650	.0308	.0276	.0225	.0151	.0222
	(1.93)*	(-0.97)**	(2.42)**	(2.26)**	(1.50)	(2.28)**
Real Effective	-.0769	-.0692	-.0070	-.0075	-.0562	-.0075
Exchange Rate	(-1.67)*	(-4.59)***	(-1.74)*	(-2.03)**	(-3.95)***	(-2.05)**
Trade Openness	-.0471	-.0188	-.1164	-.0530	-.0353	-.0498
	(-0.94)	(-0.97)	(-4.83)***	(-2.98)***	(-1.77)*	(-2.95)***
Relative Income	-28.7995	-17.6522	-146.1198	-27.6096	-12.85	-27.1591
	(-2.34)**	(-1.89)*	(-2.68)***	(-1.75)*	(-0.87)	(-2.63)***

Net Crude Oil	.3338	.2577	.8041	.7406	.8576	.7349
Export/GDP	(0.92)	(1.65)*	(5.52)***	(5.81)***	(3.65)***	(5.90)***
Total Private	-.0289	-.0148	-.0615	-.0199	-.0133	-.0218
Credit/GDP	(-2.55)**	(-2.35)**	(-2.72)***	(-2.49)**	(-1.85)*	(-3.20)***
R-sq	0.1460	0.1288	0.2811	0.2177	0.1958	0.2055
Number of Observations	285	602	949	1266	951	1551

Note: First differences of the variables are used. t- statistics are shown in parentheses. *, **, *** indicate significance level at 10%, 5%, 1%, respectively. The constants' estimations are not shown.

4.2. The role of macroeconomic stability

Ben Bernanke (2005) suggests that developing countries improve their investment climate by raising macroeconomic stability. The macroeconomic stability index is added to the base model. When macroeconomic stability gets higher, more financial capital out of the country is expected to enter the country. As a result, the current account deficits will increase. A negative relationship is expected between the macroeconomic stability index and current account balances, especially in developing countries. Altayligil and Çetrez (2020) find a positive relationship between inflation rate and current account balances for some country groups. They use the consumer price index to represent macroeconomic stability.

Macroeconomic and financial determinants are added to the base model. Institutional determinants are not added to the base model because there is no same institutional determinant for more than one country group (Appendix Table 3). Since the growth rate and macroeconomic stability index are highly correlated, the growth rate is excluded from the model. There is a negative relationship between the macroeconomic stability index and current account balances. Higher macroeconomic stability for all country groups except industrial and high-income countries (Table 4) increases the current account deficits. When economic stability gets better, this causes more capital inflows to these countries and as a result, higher current account deficits are seen.

Table 4. The Role of Macroeconomic Stability in Current Account Balances (1980-2016)

	Industrial	High	Developing	All Countries -	All Countries -	All
	Countries	Income	Countries	Industrial	Africa&Ind.	Countries
Fiscal Balance	.0353	.0958	.2182	.2172	.1616	.1847
	(0.42)	(0.215)	(1.97)**	(2.42)**	(1.74)*	(2.52)**
Terms of Trade	.0710	.0322	.0303	.0244	.0191	.0248
	(2.04)**	(2.26)**	(2.00)**	(1.93)*	(1.48)	(2.04)**
Real Effective	-.0815	-.0747	-.0631	-.0574	-.0572	-.0583
Exchange Rate	(-1.86)*	(-2.42)**	(-3.04)***	(-3.18)***	(-2.73)***	(-3.38)***
Trade Openness	-.0387	-.0291	-.1213	-.0451	-.0376	-.0440
	(-0.90)	(-1.51)	(-3.68)***	(-2.08)**	(-1.72)*	(-2.18)**
Relative Income	-29.7682	-19.2670	-131.2361	-15.5016	-11.8465	-20.2233
	(-2.28)**	(-1.94)*	(-1.85)*	(-1.02)	(-0.78)	(-1.99)**
Average Net Crude Oil	.3159	.2155	1.1176	.8235	.8182	.8068
Export/GDP	(0.86)	(0.205)	(4.83)***	(3.83)***	(3.44)***	(3.88)***
Total Private	-.0270	-.0153	-.0364	-.0136	-.0123	-.0185
Credit/GDP	(-2.31)**	(-2.38)**	(-1.56)	(-1.93)*	(-1.72)*	(-2.87)***
MS Index	1.1204	-.7423	-.9076	-1.5262	-1.8100	-1.1379
	(1.20)	(-1.31)	(-1.74)*	(-3.56)***	(-4.11)***	(-2.87)***
R-sq	0.1521	0.1021	0.3087	0.2071	0.1925	0.1904
Number of Observa.	285	578	550	843	753	1128

Note: First differences of the variables are used. t- statistics are shown in parentheses. *, **, *** indicate significance level at 10%, 5%, 1%, respectively. The constants' estimations are not shown.

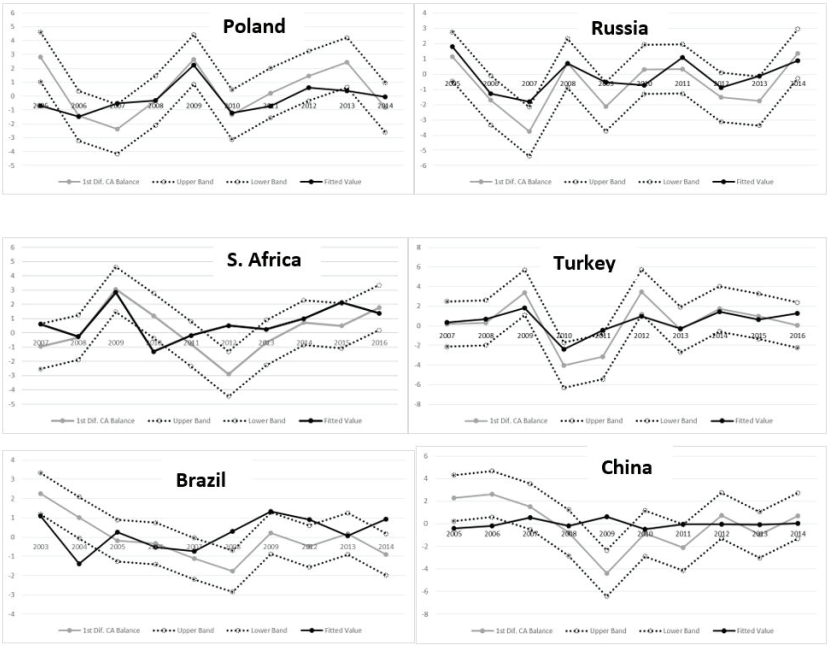
To isolate which factors, drive the results, the same regressions are re-estimated by using the components of the macroeconomic stability index, the test results suggest that unemployment is the most significant contributor among the four variables. It has a statistically significant positive relationship with current account balances for all country groups. The growth rate follows unemployment; it has a statistically significant negative relationship with current account balances for all country groups except industrial countries. The inflation rate has no significant relationship.

Fiscal balance has a statistically significant positive relationship with current account balances for all country groups except industrial and high-income

countries. This is expected when the fiscal balance is considered alone because an increase in the public deficit can decrease national savings if there is no Ricardian offset from private savings, which may lead to a rise in current account deficits. A positive relationship has been found in many studies. As a proxy for the macroeconomic stability index negative sign may be expected. However, the first effect is more critical when the fiscal balance is considered alone.

According to the results, macroeconomic stability is more important for developing countries. Macroeconomic stability is one of the determinants for all country groups except industrial and high-income countries. Better macroeconomic stability causes more capital inflows to these countries and that causes higher current account deficits. So, to understand the effect, some of the emerging economies, like Poland, Russia, South Africa, Turkey, Brazil, and China, are selected because of their high current account balances.

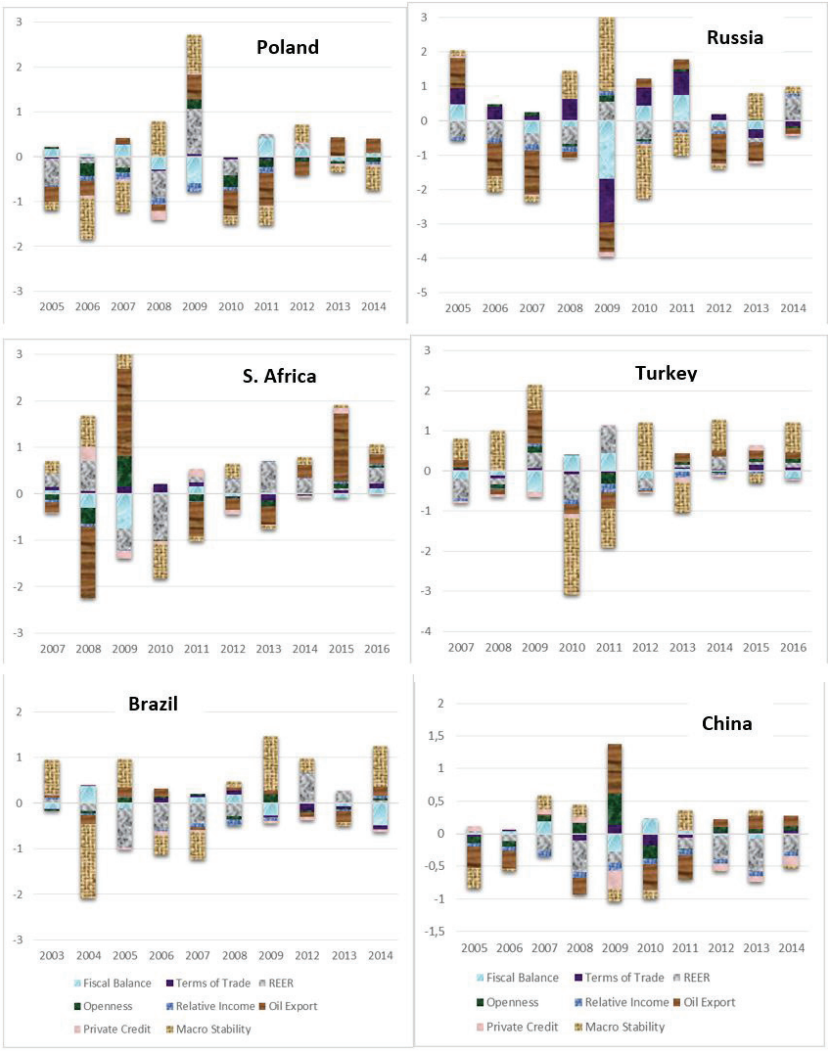
Figure 2. Predicted First Differences of Current Account Balances



The equation for all countries except Industrial and African countries is used for the estimation. The equation can simulate the direction of current account patterns reasonably well for the selected developing countries (Figure 2). Figures show the time until 2016 for S. Africa and Turkey, and 2014 for Poland, Russia, Brazil, and China because of some missing annual data.

When the decompositions of the first differences of current account balances are checked, it is seen that for Poland, Russia, Turkey, and Brazil, macroeconomic stability is one of the key determinants (Figure 3). It has a significant effect on current account balances for these countries. South Africa and China it has a minor impact. It can also be seen the contribution of the other determinants in detail. Real effective exchange rates and oil export are two other key determinants for these countries.

Figure 3. Decomposition of First Differences of Current Account Balances



5. Conclusion

The role of macroeconomic stability in current account balances has not been studied with a calculated index in the literature until now. It is aimed to find out the role of macroeconomic stability in current account balances. The analysis is

completed for the period between 1980 and 2016 for 97 countries. Macroeconomic stability is represented by an index that is created with the inflation rate, growth rate, unemployment rate, and fiscal balance data of all the countries. It is found that macroeconomic stability is one of the important determinants of current account balances. It has negative and statistically significant relationships with current account balances for four different country groups. Results support that macroeconomic stability as a determinant is especially important for developing countries rather than high-income countries.

The study's main aim is to understand the role of macroeconomic stability on current account balances. The macroeconomic stability index is created and calculated for each country individually. Macroeconomic stability represented by a new index is added to the study. Macroeconomic stability is discussed by Bernanke (2005) as one of the potential determinants of current account balances. Macroeconomic stability, represented with an index in the study, has a statistically significant association with current account balances for all the country groups except industrial countries and high-income countries with negative signs. Higher macroeconomic stability increases the current account deficits. When economic stability gets better, this causes more capital inflows to these countries and ends up with higher current account deficits. It is also seen that macroeconomic stability is one of the key determinants of current account balances for Poland, Russia, Turkey, and Brazil. South Africa and China it has a minor impact. It is found that, like institutional quality and financial development, macroeconomic stability is one of the key determinants of current account balances, especially for developing countries.

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Appendix

Appendix Table 1. Sources of the Data

	Variables	Number of Observations	Data Sources
	Dependent Variables		
1	Current Account Balances/GDP (%)	3239	World Bank
	Macroeconomic Determinants		
2	Growth Rate (%)	3471	World Bank
3	Real Effective Exchange Rate	3501	Bruegel Economic Think Tank
4	Fiscal Balance/GDP (%)	2617	World Bank
5	Trade openness (Ex+Im) / GDP (%)	3409	World Bank
6	Net Crude Oil Export/GDP (%) *	3119	EIA, World Bank
7	Terms of Trade	2614	World Bank
8	Relative Income (US=1)	3495	World Bank
	Macroeconomic Stability Determinant		
9	Macroeconomic Stability Index *	2057	World Bank
	Financial Determinant		
10	Total Private Credit/GDP (%)	2938	World Bank
	Institutional Determinants		
11	Legal System and Property Rights Index	1933	Fraser Institute
12	Voice and Accountability Index	1897	World Bank
13	Control of Corruption Index	1897	World Bank
14	Political Stability and Absence of Violence Index	1897	World Bank
15	Regulatory Quality Index	1897	World Bank
16	Rule of Law Index	1897	World Bank

Note: EIA: U.S. Energy Information Administration, * Calculated Values

Appendix Table 2. Country List

High-income Countries
Argentina, Australia, Austria, Belgium, Canada, Chile, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, S. Korea, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Russia, Singapore, Slovak Republic, Slovenia, Spain, Swiss, Switzerland, United Kingdom, United States of America, Uruguay, Venezuela, Cyprus, Hong Kong, Macao, Malta.
Developing Countries
Afghanistan, Albania, Algeria, Angola, Armenia, Azerbaijan, Bangladesh, Bolivia, Botswana, Brazil, Bulgaria, Cameroon, Chad, China, Democratic Republic of Congo, Egypt, Ethiopia, Fiji, Gabon, Georgia, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Iran, Jordan, Kazakhstan, Kenya, Kirghizstan, North Macedonia, Madagascar, Malaysia, Mexico, Morocco, Mozambique, Nepal, Nicaragua, Pakistan, Paraguay, Peru, Philippines, Romania, South Africa, Serbia, Sudan, Thailand, Tunisia, Turkey, Uganda, Ukraine, Zimbabwe.
Industrial Countries
Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Holland, New Zealand, Norway, Portugal, Spain, Sweden, Swiss, UK, USA.

Appendix Table 3. The role of Institutional Quality in Current Account Balances (1996-2016)

	Industrial Countries	**High Income**	**All Countries-Africa&Industrial**
Growth Rate	.1157	-.0547	-.1137
	(1.28)	(-1.16)	(-2.24)**
Fiscal Balance	.0816	.0692	.2129
	(0.83)	(0.88)	(2.15)**
Terms of Trade	.0478	.0241	.0024
	(1.36)	(1.89)*	(0.22)
Real Effective Exchange Rate	-.0682	-.0405	-.0594
	(-1.38)	(-1.42)	(-2.11)**
Trade Openness	-.0438	-.0181	-.0476
	(-0.86)	(-0.87)	(-1.92)*
Relative Income	-33.4343	-14.8623	5.1322
	(-2.57)**	(-1.50)	(0.35)
Average Net Crude Oil Export /GDP	.5410	.2229	.8993
	(1.43)	(1.34)	(3.45)***
Total Private Credit/GDP	-.0345	-.0163	-.0173
	(-2.87)***	(-2.35)**	(3.45)**
Regularity Quality		-2.6331	
		(-2.04)**	
Rule of Law	-5.3279		
	(-2.13)**		
Control of Corruption			-2.0441
			(-1.65)*
R-sq	0.1947	0.0839	0.2015
Number of Observations	255	498	642

Note: First differences of the variables are used. t- statistics are shown in parentheses. *, **, *** indicate significance level at 10%, 5%, 1%, respectively. The constants' estimations are not shown.

Appendix Figure 1. Inflation Rate (CPI), Unemployment, Growth Rate, Fiscal Balance, CAB, MS Index, FDI for Turkey (2001-2022)