MACROECONOMIC STABILITY: AN INTERNATIONAL COMPARISON WITH A PANEL VAR MODEL[1]

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Abstract

Monetary and fiscal stability is fundamental to evaluate a country's macroeconomic performance. A measure of macroeconomic stability is crucial for a central bank's monetary policy decisions, and for the central government's fiscal policy actions. Over time, economic literature has designed different indicators, within an economy, to measure monetary and fiscal stability, but few attempts have come to develop a unique indicator for macroeconomic stability. This document aims to close this gap and introduce the so-called Monetary and Fiscal Stability Indicator (MFSI), which is built based on annual data for a set of emerging and developing countries, from 2005 to 2021. Using a panel VAR model, we found empirical evidence that this indicator has a significant and robust negative relationship with economic growth.

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I. INTRODUCTION

Macroeconomic stability has an important bond to economic growth. According to the economic consensus, the former is a necessary, but not a sufficient; condition to obtain large and sustained economic growth (Fischer, 1992; Corden, 1991; World Bank, 1992). Despite its importance, there is no consensus about a simple quantitative measure to determine whether an economy is stable. Instead, there are several factors associated with an economy that has achieved a state of macroeconomic stability, such as moderate inflation, low exchange rate volatility, modest fiscal deficits, sustainable levels of public debt and current account balance, and appropriate interest rates levels (Ocampo, 2005).

In this document, we intend to close this gap and provide a quantitative definition for macroeconomic stability. First, we compute an indicator called the Monetary and Fiscal Stability Index (MFSI) that accounts for excess volatility in inflation, nominal exchange rate depreciation, and fiscal deficits to GDP ratios. We compute limits for each of these variables based on data for advanced economies. Fluctuations above such limits are considered to generate macroeconomic instability and adversely affect economic growth. We compute MFSI values for the G-24 countries, and for the most relevant industrial countries using annual data for the period 2005-2021. Second, we established a quantitative definition for macroeconomic stability based on MFSI values computed for advanced economies. In particular, we establish that an economy registers macroeconomic stability when its MFSI is below 1%. Finally, we tested the relevance of the MFSI indicators on economic growth. Using panel data estimation to identify the determinants of economic growth during the period mentioned above, we found a strong and significant negative relationship between MFSI and economic growth. Therefore, we concluded that increments in this measure have produced a negative effect on economic growth in G-24 countries during the 2005-2021 period.

The following sections are organized as follows. Section II provides a literature review on the definition of macroeconomic stability. Section III introduces the Monetary-Fiscal Stability Index (MFSI), the methodology employed in the empirical work, and the data needed to compute it. Section IV presents the empirical results obtained through a Panel VAR estimation, which include a comparative analysis of MFSI values from 2005 and 2021. Finally, Section V presents our conclusions for this study.

II. LITERATURE REVIEW

The literature distinguishes between two definitions of macroeconomic stability, which are differentiated not only by the scope of variables included in its conception, but also by the number of policies which can be used to achieve it. We named the first approach, Broad Monetary Stability (BMS). Proponents of this definition argue that macroeconomic stability is associated with a large number of monetary and fiscal factors, such as low and stable levels of: inflation, fiscal deficit, public debt, exchange rate volatility (nominal or real), and interest rates, among others, all of which could be quantitatively assessed for each particular economy. This BMS conceptualization was common during the postwar period, dominated by Keynesian thinking, since macroeconomic stability was defined by a state of an economy, which had obtained both internal and external equilibrium, where the former represented full employment, stable economic growth and low inflation, while external equilibrium represented an equilibrated balance of payments. Some studies embrace some (or all) of

the five Maastricht convergence criteria[4] as efficient indicators of macroeconomic stability (low and stable levels of inflation, long-run interest rates, public debt to GDP, public sector deficit to GDP, and stable currency fluctuations (see Obstfeld, Alesina and Cooper, 1997, for a detailed analysis about such convergence criteria).[5] Some other studies point to a different set of indicators such as a stable rate of economic growth, low levels of unemployment, financial inclusion, and healthy private sector balance sheets (Bernanke, 2004; Ocampo, 2005). Given the large number of monetary and fiscal variables involved in the BSM conceptualization of macroeconomic stability, there should be at least the same number of instruments that policymakers should use to achieve it (Tinbergen, 1963; Aoki, 1975).

On the other hand, Narrow Monetary Stability (NMS) is the name we provided to the second approach, which states that macroeconomic stability, should be associated with just one factor: low and stable inflation. Fischer (1992) argues that inflation is the single best indicator of macroeconomic stability. This argument stands over the fact that no advanced economy has registered double-digit inflation rates in the last 20 years, and governments in those emerging or developing economies that have registered such high inflation rates, have taken measures to reduce it, since they recognize that high inflation cannot be sustainable on economic and political grounds. In addition, Fischer argues that inflation is the only reliable measure to determine macroeconomic stability, since there is a difficulty to determine appropriate levels for other indicators, so that deviations from such values would be associated with macroeconomic instability. The focus in achieving price stability implies the application of one or few policy actions to attain this goal, particularly through a monetary policy instrument, such as a central bank leading interest rate.

The NMS conceptualization of macroeconomic stability was the dominant view because its narrow focus made it appealing and popular among policymakers, particularly among central bankers. However, this perception changed with the Great Recession of 2007-2009, because a narrow focus, by monetary authorities, on price stability before the crisis, left out-of-sight the developments that were taking place in the financial sector that eventually propitiated the episode of macroeconomic instability that followed during the next decade. Therefore, a NMS conceptualization could eventually disregard the importance of relevant factors, and macroeconomic policies, required to achieve a macroeconomic stability environment, which itself is necessary (although not sufficient) for a sustainable and long-term economic growth path. We are not saying that price stability is no longer relevant. On the contrary, we believe that it will continue be a relevant polity to pursue. Nevertheless, we believe that additional policies are also necessary to achieve and sustain macroeconomic stability for longer horizons. In the following section, we introduce a broad measure of macroeconomic stability in line with a BMS conceptualization, which we believe it could provide a better scope for policymakers to pursue macroeconomic stability.

[4]The European Commission' Delors Report issued in 1989 at the Dutch city of Maastricht, established a set of conditions (macroeconomic stability prerequisites) for a country to belong to the European Union. Such requirements are: i) low and stable inflation (below 3%); ii) low levels of long-run interest rates (below 9%); iii) low public debt with respect to GDP (less than 60% of GDP); iv) low public sector deficit to GDP (less than 3%); and v) stable currency fluctuations (inter-annual fluctuations below 2.5%). The fulfillment of such conditions was expected to produce a monetary and fiscal stable environment for all members of the Union. See Obstfeld, Alesina and Cooper (1997) for a detailed analysis about such convergence criteria.

[5] Afxentiou (2000), and Afxentiou and Serletis (2000) concluded that the Maastricht convergence criteria produced a higher per capita income growth in the country members of the European Union.

III. METHODOLOGY AND DATA

A. METHODOLOGY

This section introduces the quantitative definition for macroeconomic stability based on a broader conceptualization of this term (BMS). We based this indicator on periodically quantified, reliable, and publically available macroeconomic statistics, which are usually available for most countries. This would allow us to make comparisons of macroeconomic stability among nations, and to analyze its evolution through time. In addition, the mathematical specification of the macroeconomic stability indicator should indicate that long run deviations from each selected statistic used in its construction could endanger a country's stability environment.

Based on the above, we proceeded to construct what we called the Monetary and Fiscal Stability Indicator (MFSI). The variables employed in its construction are: i) inflation; ii) nominal exchange rate depreciation; and iii) fiscal balance to GDP. These variables can be obtained from most country data bases, which are publically available from the IMF, the World Bank, large country risk rating companies (Moody's, Fitch Ratings, and S&P Global), domestic central banks, or local statistical institutions. The control over inflation and nominal exchange rate fluctuations are the responsibility of monetary policy, while the management of fiscal balances are the responsibility of the fiscal policy.

Furthermore, there is a consensus in the literature that a prudent monetary and fiscal management are the necessary conditions for a stable and sustainable growth. Since a prudent monetary and fiscal management characterizes advanced economies, we obtained data for inflation, nominal exchange rate depreciation and fiscal balance to GDP from industrialized countries, which also are G-24 main trading partners. Therefore, a simple average of these variables (from the set of industrial countries) represented a measure of each variable's stability limit. Hence, a large deviation from any of these average measures is associated with macroeconomic uncertainty.

The formula used to compute the Monetary-Fiscal Stability Indicator (MFSI) is the following:

$$MFSI_t^i = \left(\alpha_\pi(\pi_t^i - \pi_s)^2 + \alpha_s(\Delta s_t^i - \Delta s_s)^2 + \alpha_{fd}\left(fd_t^i - fd_s\right)^2\right)^{\frac{1}{2}} \quad (1)$$

Where:

- $\boldsymbol{\pi_t^i}$: Domestic Inflation rate of country "*i*" in period *t*;
- $\boldsymbol{\pi_s}$: Average Inflation rate of selected industrialized countries in period *t*;
- $\boldsymbol{\Delta s_t^i}$: Nominal Exchange Rate Depreciation (%) of country "*i*" in period *t*;
- $\boldsymbol{\Delta s_s}$: Average Nominal Exchange Rate Depreciation of selected industrialized countries in period *t*;
- $\boldsymbol{fd_t^i}$: Fiscal Deficit as a share of GDP of country "*i*" in period *t*;
- $\boldsymbol{fd_s}$: Average Fiscal Deficit as a share of GDP of selected industrialized countries in period *t*;
- $\boldsymbol{\alpha_j}$: Weighting parameter of variable *j*'s deviation from the corresponding industrial country average, where $j = \{\pi, \Delta s, fd\}$**;**

The difference from any of the three variables to the respective industrial country average is set to zero if its value is within the limits established by such an average value. For instance, if at time t, $\pi_t^i \leq \pi_s$, then the expression $(\pi_t^i - \pi_s)^2$ from equation (1) is equal to zero for that particular period t. For nominal exchange rate fluctuations, a value of zero is imposed for positive or negative fluctuations within the average limit that is for $|\Delta s_t^i| \leq |\Delta s_s|$. For the fiscal balance to GDP ratio, values above the limit (which is usually negative, implying a fiscal deficit) are set to zero since moderate deficits or fiscal surpluses are associated to sustainable fiscal practices.

The mathematical function selected to construct the MFSI is a quadratic loss function, which is easy to interpret, since each individual component's square difference from its long run average represents its own volatility. Hence, the overall MFSI is a volatility measure, which fluctuates around its long run average value due to its own components' deviations from their corresponding steady states or long run average values. The weighting parameter, α_i, is given the same value (0.2), since we assume that all distortions would have the same impact on macroeconomic stability.

In addition, we study the effects of the G-24 Monetary and Fiscal Stability Index (MFSI) on economic growth. We made a Panel Vector Autoregressive Model (Panel VAR) estimation for the period 2005 – 2021 with economic growth as a dependent variable, the MSFI as an explanatory variable, and a group of control variables: four of economic nature, and five institutional variables. The economic control variables are (for each country): i) Net Foreign Direct Investment to GDP ratio; ii) Family Remittances Income to GDP ratio; iii) Gross Domestic Savings to GDP ratio; and iv) Domestic Private Sector Credit to GDP ratio. The institutional control variables are (for each country): vi) Government Effectiveness; vii) Regulatory Quality; viii) Rule of Law; ix) Voice and Accountability; and x) Political Stability / Terrorism.[6]

The choice of a Panel VAR model was to take advantage of the main benefits of both a Panel and Vector Autoregressive (VAR) model. A panel Model allows the inclusion of many countries in the study to avoid the small sample bias in the estimation, and a VAR model allows to control for the possible double causality between the dependent and the independent variables in each equations of the system and to make policy analysis through an impulse – response function analysis. The latter benefit is very important in our paper because economic growth and financial instability are related each other. An improvement in economic growth may be explained by a reduction in the financial instability and a decrease in financial instability is explained for a better economic growth. Therefore, the use of the Panel VAR model gives us a more accurate analysis of the effect of the MFSI index on economic growth.

The Panel VAR model specification is the following:

$$Y_t^j = A_1 Y_{t-1}^j + u_t^j \qquad (2)$$

Where Y_t^j is a (1 x k) vector of dependent variables, A_1 is a matrix of the parameters to be estimated, u_t^j are the error terms to be serially uncorrelated, j represents each country that belongs to the G-24 group, and t represents the time.

For any country *j* that belongs to the G-24 group and for a given time *t*:

[6]Data for economic control variables was taken from the World Bank's World Development Indicators. Data for institutional control variables was taken from the World Bank's Worldwide Governance Indicators.

y_t^j: Annual growth rate;
$MFSI_t^j$: Monetary and Fiscal Stability Index;
fdi_t^j: Net Foreign Direct Investment to GDP ratio;
rem_t^j: Family Remittances Income to GDP ratio;
sav_t^j: Gross Domestic Savings to GDP ratio; and
$cred_t^j$: Domestic Private Sector Credit to GDP ratio.
$gov\_effec_t^j$: Government Effectiveness.
$reg\_qual_t^j$: Regulatory Quality.
$rule\_law_t^j$: Rule of Law.
$voice_t^j$: Voice and Accountability.
$pol\_inst_j^t$: Political Stability / Terrorism.

The following section mentions the source of information for each of the variables needed to compute the MFSI indexes, as well as those employed in the econometric estimation.

B. DATA

The Monetary-Fiscal Stability Indicator (MFSI) was computed for all countries that belong to the G-24 group using annual data for the period 2005-2021.[7] Although the original number of countries within the group was 24, as stated by its name, currently there are 28 countries belonging to it. In addition, China acts as a special invitee. We considered all countries, with the exception of Syria, from which we could not find complete information for the whole period under study. Data for each country was obtained from the IMF International Financial Statistics (IFS) and World Economic Outlook (WEO) databases, and from the Moody's Statistical Handbook. Finally, data for each of the variables needed to perform our panel data estimation was obtained from the World Bank data on development indicators (WBI).

In the following subsections, we present a graphical analysis of data to evaluate the behavior of the variables considered to construct the MFSI. We classified G-24 countries into three groups, according to their geographical location: Africa, Latin America, and Asia. Region I refers to the eleven African countries that belong to G-24: Algeria, Côte d'Ivoire, Democratic Republic of Congo, Egypt, Ethiopia, Gabon, Ghana, Kenya, Morocco, Nigeria, and South Africa. The Latin American G-24 group or Region II includes ten countries: Argentina, Brazil, Colombia, Ecuador, Guatemala, Haiti, Mexico, Peru, Trinidad and Tobago, and The Bolivarian Republic of Venezuela. Finally, Region III, the G-24 Asian economies, comprises eight countries: China, India, Iran, Lebanon, Pakistan, Philippines, and Sri Lanka. The advanced economies from where we computed all comparative estimations are the following eight countries: Australia, Canada, China, the Euro Zone, Japan, New Zealand, the United Kingdom and the United States. Note that China is included twice. It is included

[7] The Intergovernmental Group of Twenty-Four on International Monetary Affairs and Development, or The Group of 24 (G-24) was established since 1971 to help coordinate the positions of developing countries on international monetary and development finance issues, as well as and to ensure that their interests are adequately represented in negotiations on international monetary matters. Additional information about the G-24 group can be found in: https://www.g24.org/organizational-structure-and-governance/.

within the group of advanced economies, and within the Asian group of G-24 countries, since it acts as a Special Invitee to the group.

It is important to remember that during the period analyzed there were two important global shocks that increased the level of macroeconomic instability in all countries: The global financial crisis (2007-2010) and the COVID outbreak since 2020. As we would be able to observe, these shocks had an effect on most variables considered. In Appendix II (Tables 1, 2 and 3), we present the dataset and the sources of data for this document.

1. Domestic Inflation

Inflation rates for G-24 countries are depicted in Figures 1-4of Appendix III. Figure 1 illustrates inflation rates for selected industrialized countries. Each country's inflation is depicted in gray bars for the 2005-2021 period. The horizontal line represents average inflation plus two standard deviations computed for all countries selected during the non-crisis years. That is, such calculation does not take into account the period 2007-2009 and 2020-2021 because macroeconomic variables showed extraordinary volatility during these years. Hence, such a horizontal line represents a limit to inflation fluctuations in normal times for both industrial and G-24 countries. Its value is equal to 4%. In other words, countries registering annual inflation values on or below such value are considered to satisfy this inflation stability criterion. As observed, price stability is a characteristic of these economies, since they registered inflation rates below such a mark in all non-crisis years. The only exception was China in 2010 and 2019. In the first case, the recovery from the financial crisis was more pronounced than then rest of economies. In 2019 China was the first country affected by the pandemic, and the supply shock affected prices upwards a year before it affected the rest of the world.

Figure 2 illustrates inflation for each African country that belong to the G-24 group (in orange). The horizontal line depicts the inflation stability limit computed with data for the selected industrial economies mentioned above. Ivory Coast, Gabon, Morocco, Algeria, Kenya, and South Africa were successful in achieving one digit inflation during non-crisis years. From this list, just the first three countries could achieve an average inflation rate below the 4% stability limit during this period. On the other hand, The Democratic Republic of Congo (DCR), Egypt, Ethiopia, Ghana and Nigeria registered a double-digit average inflation rate during normal times. This high inflation was mainly driven by a severe drought that affected agricultural food prices, mainly during 2015-2016, which lead to a large demand for foreign currency in most African economies to pay for these more expensive imported commodities, and generated a large currency depreciation whose pass-through affected domestic prices (WEO Regional Sub-Saharan Africa, October 2017). Within this latter group, DCR registered above 50% inflation in 2009 and 2017, Ethiopia registered an inflation rate over 30% in 2008 and 2011, while Egypt registered a near 30% inflation in 2017.

Inflation rates in G-24 Latin American countries are illustrated in Figure 3 (in blue); along with the inflation stability limit (4%). Most countries registered one-digit inflation during the non-crisis years. This result might follow because Mexico, Brazil, Colombia, Guatemala and Peru follow an inflation-targeting framework and Ecuador is a dollarized economy. Nevertheless, just Ecuador, Peru and Mexico registered an average inflation below the inflation stability limit during non-crisis years. On the other hand, Haiti, Argentina, and particularly Venezuela registered high inflation episodes.

Inflation in Haiti was high in average, but it did not raised above 20%, except in 2020, due to the COVID-19 outbreak, when it increased to 25.2%. Argentina on the other hand, registered an increasing trend in domestic inflation that started immediately after the Great Recession. In 2014, inflation was high owing to the monetization of the fiscal deficit and became the fifth highest in the world (WEO Western Hemisphere, October 2015). Moreover, in its peak, in 2019, it reached 53.8%. The bout of financial turmoil after the primary elections in august prevented a recovery. The sharp depreciation of the peso (more than 20 percent in the week after the primary elections) increased inflation in 2019 (WEO Western Hemisphere, October 2019).Venezuela is a different story. Inflation in Venezuela was in the double digits since the beginning of the sample, and gradually registered an exponential trend, which unfortunately ended in an ongoing hyperinflation episode since 2013. Persistent loose macroeconomic policies had generated high inflation and a drain on official foreign exchange reserves since 2014. At its peak, annual inflation registered over 130,000% in 2018. The main reason to reach a hyperinflation was the persistent monetary financing of the large fiscal deficits and the consequent increase in money demand (WEO Western Hemisphere, October 2018). This is the highest inflation rate observed in the G-24 countries during the period under study.

Figure 4 illustrates inflation rates in G-24 Asian economies. Like in previous regions, we could distinguish between countries that were able to maintain a single-digit average inflation rate during the non-crisis years, from those that registered a higher inflation rate. The first group of countries comprises China, Philippines, India, Pakistan, Sri Lanka and Lebanon, while in the second category the only country that qualifies is Iran. Countries classified within the first group are still quite heterogeneous regarding inflation. Despite of registering a single-digit average inflation during the non-crisis years, only China and The Philippines registered an average inflation below the stability limit (4%), and never registered a double-digit inflation during the whole sample period, while India, Pakistan and Sri Lanka registered two-digit inflation during some years. Since 2011, the inflation of Pakistan has accelerated slightly because of accommodative monetary policies and a moderate nominal exchange rate depreciation. Furthermore, Lebanon registered hyperinflation (145.8% inflation rate) in 2020, because of internal socio-political issues, and large fiscal deficits financed by monetary financing. In addition, Iran registered high inflation due to the oil sanctions (WEO Middle East and Central Asia, October 2012), which also led to large exchange rate depreciations, and a worsening of commodity supply shortages (WEO Middle East and Central Asia, October 2013).

2. Fiscal Balance as a Share of GDP

Fiscal balances as a share of GDP for G-24 countries are illustrated in Figures 5-8 in Appendix III. A negative value represents a deficit, while a positive value indicates a surplus. In that sense, fiscal deficit gradually increased (the fiscal balance became more negative) in all regions during the period illustrated, worsening during the 2007-2010Financial Crisis, and during the COVID-19 outbreak. This information is relevant in terms of macroeconomic stability, because even when countries could be registering lower inflation (a positive sign in terms of a narrow macroeconomic stability conceptualization) they might also be registering an increasing fiscal deficit, which might imply possible inflationary pressures and lower output growth in the long term.

The fiscal stances of selected industrialized countries are displayed in Figure 5. Each country's fiscal position is depicted by gray bars, while the horizontal black line depicts the average fiscal balance to GDP ratio plus two standard deviations for all countries during the non-crisis years of the period

2005-2021.[8] Such a horizontal line represents a limit to fiscal balance to GDP ratios in normal times for both industrial and G-24 countries. Its value is equal to -5%. Therefore, countries registering annual fiscal deficits to GDP ratios above this value are considered to satisfy a fiscal stability criterion. During the non-crisis years, all selected industrial economies registered an average fiscal deficit to GDP ratio below the stability limit indicated. In particular, Australia, Canada, and New Zealand achieved lower fiscal deficits than the other countries. The Financial Crisis of 2007-2010, and the COVID outbreak were challenging times for these economies. Some of them registered a two-digit fiscal deficit ratio in at least one year of the crisis years: Canada in 2020, Japan in both 2009 and 2020, United Kingdom in 2009 and 2020, and the United States of America from 2009 to 2011 and from 2020 to 2021 (above 12% of GDP in both years).

Figure 6 displays the fiscal stance for G-24 African countries (in orange), as well as the fiscal stability limit (-5%) depicted by the horizontal line. The Democratic Republic of Congo, Ethiopia, Gabon, Ivory Coast, South Africa, Algeria, Morocco, and Nigeria, achieved an average fiscal deficit to GDP ratio lower than the fiscal limit. The first three countries were the more solid on fiscal basis since they never surpassed such a limit, even during crisis years. On the other hand, Egypt, Ghana, and Kenya registered a wider fiscal deficit, particularly after the 2007-2010 Financial Crisis. Algeria, Egypt and Ghana registered a two-digit fiscal deficit ratio at least in one year (Algeria in 2010 and 2016; Egypt from 2013 to 2017; and, Ghana in 2012 and from 2020 to 2021). It is important to mention that the Ebola epidemic affected the fiscal positions of the latter group of countries due to resources that had to be addressed to the combat the disease (WEO Regional Sub-Saharan Africa, April 2015).

The fiscal balance to GDP ratio of G-24 Latin American countries (in blue), and the fiscal stability limit are illustrated in Figure 7. The more stable economies according to this measurement were Guatemala, Haiti, Mexico, Colombia, and Peru. The first three countries did not registered a fiscal stance lower than the stability limit of -5% in any year of the sample period 2005-2021, while Colombia and Peru registered a higher deficit during the COVID-19 outbreak. On the other hand, Argentina, Brazil, Ecuador, Trinidad and Tobago and Venezuela registered increasing fiscal deficits. Two-digit deficits were registered in Brazil from 2015 to 2020, Trinidad and Tobago from 2020 to 2021, and Venezuela from 2012 to 2019. The worst performer was Venezuela, since it reached a 31% fiscal deficit to GDP in 2019. In the case of Brazil, a political crisis emerged in 2015 due to allegations of corruption in *Petrobras*, the major oil company of the country, and allegations of campaign finance irregularities during the 2014 presidential elections. These disturbances lead to an economic slowdown, which depressed fiscal revenues since 2015.In the case of Venezuela, persistent fiscal deficits were partially explained by the fall in its terms of trade, after a restriction was imposed to its oil exports since 2014, which compressed the country's fiscal revenues (WEO Western Hemisphere, October 2015).

Figure 8 depicts the fiscal stance (in red) of G-24 Asian countries. As before, we divide these countries into two groups, depending if their fiscal deficit to GDP ratios were higher or lower than the fiscal stability limit imposed by the horizontal line in -5%. Only China and the Philippines registered a lower deficit to GDP ratio in non-crisis years. The Lebanon was by far the country that registered the highest average fiscal deficit to GDP during the non-crisis years (-8.7%) followed by

[8] Since the average fiscal balance was negative (-3%), the two standard deviations added to the value were also negative, in order to obtain a measure of fiscal stability. The calculation does not take into account the periods 2007-2009 and 2020-2021.

India (-6.4%), Sri Lanka (-6.3%), and Pakistan (-5.8%). The decline in oil prices that occurred from 2015 onwards led to a substantial deterioration in the fiscal balances of both Lebanon and Pakistan (WEO Middle East and Central Asia, November 2015). Two-digit fiscal deficits were registered in some of these countries during some years of the sample: in China, India and Sri Lanka at some point between 2020 and 2021 because of the COVID-19 outbreak, and in Lebanon from 2006 to 2008 and from 2018 to 2019.

3. Nominal Exchange Rate Depreciation

Annual nominal exchange fluctuations for G-24 countries are depicted in Figures 9-12 in Appendix III. A positive (negative) value represents a nominal exchange rate depreciation (appreciation). Currency fluctuations for selected industrialized countries are displayed in Figure 9. Such exchange rates are calculated with respect to the US dollar. According to the IMF AREAER (2020) report, with the exception of the Chinese Yuan, all other currencies are characterized by being floating regimes. Therefore, currency fluctuations in these economies are a little larger in average, when compared to other regions (such as G-24 countries), since they are not subject to any government intervention to smooth currency fluctuations. The two horizontal lines in each graph depict two standard deviations around a mean of 1% average depreciation registered by these countries during non-crisis years of the sample. Hence, these lines represent a 14% depreciation, and a -12% appreciation. Currency fluctuations within such bands represent our measure of currency depreciation stability applied to advanced economies, and to G-24 countries. Regarding the currencies illustrated in Figure 9, most of them register a volatility within the stability bands. The financial turmoil of 2007-2009 was the cause of higher volatility, which almost tripled in each economy, particularly in 2008. Australia and the UK registered slightly higher currency fluctuations (12.26% and 12.13%, respectively) during the whole period. An interesting fact is that the COVID outbreak did not significantly affected currency volatility in the advanced economies analyzed in this study.

Figure 10 illustrates currency fluctuations inG-24 African economies, Region I, along with the two horizontal lines that represent the limits for currency depreciation stability. Terms of trade shocks and a severe drought experienced in 2015-2016 triggered exchange rate pressures where most of the countries allowed their currency to adjust, but many tried to smooth the exchange rate depreciation by reducing their international reserves (WEO Regional Sub-Saharan Africa, April 2016). According to the IMF AREAER (2020) report, just Ghana and South Africa have stablished floating exchange rate regimes. The remaining countries have established a managed currency arrangement.[9] During the sample period, just the Moroccan Dirham registered fluctuations within the currency depreciation stability limits. The Algerian Dinar, the CFA Franco from Ivory Coast and Gabon, and the Kenyan Shilling, registered moderate fluctuations that surpassed the volatility limits in one or two years of the sample. The remaining currencies experienced a high volatility.[10] Even when the financial crisis affected currency volatility in most of this group of G-24 countries, some of them experienced domestic macroeconomic disturbances in some other years within the sample, that lead to higher

[9]Craw-like arrangements are established in Algeria, DR Congo, Egypt, and Ethiopia; Conventional Peg arrangements are established in Ivory Coast and Gabon; Stabilized and Other arrangements are established in Morocco, Nigeria and Kenya.

[10]The Congolese Franc, the Egyptian Pound, the Ghanaian Cedi, the Nigerian Naira, and the South African Rand experienced higher currency volatility (14.29%, 25.84%, 11.23%, 15.95%, and 16.14%, respectively) measured by one standard deviation.

currency fluctuations. The Egyptian Pound registered the highest average volatility during the period of analysis, and the largest depreciation rate in a single year, in 2017, when its currency depreciated by 104.17%. The Nigerian Naira registered a similar but more moderate experience in 2016 (54.82% depreciation).

Nominal exchange rate fluctuations in G-24 Latin American countries, Region II, are depicted in Figure 11 (in blue). The Peruvian, Colombian and Mexican Pesos and the Brazil Real are classified as floating regimes, while the Argentinian Peso, the Venezuelan Bolivar, the Haitian Gourde, the Guatemalan Quetzal, and the Dollar from Trinidad and Tobago are categorized as managed arrangements. Ecuador uses the US dollar as a local currency.[11]Excluding Venezuela, the average nominal exchange rate depreciation of the region in the whole evaluation period was 5.38%.[12]The less volatile currencies where the Dollar from Trinidad and Tobago, the Guatemalan Quetzal, and the Peruvian Peso, whose average annual fluctuations were below one percent. These three currencies fluctuated within the currency volatility limits during all sample years.[13]The most volatile currency was the Venezuelan Bolivar, which registered a 458,086.15% depreciation in 2018. Besides this extraordinary case, the Argentinian Peso, the Brazilian Real and the Haitian Gourde registered large average fluctuations during the period under analysis.

Finally, Figure 12 displays nominal exchange rate fluctuations for G-24 Asian economies, Region III (in red). The Indian Rupee and the Philippine Peso are under floating regimes, while the Chinese Yuan, the Pakistani and Sri Lankan Rupee, the Iranian Rial, and the Lebanese Pound are currencies under managed arrangements. The Chinese Yuan was the only currency whose fluctuations remained within the currency depreciation limit during the whole period under study, and along the Sri Lankan Ruppe registered the lower volatility values (4.42% and 5.80%, respectively) measured by one standard deviation. On the other hand, the Iranian Rial, and the Indian and Pakistani Rupee, registered a higher volatility during the period analyzed (23.86%, 8.76% and 7.93, respectively). The Lebanese Pound remained stable until late 2019, and depreciated significantly during the following years. As in the other regions, strong currency fluctuations are related to geopolitical issues, and not to international financial disturbances.

IV. EMPIRICAL ANALYSIS

In this section, we present a quantitative definition of macroeconomic stability based on the Monetary and Fiscal Stability Indexes, MFSIs, computed for selected advanced economies, and use this definition to determine whether G-24 countries have been macroeconomically stable during part or during the whole 2005-2021 period. We also refer to the COVID-19 pandemic effects on macroeconomic stability, since it has led to extraordinary increments on fiscal deficits, and public indebtedness, as governments have needed to spend additional resources to attend this event (WEO, October 2021; Gaspar, Medas, and Perrelli, 2021; Blanchard, 2020; and Summers 2021).

A. MACROECONOMIC STABILITY: A DEFINITION

[11] See the IMF AREAER (2020) report for a more detailed information.
[12] Ecuador was excluded as well, since it is dollarized.
[13]The Peruvian Peso surpassed the fluctuation bands in 2015.

Figure 13 illustrates Monetary and Fiscal Stability Indexes, MFSIs, computed for selected advanced economies. As mentioned in Section 3, this index considers large fluctuations in inflation rates, nominal exchange rate depreciation, and fiscal deficits to GDP ratios. Within some limits (denoted as stability limits), which are computed as the average value for each of these variables in advanced economies during normal (non-crisis) times, an economy is considered to exhibit macroeconomic stability.

Advanced economies are characterized by a prudent management of fiscal and monetary policies. However, every now and then, they cannot avoid experiencing domestic or external shocks that could affect inflation, currency volatility and/or fiscal deficits above the average values registered under normal circumstances (without the presence of disturbances). Therefore, the MFSI would register low values during normal times, and large values otherwise.

Figure 13 in Appendix IV shows bar graphs with MFSI values computed for the industrialized economies studied in this document. The bar depicted each year can be divided in three areas, colored by the proportion of excess deviations from its stability limit of each of the three index components. Areas in black depict the proportion corresponding to inflation, areas in red represent the part corresponding to nominal exchange rate fluctuations, and areas in gray illustrate the share belonging to fiscal deficits to GDP ratios. The horizontal line in all graphs represents the average MFSI for all countries plus two standard deviations during normal (non-crisis) years, that is, it excludes the periods 2007-2009 (the Great Recession), and 2020-2021 (the COVID-19 outbreak). Such an average value is equal to one percent.[14] The average MFSI value for all countries depicted is below 1% during normal years, which denote a consistent monetary and fiscal stability. The largest value was registered by Japan (0.9%) and it was related to large fiscal deficits to GDP ratios for the years that follow the financial crisis (particularly from 2010 to 2012), and a large depreciation in the Yen to US dollar exchange rate in 2013. During non-crisis years, the most stable economy was New Zealand, which registered an average MFSI of 0.1, and it did not registered any value above the 1% limit during any year.

The most important use of the MFSI comes when analyzing the crisis years, because we can identify the variables that are the most affected by domestic or external disturbances, so policymakers can establish monetary and fiscal policy measures addressed to attend specific disequilibria. During the financial crisis (2007-2009), just the Eurozone and China registered average MFSI values below the one percent limit. On the other hand, the UK, New Zealand, and Australia registered the highest degree of monetary and fiscal instability, since their average MFSI values during this period were 5.9%, 5.3%, and 4.5%, respectively, where their instability was concentrated in large nominal exchange rate fluctuations. During the COVID-19 outbreak, all advanced economies in the sample registered an MFSI above the 1% mark. The most affected countries were the US and the UK, whose average MFSI values during this period were 4.5% and 4.1%, respectively. In this case, macroeconomic instability was reflected in large fiscal deficits to GDP ratios. Since these later crisis is an ongoing source of instability, policymakers should try to focus on fiscal policy measures to make their economies converge to a stable path.

[14]One percent equals the MFSI mean (0.3) plus two standard deviations (one standard deviation equals 0.5) rounded to the nearest integer value.

B. MACROECONOMIC STABILITY IN G-24 COUNTRIES

Macroeconomic stability in G-24 African countries is identified and illustrated in Figure 14 of Appendix IV. Ivory Coast was the only country, which registered a MFSI value lower than the one percent limit during the non-crisis years. Its average MFSI was 0.1% during these years. Gabon and Morocco also registered low average MFSI values (0.1%, and 0.2%, respectively) during the same period, although Gabon experienced a large inflation in 2018, and Morocco a large fiscal deficit to GDP ratio in 2012, which made them surpass, respectively, the stability limits established for both variables. On the other hand, Egypt was the country that registered the highest level of macroeconomic instability with respect to its regional peers. Its average MFSI during non-crisis years was 9.0% generated by continued fiscal deficits and high levels of inflation, along with a strong depreciation of the Egyptian Pound, particularly, in 2017. Ethiopia, Ghana, DR Congo and Nigeria also experienced high levels of macroeconomic instability. Their average MFSI values during non-crisis years were 6.5%, 6.4%, 5.8%, and 5.4%, respectively. High inflation levels, and large currency fluctuations, above the stability limits for both variables, characterized these economies.

Figure 15 of Appendix IV illustrates MFSI estimates for G-24 Latin American countries. Peru and Ecuador were the most stable economies, since they were the only countries whose MFSI values remained below the 1% limit during non-crisis years. Their average MFSI during these years was 0.1%, and 0.2%. Mexico and Guatemala were also stable economies, and excepting few years, they registered MFSI values below the one percent stability limit. During non-crisis years, their average MFSI was 0.7% and 0.8%, respectively. Mexico registered an episode of instability from 2015 to 2017 due to large currency depreciations experienced during 2015-2016, which were followed by high inflation, above the stability limit, in 2017. Guatemala registered high inflation episodes in 2005, 2011, and 2017 triggered by high commodity prices and foreign inflation, which made its MFSI exceed the one percent stability mark during these years. The two more unstable economies not only in the Latin American region, but in the G-24 group were Venezuela and Argentina. In both cases, domestic political issues propitiated large currency depreciations and high inflation episodes, which became ongoing hyperinflations, particularly in Venezuela.

MFSI values for G-24 Asian economies are depicted in Figure 16 of Appendix IV. China was the only economy that registered MFSI values below the one percent limit during every non-crisis period. Its average MFSI for such a period was 0.2%. Philippines was close to such a mark, but missed the target in 2005 due to high inflation levels. Iran was the most unstable economy in the region, registering an average MFSI of 13.1% during normal times. During most of the time, this economy was characterized by high inflation levels. In addition, a large depreciation of the Iranian Rial in 2013 generated more instability in the economy. The COVID-19 pandemic produced large macroeconomic instability in this region, but it was reflected in different indicators. Large fiscal deficits to GDP ratios were registered in China, India, Philippines, and Sri Lanka, while high inflation was observed in the remaining countries. Although in average Iran registers the highest MFSI values, the Lebanon is registering an ongoing macroeconomic instability episode. During most of the time, this economy presented large fiscal deficits to GDP ratios, but in the last two years, during the COVID-19 outbreak, this economy has been experiencing hyperinflation, along with a strong depreciation in the Lebanese Pound.

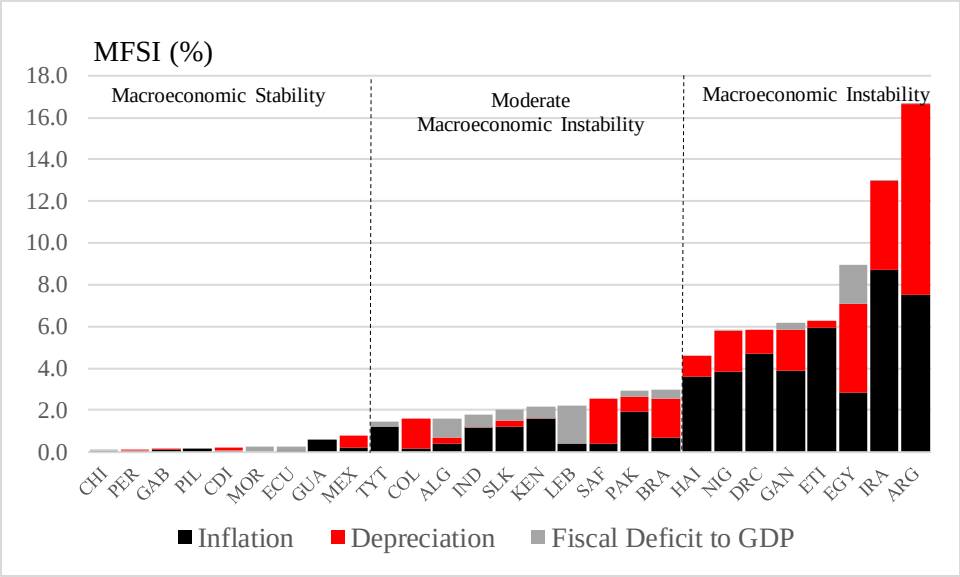

Figure 1. Monetary and Fiscal Stability Indicator (MFSI) for G-24 countries: average during non-crisis years, period 2005-2021.

Figure 1 illustrates average MFSI values for G-24 countries. Average MFSI values are computed for normal (non-crisis) years of the period 2005.2021.[15] Each bar is divided into three colored areas. The black area represents inflation deviations from stability limits, the red area depicts the portion related to excess nominal exchange rate fluctuations, and the gray area illustrates the share belonging to excessive fiscal deficits to GDP ratios. G-24 countries are ordered according to their average MFSI values, from more to less stable. The vertical lines divide countries into three groups. The first group, to the left, are the countries characterized by exhibiting macroeconomic stability, which are those whose average MFSI was below one percent during normal times. The second group, in the middle, are the countries characterized by displaying moderate macroeconomic instability, which are those whose MFSI was between one and four percent. These countries registered fluctuations in some MFSI components during particular episodes different from the international crisis years. The third group of countries are those characterized by being continuously unstable on macroeconomic grounds. This group of countries registered an average MFSI larger than four percent, and registered sharp continuous fluctuations in the three MFSI components, particularly inflation and nominal exchange rate depreciation.

Among the G-24 group, the most stable economy was China, which registered an average MFSI of 0.10%, followed closely by Peru (0.11%), and Gabon (0.14%). Other macroeconomically stable economies were the Phillipines, Ivory Coast, Morocco, Ecuador, Guatemala and Mexico, whose average MFSI were below the 1% stability limit. The group of G-24 countries that exhibit moderate macroeconomic instability during non-crisis episodes is composed by Trinidad and Tobago, Colombia, Algeria, India, Sri Lanka, Kenya, Lebanon, South Africa, Pakistan and Brazil. Finally, the group of countries characterized by being macroeconomic instable are Haiti, Nigeria, DR Congo, Ghana, Ethiopia, Egypt, Iran, Argentina and Venezuela. The latter economy registered the sharpest macroeconomic instability among the G-24 group, but it does not appear in the graph, because its average MFSI for the period mentioned is extraordinarily large (23,362.4).

[15] The years excluded were 2007-2009 (the Financial Crisis), and 2020-2021 (the COVID-19 outbreak).

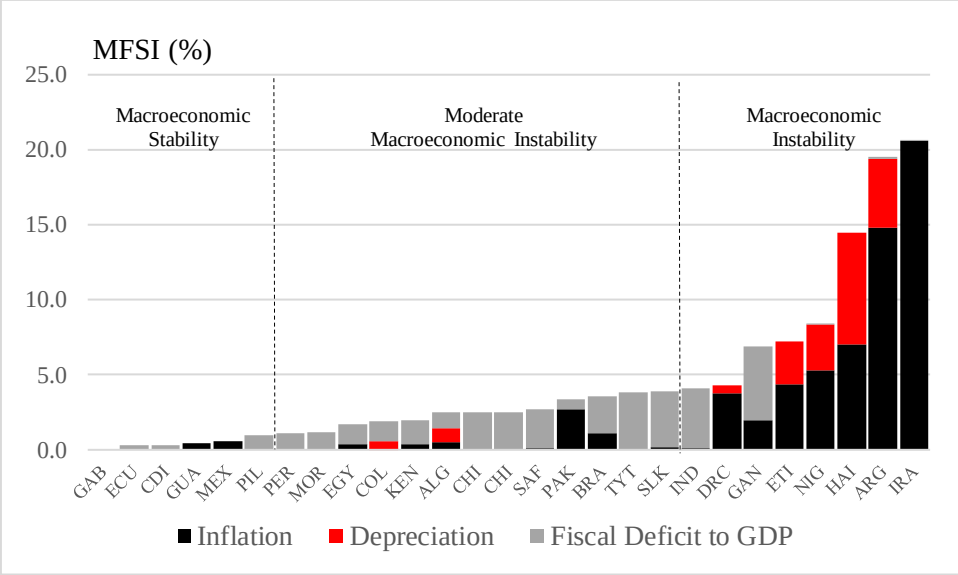

Figure 2. Monetary and Fiscal Stability Indicator (MFSI) for G-24 countries: average period 2020-2021.

Figure 2 illustrates average MFSI values for G-24 countries during the period 2020-2021. It illustrates the effects, on macroeconomic stability, mainly due to the COVID-19 outbreak. Some countries moved to the right of the graph, since their MFSI values increased. Nevertheless, such an increment appears to be concentrated in higher fiscal deficits to GDP values, given the larger amounts of resources that governments had to address to moderate the pandemic effects in their own economies.

Countries characterized by macroeconomic instability continued exhibiting large fluctuations in inflation and nominal exchange rate depreciation. However, there are two main differences within this group, worth mentioning. First is the improvement in macroeconomic stability of the Egyptian economy, which MFSI decreased from 8.95% during the period 2005-2019 (not taken into account the financial crisis) to 1.70% in the latter two years. The second is the worsening of macroeconomic stability in Lebanon, which MFSI increase to 134.5%, just surpassed by Venezuela (1881.50%). Such instability was caused by domestic political issues, which affected local inflation and prompted a strong depreciation in the Lebanese Pound (Böwer, 2021).[16] Both economies are not depicted in Figure 2.

C. MACROECONOMIC STABILITY AND ECONOMIC GROWTH IN G-24 COUNTRIES

In this section, we present the analysis of the results obtained from our panel vector autoregressive model of order 1, where we tried to identify the relationship between macroeconomic stability, measured by MFSI indexes, and economic growth in the G-24 group. We analyze a set of three impulse response functions for the all G-24 countries and each region.

[16] Data for the Lebanese Pound in the 2020-2021 period was taken from the parallel market statistics website: https://lirarate.org/. Official sites continue posting as valid the historical exchange rate of the pound fixed at P1,515 per 1 US$.

First, we performed an overall estimation, including all G-24 countries starting with only the MFSI index and economic growth. The impulse response functions are depicted in Figure 17, Appendix IV. An increase in 1 percentage point of the MFSI index reduces in 0.24 percentage point economic growth, and the response is statistically significant in one period. In addition, we re-estimate the model with the inclusion of net foreign direct investment to GDP ratio (fdi) and family remittances income to GDP ratio (rem). The impulse response functions are illustrated in Figure 18, Appendix IV. According to the impulse response functions, an increase in one percentage point of the MFSI index diminishes in 0.21 percentage point economic growth, and the response is statistically significant in at least three periods. Besides, we estimate again the model by adding government effectiveness (gov_effec) and gross domestic savings to GDP ratio (sav). The impulse response functions are shown in Figure 19, Appendix IV. From impulse response functions, an increase in one percentage point of the MFSI index reduces in 0.22 percentage point economic growth, and the response is statistically significant in at least two periods. Therefore, in the three panel VAR estimations, we found statistical evidence of a negative relationship between macroeconomic instability and economic growth, and the results are robust with the addition of economic and institutional variables.

Second, we made an estimation for Region I starting with only the MFSI index and economic growth. The impulse response functions are depicted in Figure 20, Appendix IV. An increase in 1 percentage point of the MFSI index diminishes in 0.08 percentage point economic growth, however; the response is not statistically significant. Besides, we re-estimate de model with the addition of both foreign direct investment to GDP ratio and family remittances income to GDP ratio. The impulse response functions are depicted in Figure 21, Appendix IV. Similarly, with the previous estimation, there is a negative response of economic growth to an increase of the MFSI index but it is not statistically significant. Furthermore, we estimate again the model by adding government effectiveness and gross domestic savings to GDP ratio. The impulse response functions are illustrated in Figure 22, Appendix IV. Likewise, the two previous estimations, the response of economic growth with a positive shock in the MFSI index is negative but not statistically significant. Overall, we do not get empirical evidence on the relationship between macroeconomic instability and economic growth for Region I.

Third, we performed an estimation for Region II starting with only the MFSI index and economic growth. The impulse response functions are shown in Figure 23, Appendix IV. In this case, an increase in MFSI index decrease economic growth in 0.09 percentage points and the response is statistically significant from period 1 to 3. Moreover, we re-estimate the model with the addition of foreign direct investment to GDP ratio and family remittances income to GDP ratio. The impulse response functions are illustrated in Figure 24, Appendix IV. An increase in 1 percentage point decreases economic growth in 0.18 percentage points, and the response is statistically significant from period 1 to period 3. Furthermore, we estimate again the model with the addition of government effectiveness. The impulse response functions are depicted in Figure 25, Appendix IV. Again, and increase in 1 percentage point diminishes economic growth in 0.18 percentages, and the response is statistically significant from period 1 to period 3. Therefore, we found empirical evidence about the negative relationship between macroeconomic instability and economic growth for Region II, the results are robust with the addition of economic and institutional variables.

Fourth, we estimate the relationship between financial stability and economic growth for the region III starting with only the MFSI index and economic growth. The impulse response functions are illustrated in Figure 26, Appendix IV. An increase in 1 percentage point of MFSI index diminishes

economic growth in 0.28 percentage points, and the response is statistically significant in the first period. In addition, we re-estimate the model with the addition of foreign direct investment to GDP ratio and family remittances income to GDP ratio. The impulse response functions are depicted in Figure 27, Appendix IV. An increase in 1 percentage point in the MFSI index diminishes economic growth in 0.24 percentage point, and the response is statistically significant in the first period. Besides, we estimate again the model with the addition of government effectiveness and gross domestic savings to GDP ratio. The impulse response functions are illustrated in Figure 28, Appendix IV. An increase in 1 percentage point of the MFSI index reduces economic growth in 0.22 percentage point, and the response is statistically significant in the first period. Consequently, we found empirical evidence of the negative relationship between macroeconomic instability and economic growth for Region III, and the results are robust with the inclusion of economic and institutional variables.

Overall, we found empirical evidence of a negative and significant relationship between economic growth and macroeconomic instability for either the G-24 countries or Region II and III with the estimation of a panel vector autoregressive model. In the case of Region I, the relationship is negative but the response is not statistically significant.

V. CONCLUSIONS

We built a Monetary and Fiscal Stability Index (MFSI) based on data for advanced economies and for G-24 members, and used it to establish a quantitative definition for macroeconomic stability. The MFSI is a volatility measure, which takes into account excess deviations of inflation, nominal exchange rate depreciation, and fiscal deficits to GDP from stability limits. Such limits are equivalent to two standard deviations above the average value of such variables during non-crisis years, for a selected group of eight advanced economies, which are the main trading partners of G-24 countries (US, UK, Euro Zone, China, Japan, Australia, New Zealand, and Canada).

Macroeconomic stability is defined as a maximum of 1% annual change in the MFSI. During the period 2005-2021 just eight G-24 economies could be defined as macroeconomically stable under this measure: China, Peru, Gabon, Philippines, Ivory Coast, Morocco, Ecuador, Guatemala and Mexico. The remaining economies registered either, moderate episodes of instability or a continuous and in some cases growing instability. Iran, Argentina and Venezuela were the more unstable economies in the sample (Lebanon became part of this group in the past two years), although the sources of such instability is due to local socio-political factors, which have affected their domestic economies. The COVID-19 outbreak has shaken macroeconomic stability in most G-24 economies since fiscal deficits to GDP ratios have widened to address resources to attend the pandemic. Nevertheless, it is expected to be just a temporary phenomenon.

Finally, we tested the effect of MFSI on economic growth, through a panel vector autoregressive estimation with both economic and institutional variables. We found that an increase on the MFSI has a significant and robust adverse effect on economic growth for either the G-24 countries, and Region II and III. However, in the case of Region I, there are also a negative relationship between macroeconomic instability and economic growth but the response of the latter to a shock of the former is not statistically significant.

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APPENDIX I: G-24 MEMBERS LISTED BY REGION

Region I: Africa (11 countries)	Region II: Latin America and the Caribbean (10 countries)	Region III: Asia (8 countries)
Algeria (ALG)	Argentina (ARG)	China (CHI)
Côte d'Ivoire (CDI)	Brazil (BRA)	India (IND)
DR Congo (DRC)	Colombia (COL)	Iran (IRA)
Egypt (EGY)	Ecuador (ECU)	Lebanon (LEB)
Ethiopia (ETI)	Guatemala (GUA)	Pakistan (PAK)
Gabon (GAB)	Haiti (HAI)	Philippines (PIL)
Ghana (GAN)	Mexico (MEX)	Sri Lanka (SLK)
Kenya (KEN)	Peru (PER)	Syria (SYR)
Morocco (MOR)	Trinidad and Tobago (TYT)	
Nigeria (NIG)	Venezuela, Bolivarian Republic of (VEN)	
South Africa (SAF)		

Observers of the G-24 (4 countries)

i) Angola
ii) Indonesia
iii) Saudi Arabia
iv) United Arab Emirates

Selected Industrialized Countries (7 countries)

i) Australia (AUS)
ii) Canada (CAN)
iii) China (CHI)
iv) Japan (JAP)
v) New Zealand (NWZ)
vi) United Kingdom (UKD)
vii) United States of America (USA)

APPENDIX II: DATA SOURCES

In this appendix, wedescribe the sources of data to build the MFSI, as well as the sources of data for economic and institutional variables employed in the panel data estimations. Table 1 presents the

sources of data of economic variables for most countries with the exception of Algeria, Haiti and Venezuela.Sources of data for these three countries are described in Table 2.Sources of data for institutional variables are depicted in Table 3.

Variable	Description	Source
Economic Growth	year-to-year change in GDP, %	Moody's Statistical Handbooks (2005, 2009, and 2019), World Economic Outlook, IMF October 2021.
Domestic Inflation Rate	year-to-year variation in the Consumer Price Index, %	Moody's Statistical Handbooks (2005, 2009, and 2019), World Economic Outlook, IMF October 2021.
Nominal Exchange Rate Depreciation	%	Moody's Statistical Handbooks (2005, 2009, and 2019), International Financial Statistics (IFS), IMF.
Fiscal Balance share of GDP	%	Moody's Statistical Handbooks (2005, 2009, and 2019), World Economic Outlook, IMF October 2021.

Table 1. Sources of data for G-24 countries (it excludes Algeria, Haiti and Venezuela)

Variable	Description	Source
Economic Growth	year-to-year change in GDP, %	World Economic Outlook, October 2021, IMF
Domestic Inflation Rate	year-to-year variation in the Consumer Price Index, %	World Economic Outlook, October 2021, IMF
Nominal Exchange Rate Depreciation	%	International Financial Statistics (IFS), IMF
Fiscal Balance share of GDP	%	World Economic Outlook, October 2021, IMF

Table 2. Sources of data for Algeria, Haiti and Venezuela

Variable	Description	Source
Government Effectiveness	Percentile Rank	Worldwide Governance Indicators, World Bank, 2021
Regulatory Quality	Percentile Rank	Worldwide Governance Indicators, World Bank, 2021
Rule of Law	Percentile Rank	Worldwide Governance Indicators, World Bank, 2021
Voice and Accountability	Percentile Rank	Worldwide Governance Indicators, World Bank, 2021
Political Stability / Terrorism	Percentile Rank	Worldwide Governance Indicators, World Bank, 2021

Table 3. Sources of data for all countries.

APENDIX III: COUNTRY DATA

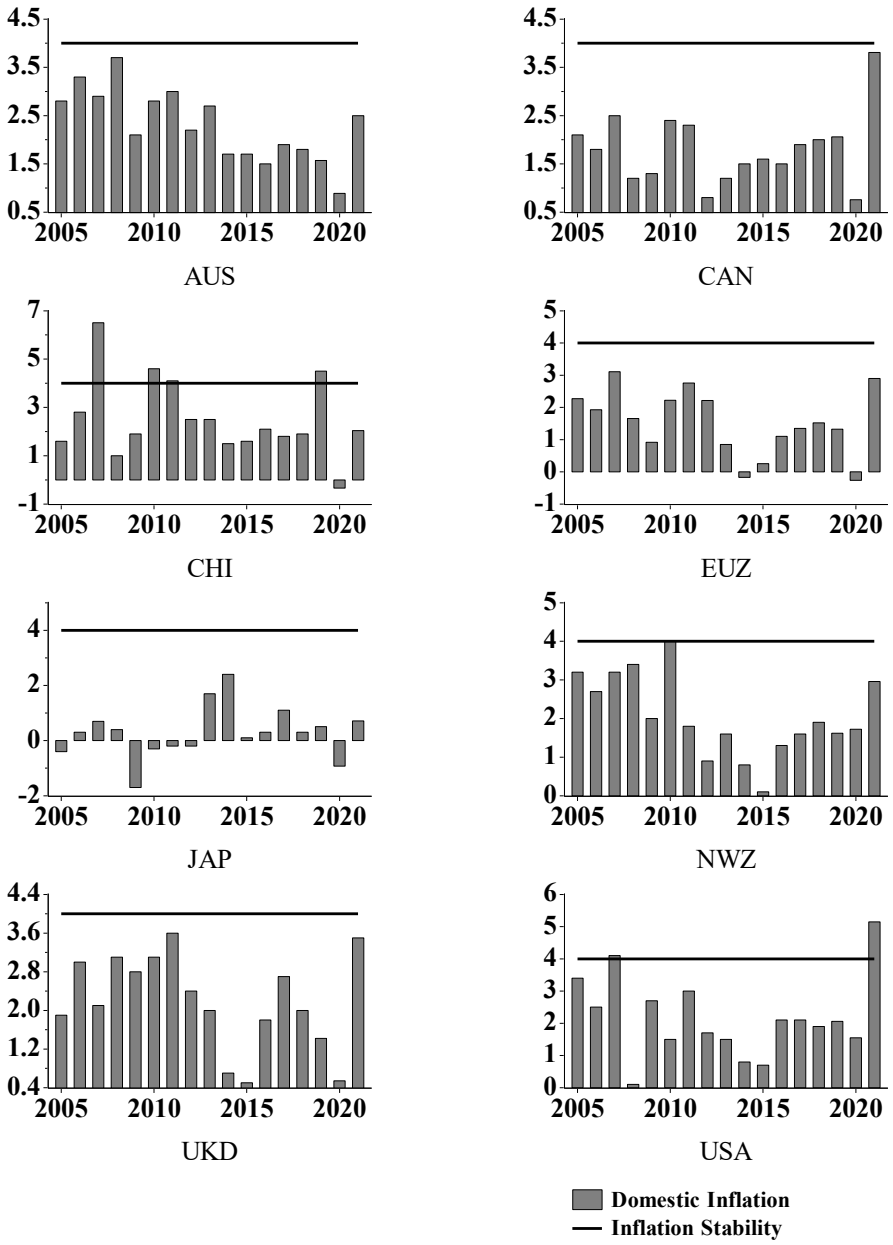


Figure 1. Advanced Economies: Inflation Stability 2005-2021

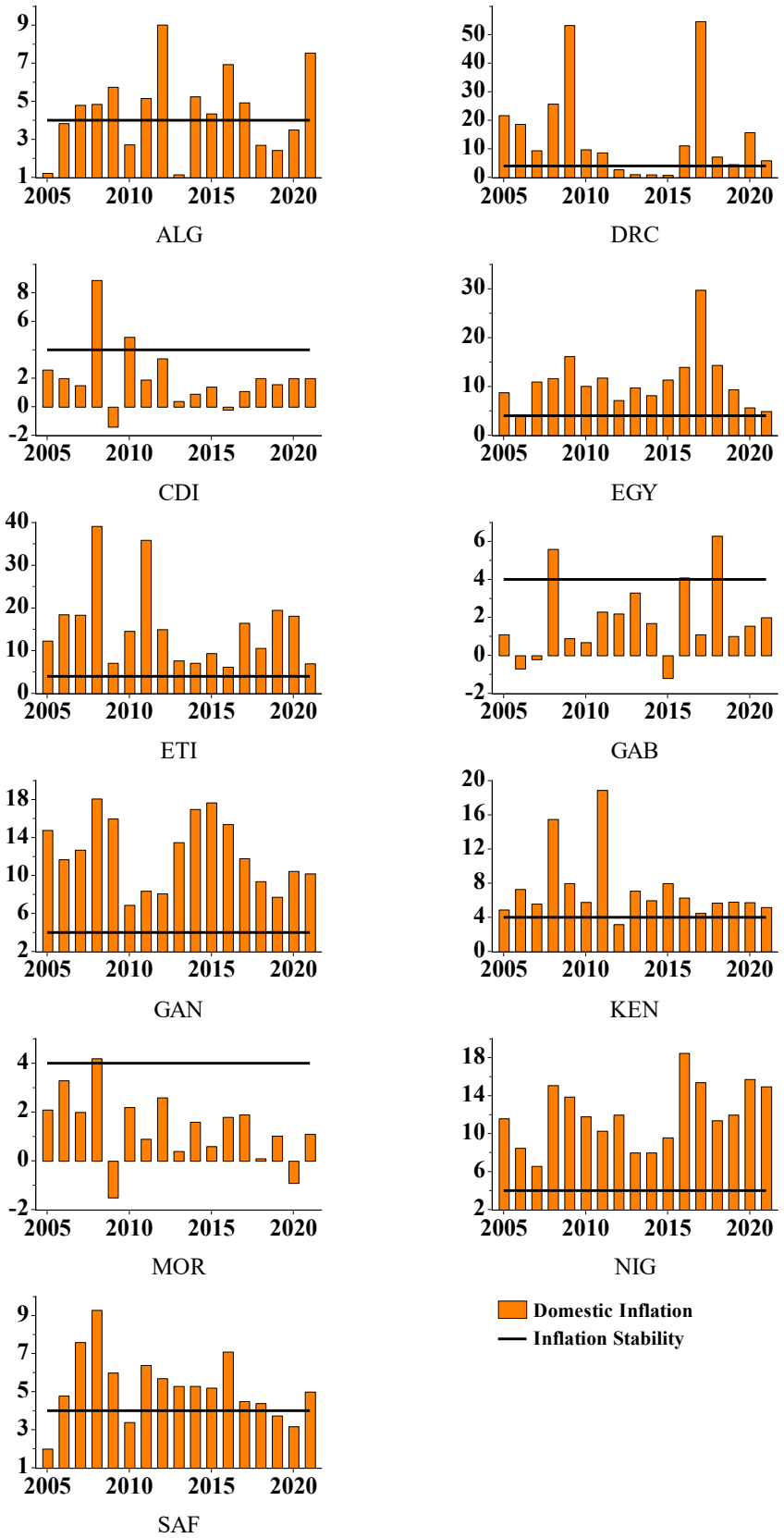


Figure 2. G-24 Region I (African Countries): Inflation Stability 2005-2021

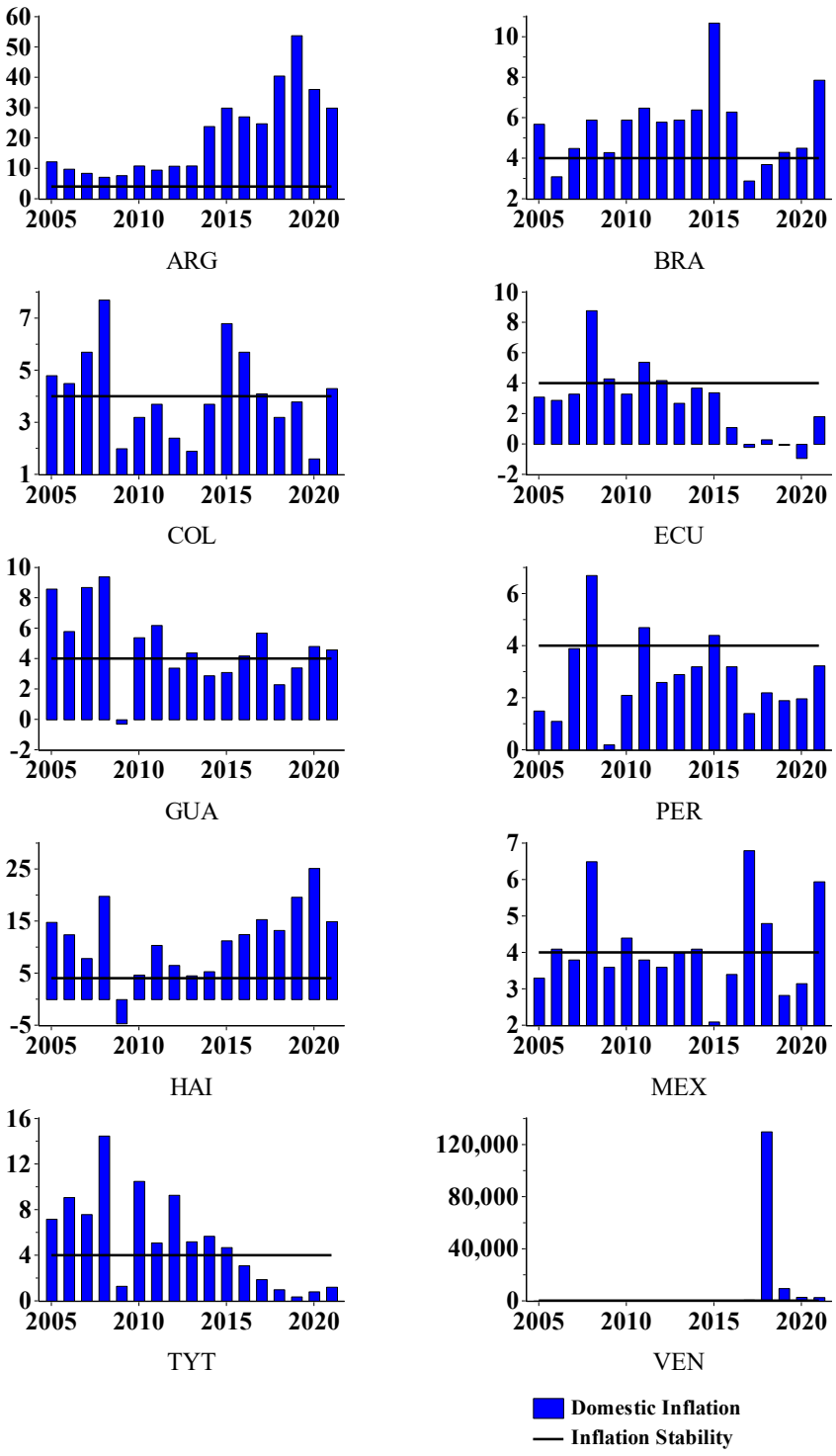


Figure 3. G-24 Region II (Latin American Countries): Inflation Stability 2005-2021

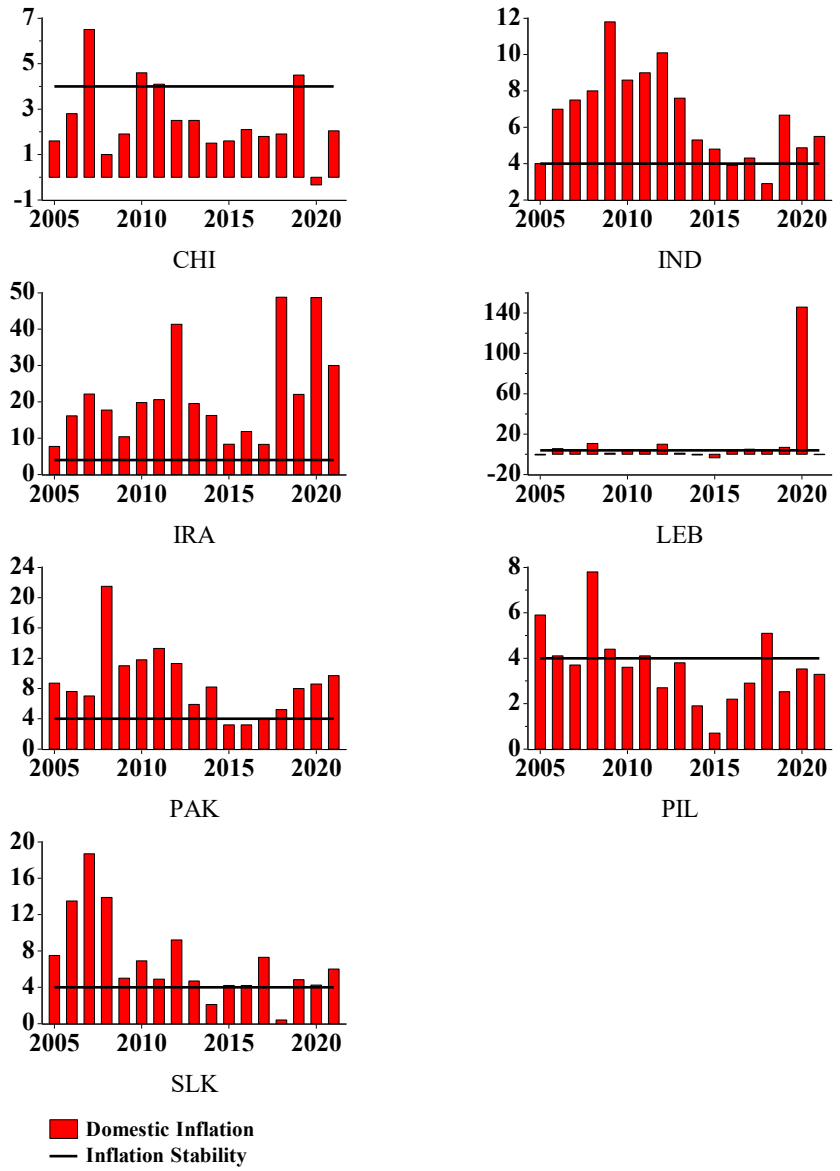


Figure 4. G-24 Region III (Asian Countries): Inflation Stability 2005-2021

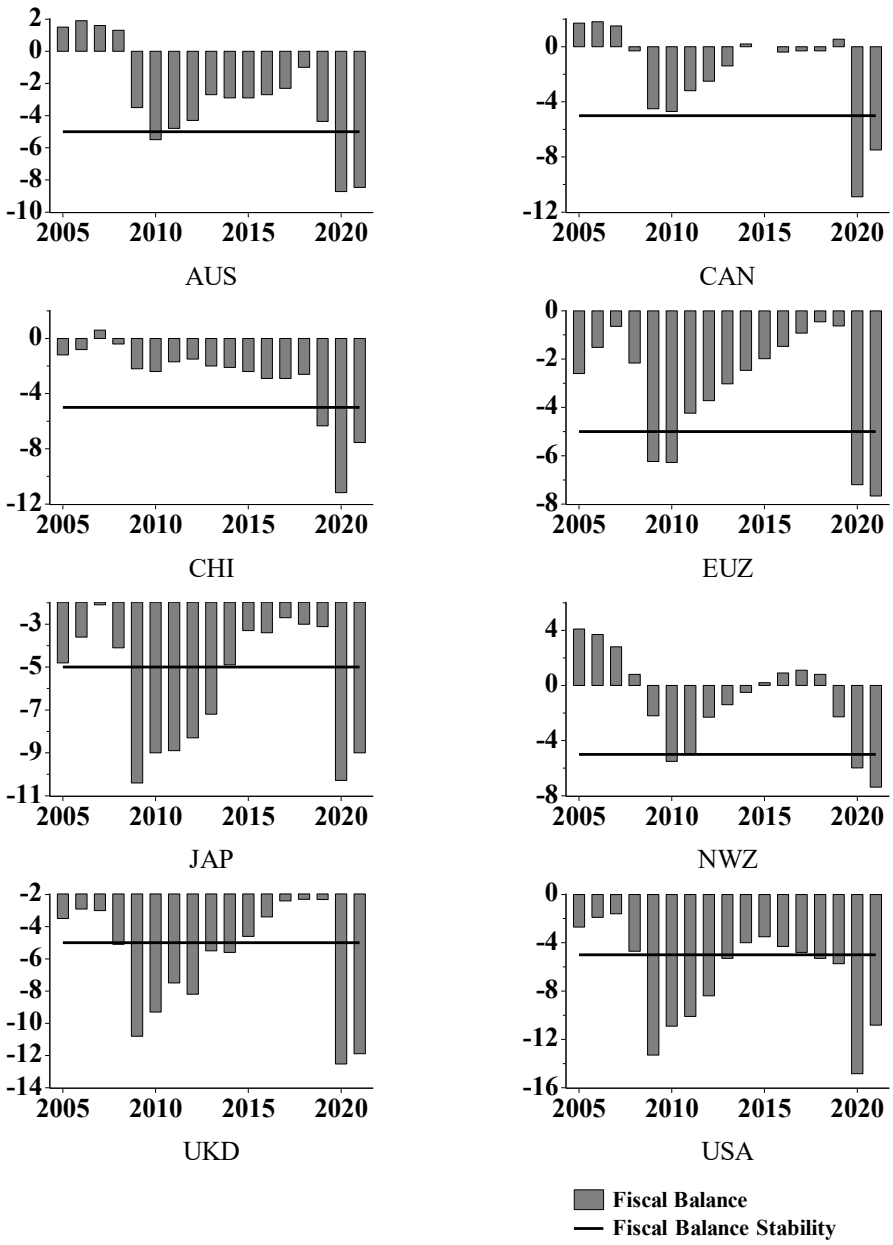


Figure 5. Advanced Economies: Fiscal Balance Stability 2005-2021

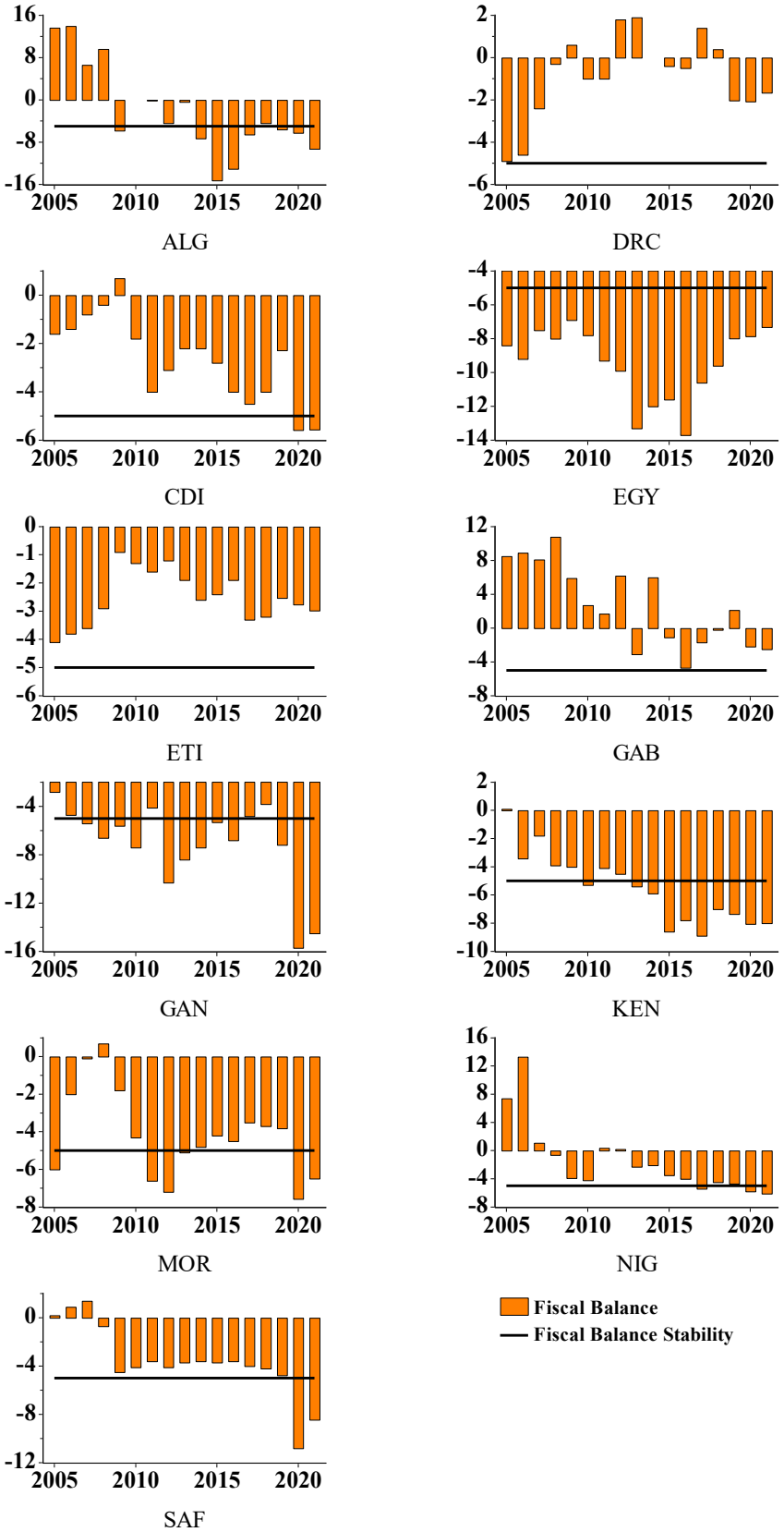


Figure 6. G-24 Region I (African Countries): Fiscal Balance Stability 2005-2021

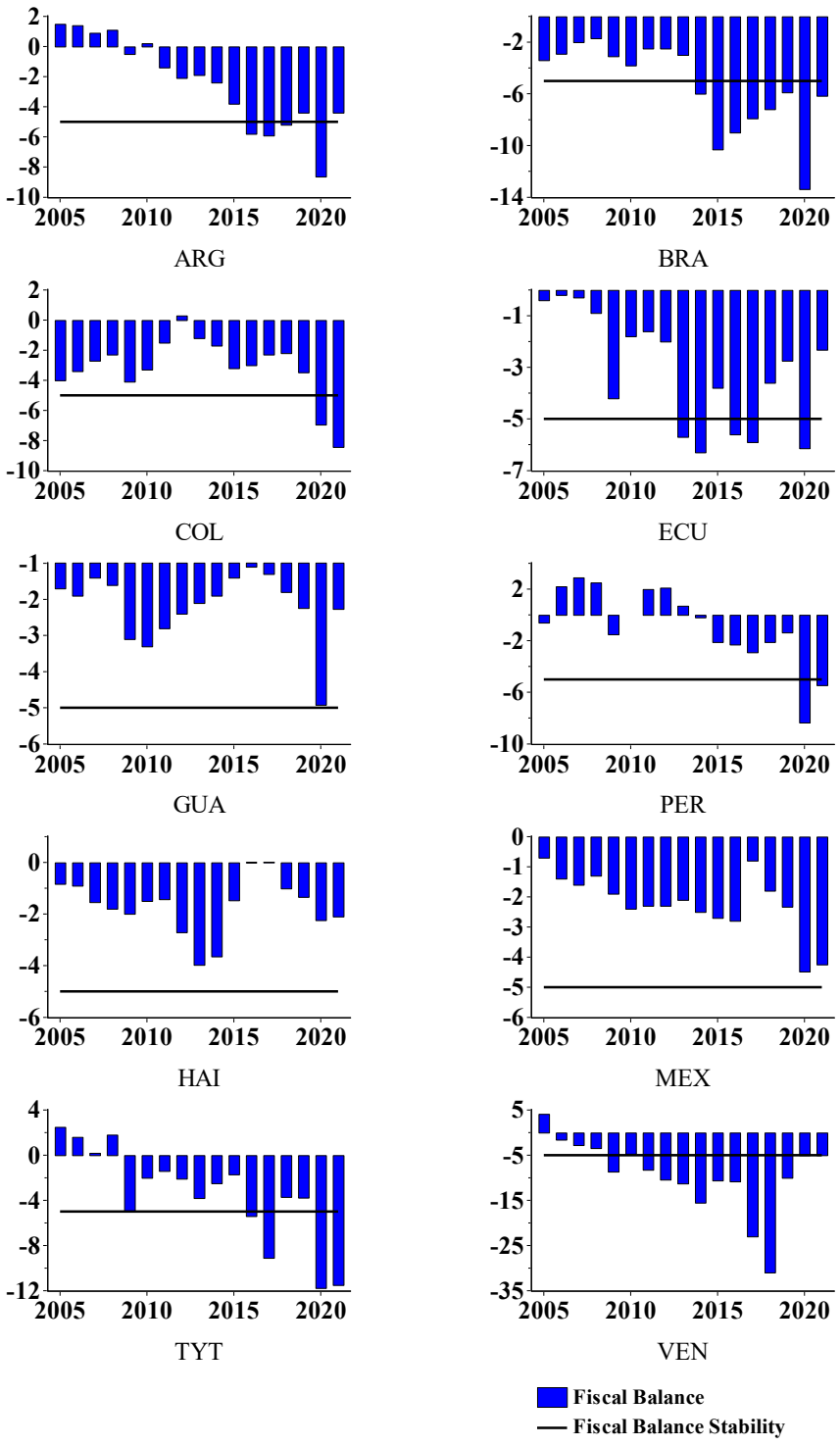


Figure 7. G-24 Region II (Latin American Countries): Fiscal Balance Stability 2005-2021

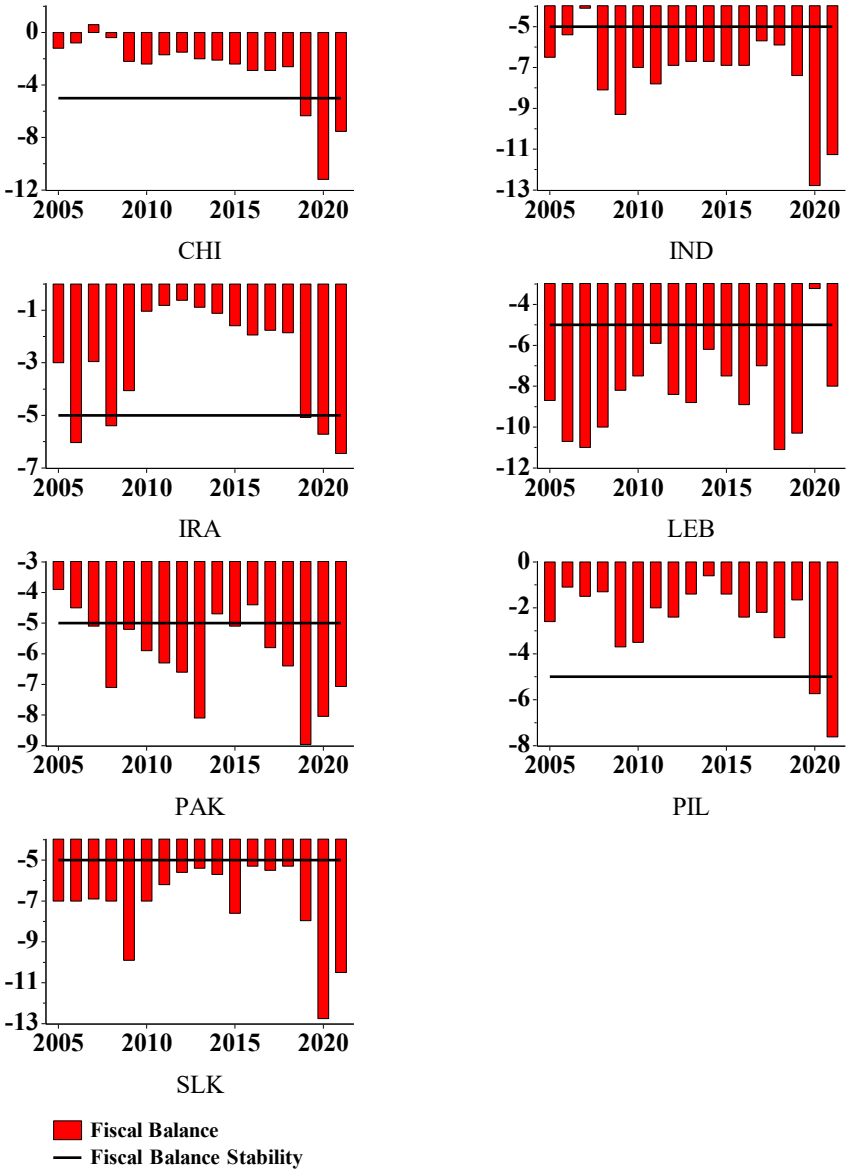


Figure 8. G-24 Region III (Asian Countries): Fiscal Balance Stability 2005-2021

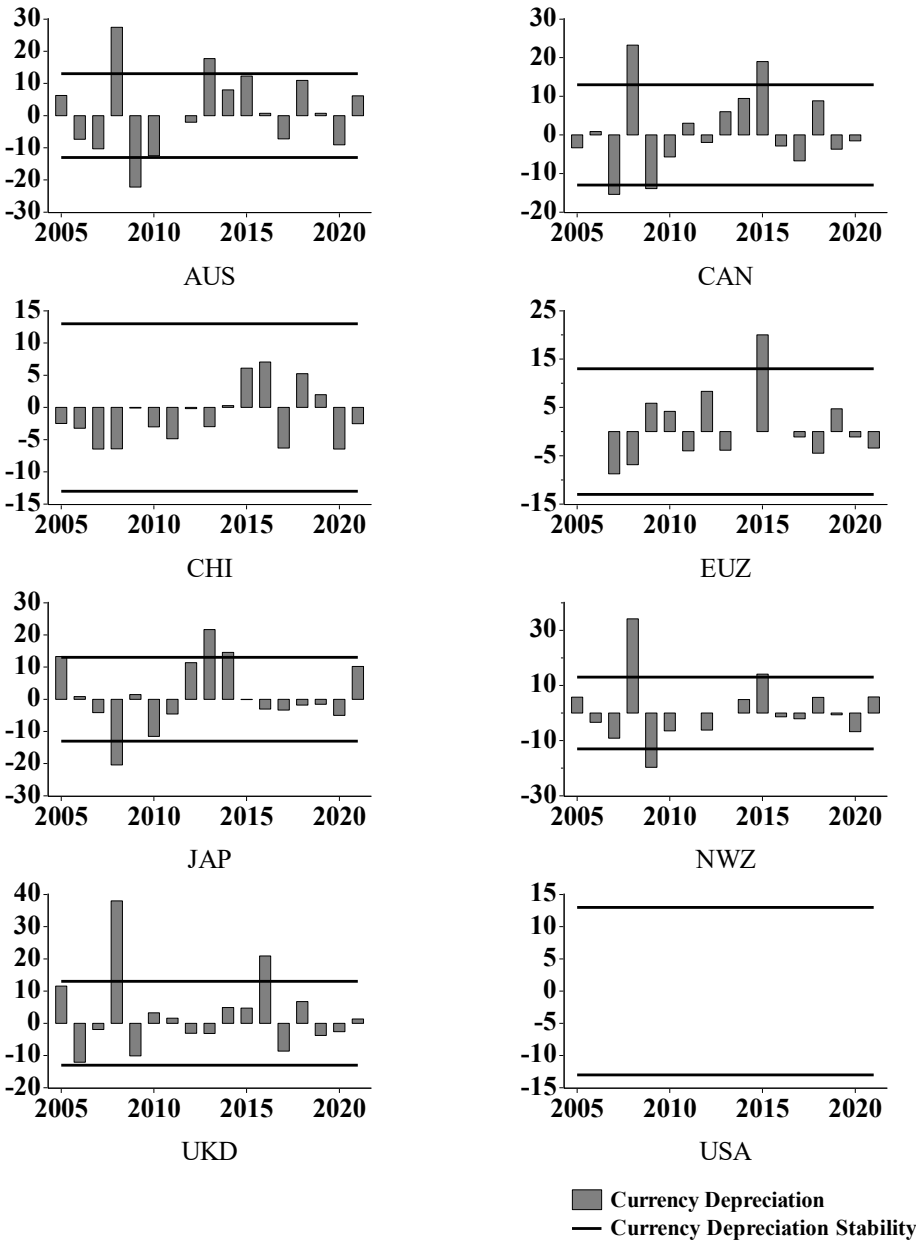


Figure 9. Advanced Economies: Currency Depreciation Stability 2005-2021

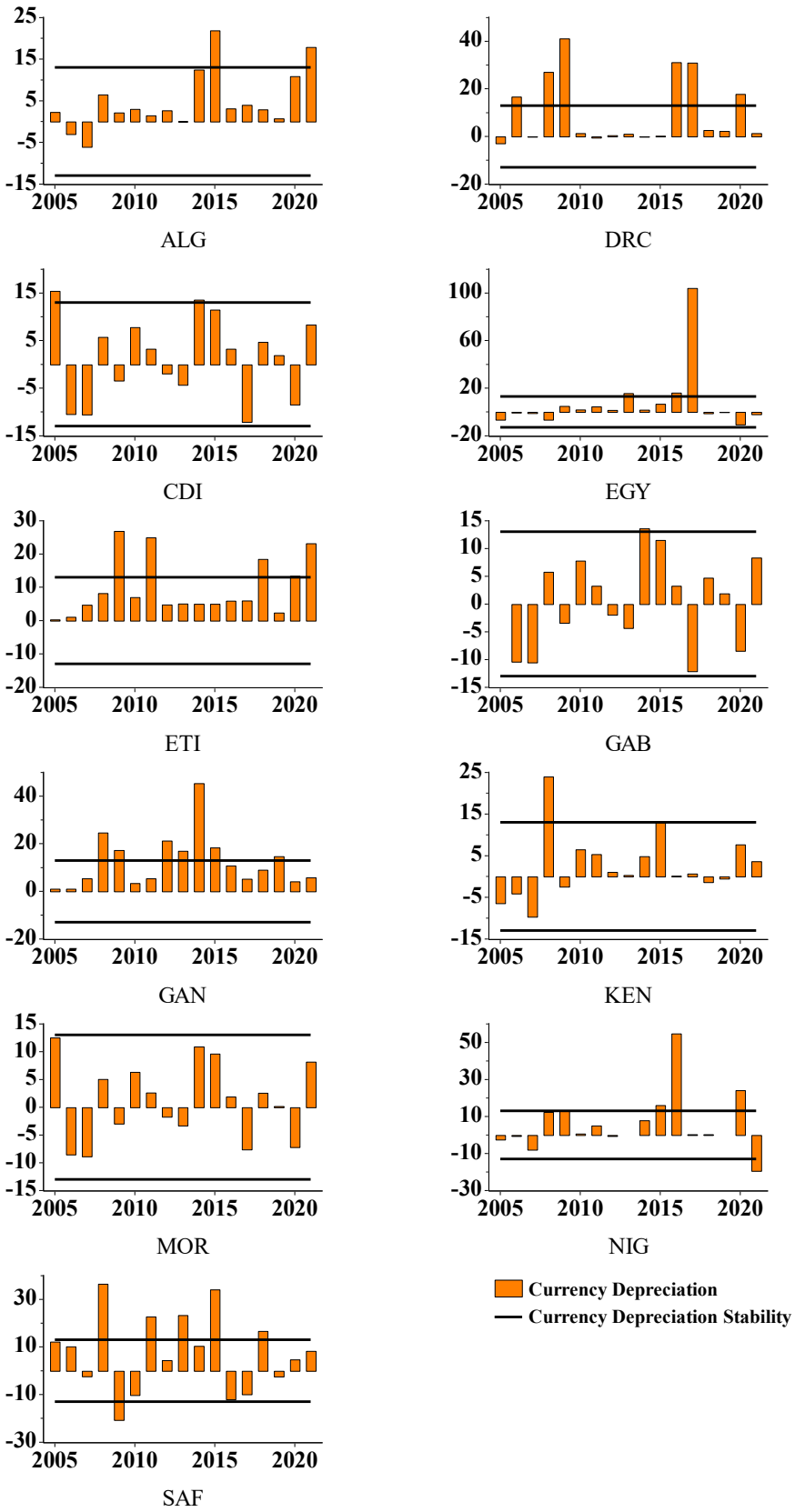


Figure 10. G-24 Region I (African Countries): Currency Depreciation Stability 2005-2021

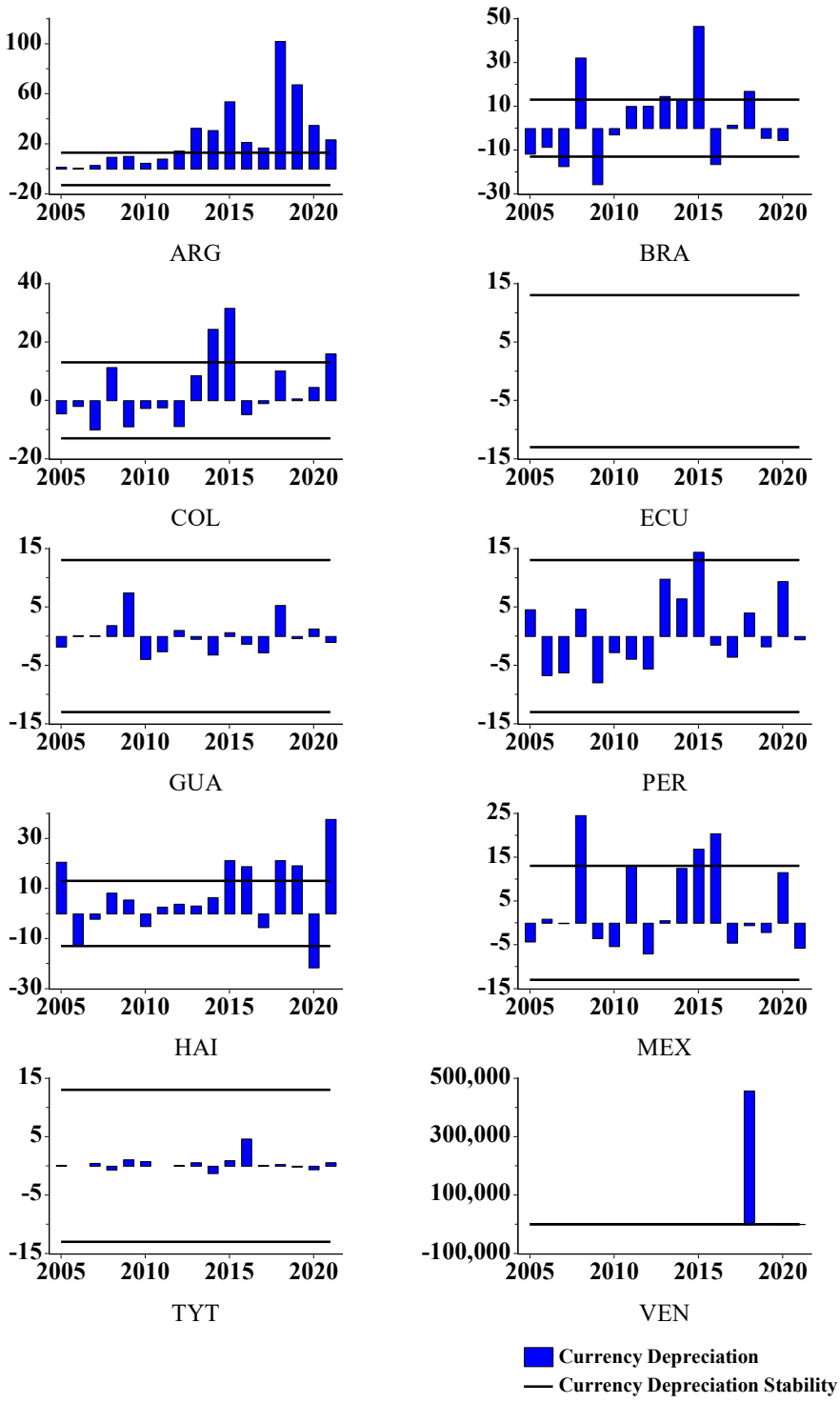


Figure 11. G-24 Region II (Latin American Countries): Currency Depreciation Stability 2005-2021

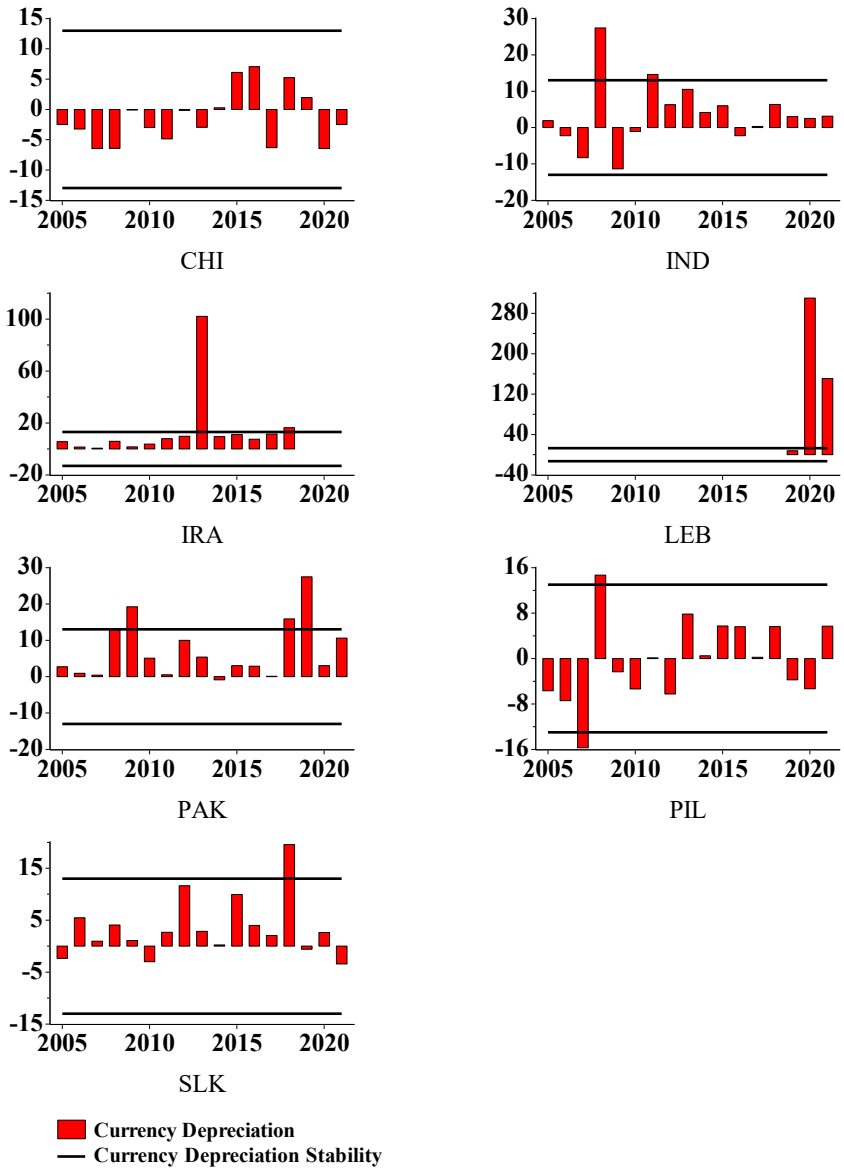


Figure 12. G-24 Region III (Asian Countries): Currency Depreciation Stability 2005-2021

APENDIX IV: MONETARY AND FISCAL STABILITY INDEXES

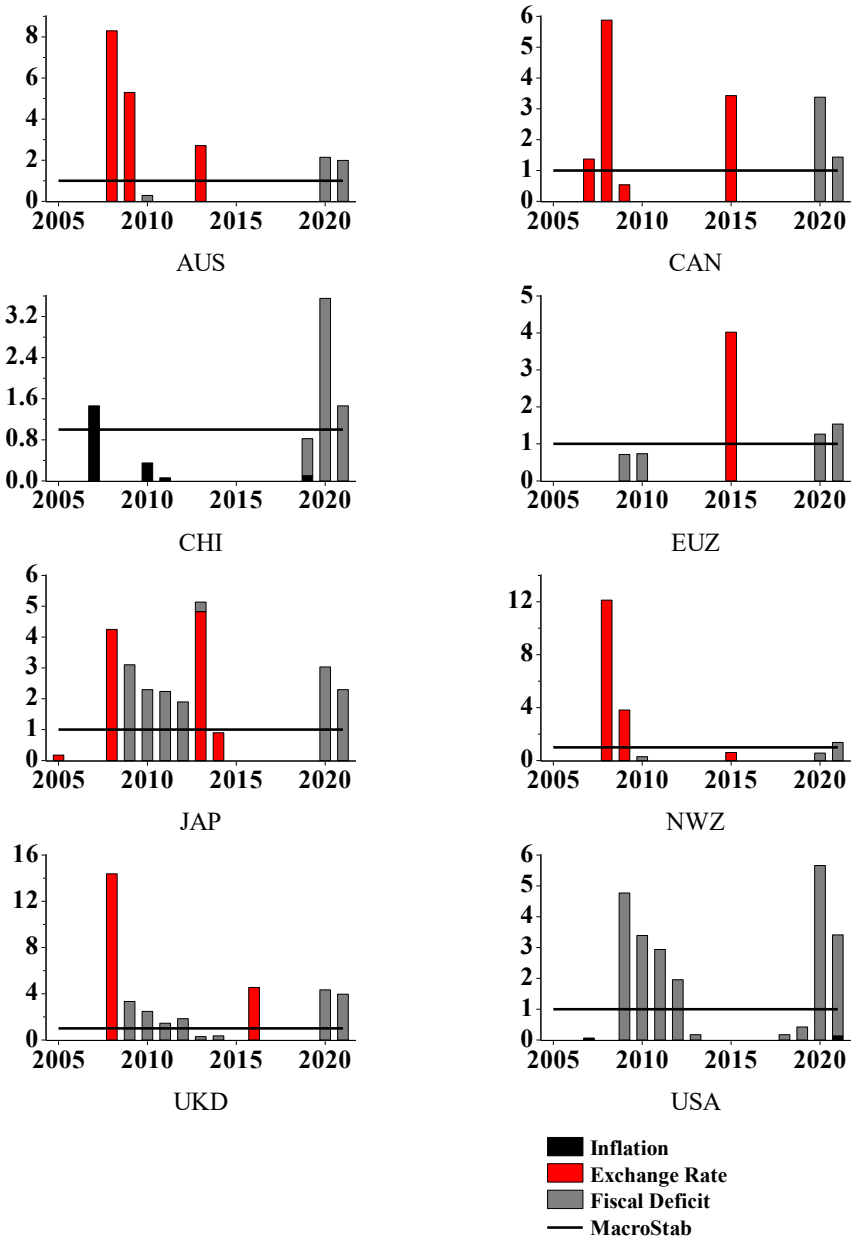


Figure 13. Advanced Economies: Monetary and Fiscal Stability Index, MFSI (%) 2005-2021

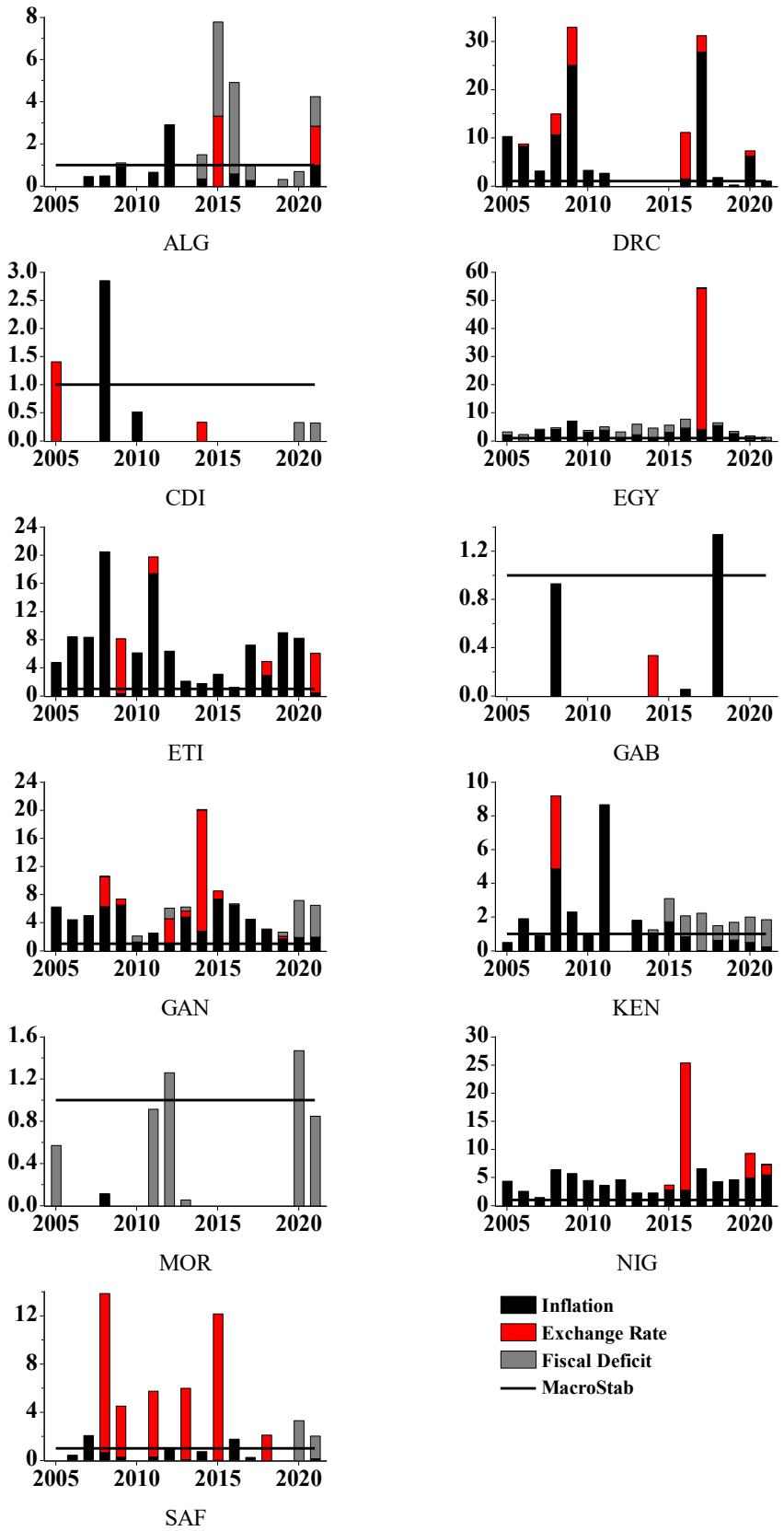


Figure 14. G-24 Region I (African Countries): Monetary and Fiscal Stability Index, MFSI (%) 2005-2021

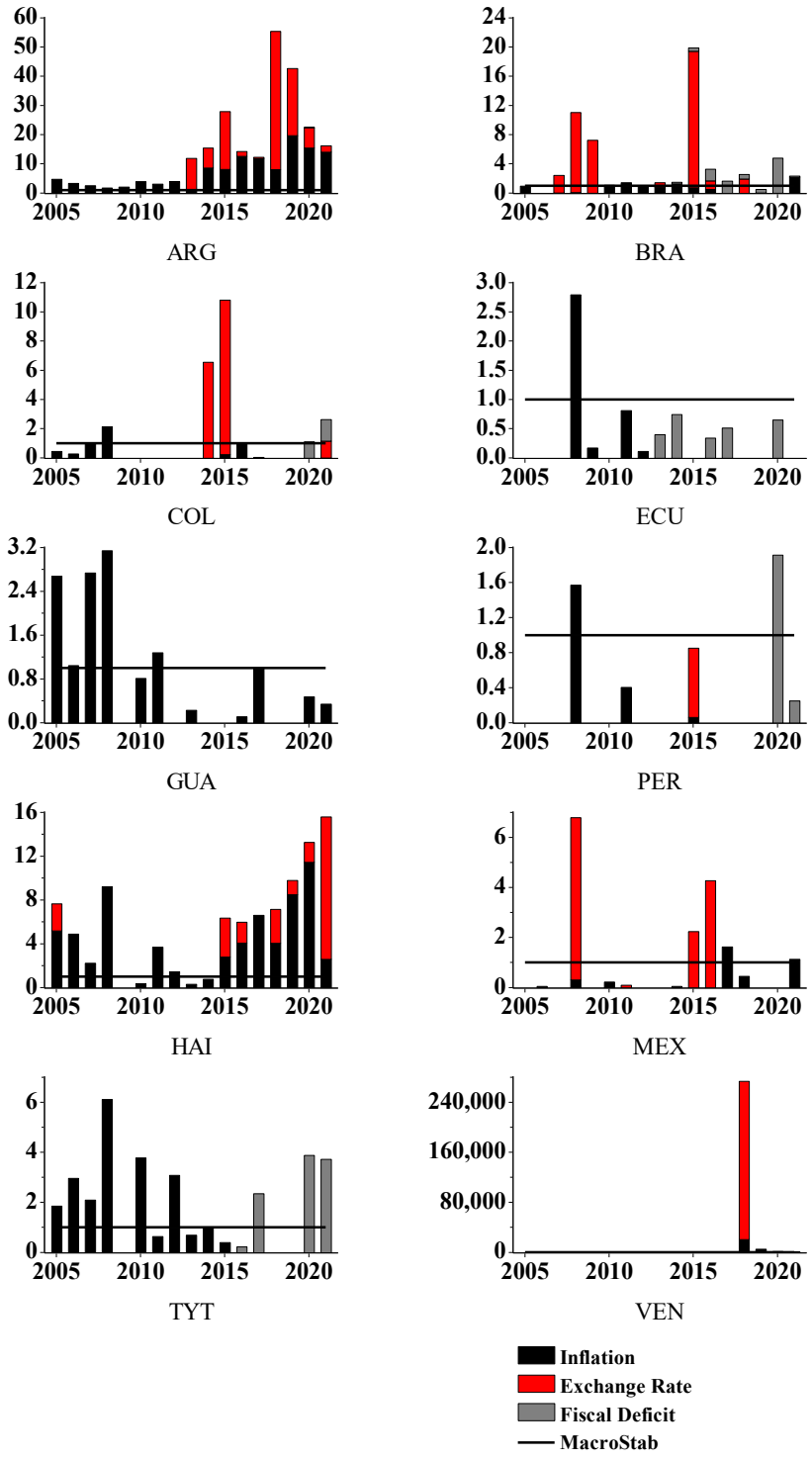


Figure 15. G-24 Region II (Latin American Countries): Monetary and Fiscal Stability Index, MFSI (%) 2005-2021

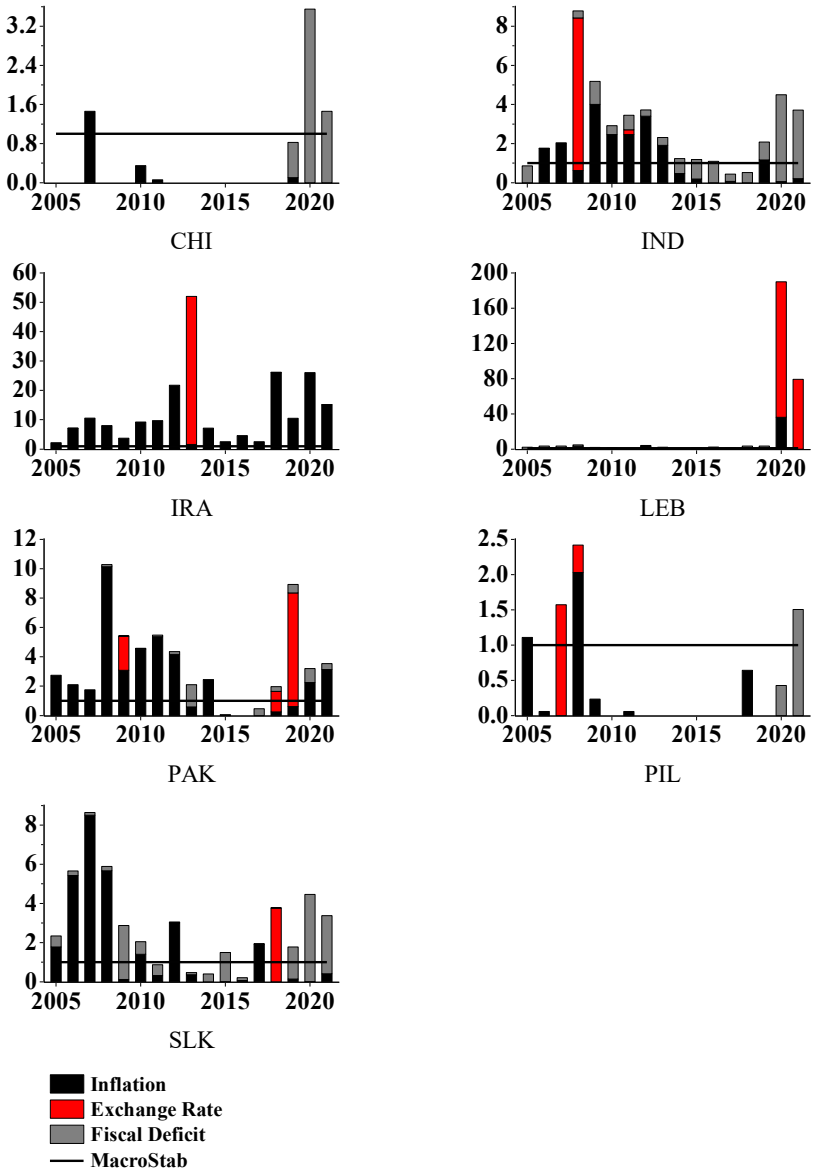
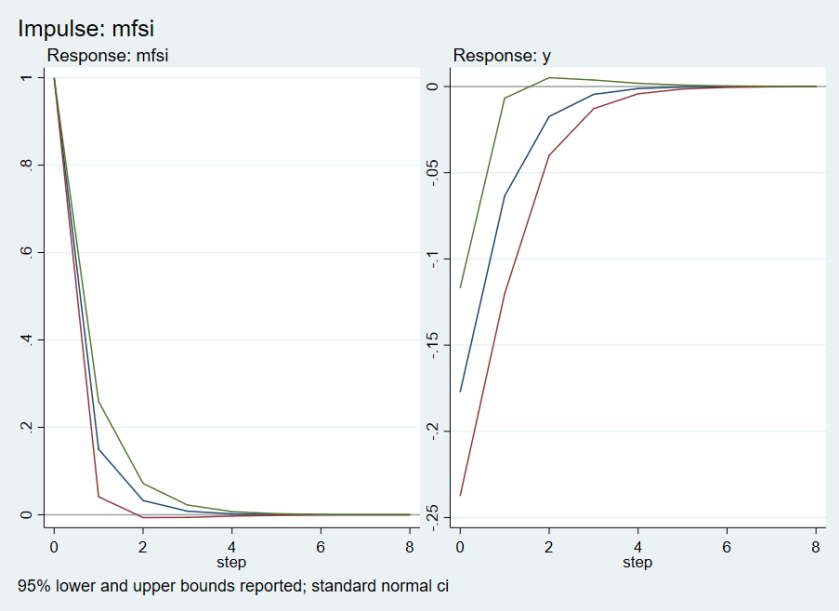


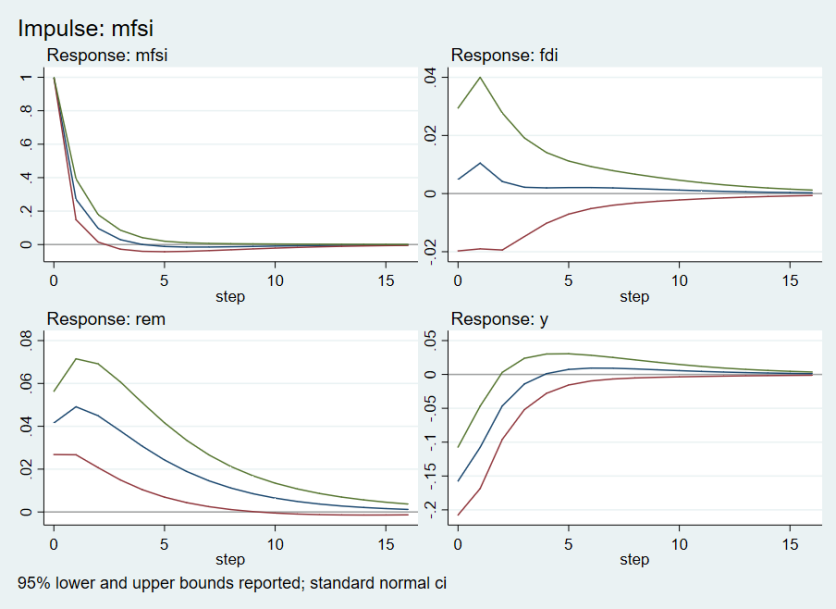
Figure 16. G-24 Region III (Asian Countries): Monetary and Fiscal Stability Index, MFSI (%) 2005-2021

APPENDIX IV: PANEL VAR ESTIMATION RESULTS



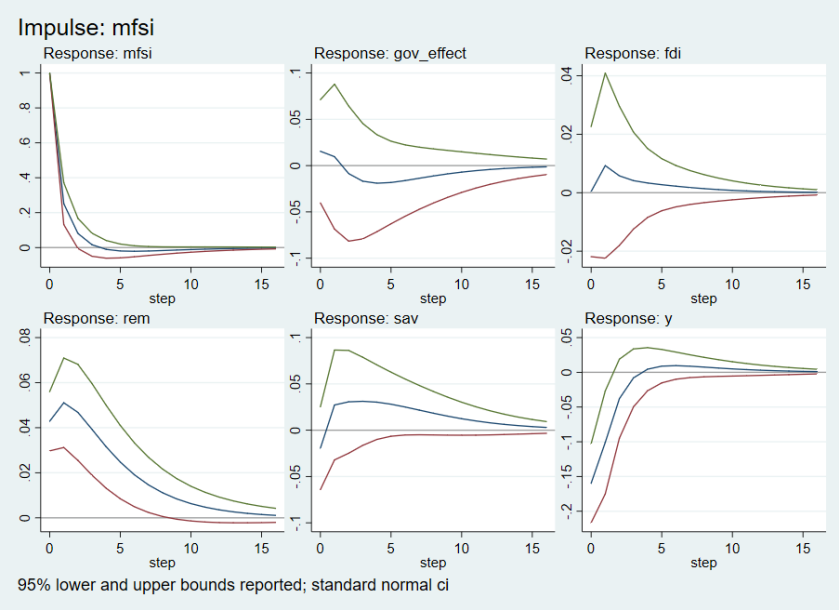
Source: Own Elaboration

Figure17: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for G-24 countries



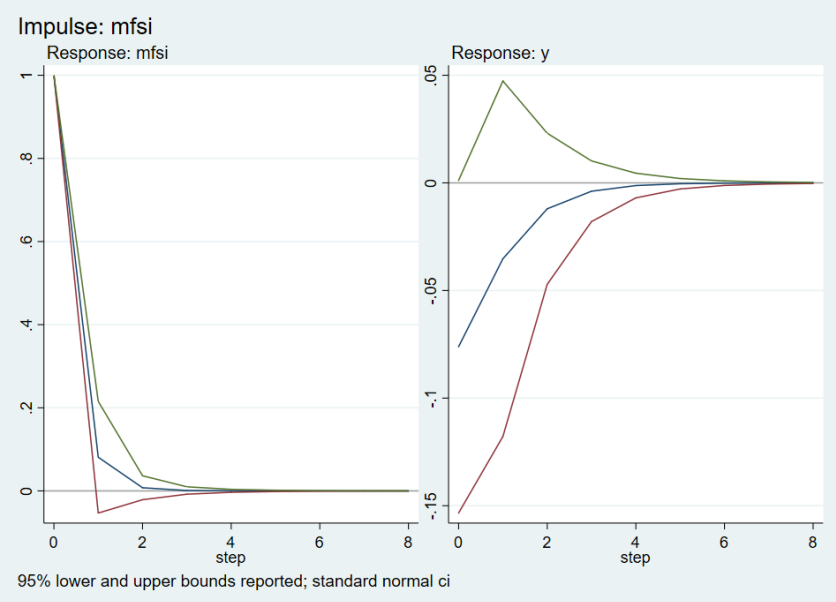
Source: Own Elaboration

Figure 18: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for G-24 countries with economic variables.



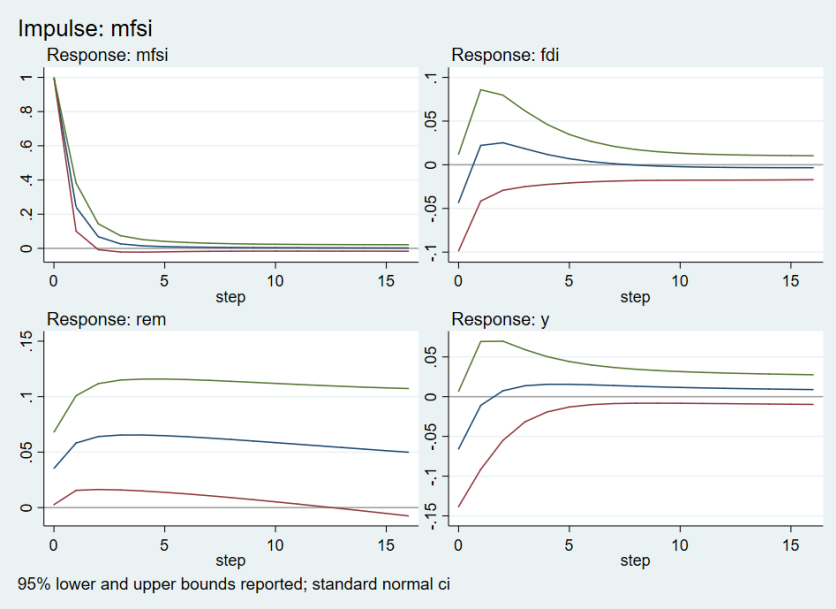
Source: Own Elaboration

Figure 19: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for G-24 countries with economic and institutional variables.



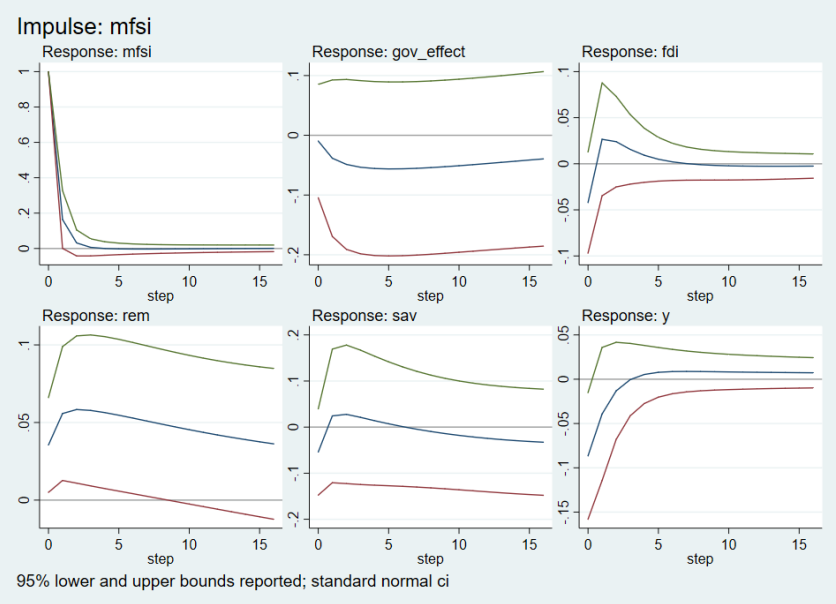
Source: Own Elaboration

Figure 20: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region I.



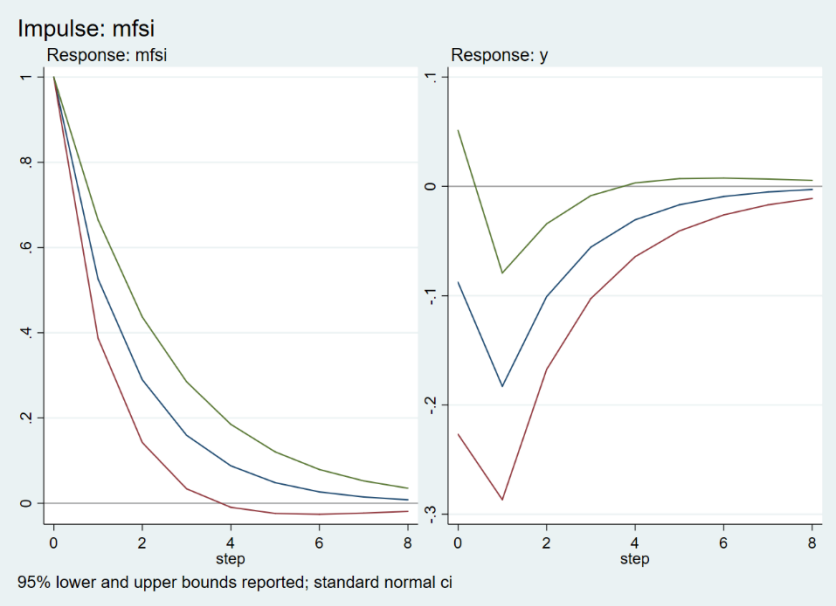
Source: Own Elaboration

Figure 21: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region I with economic variables.



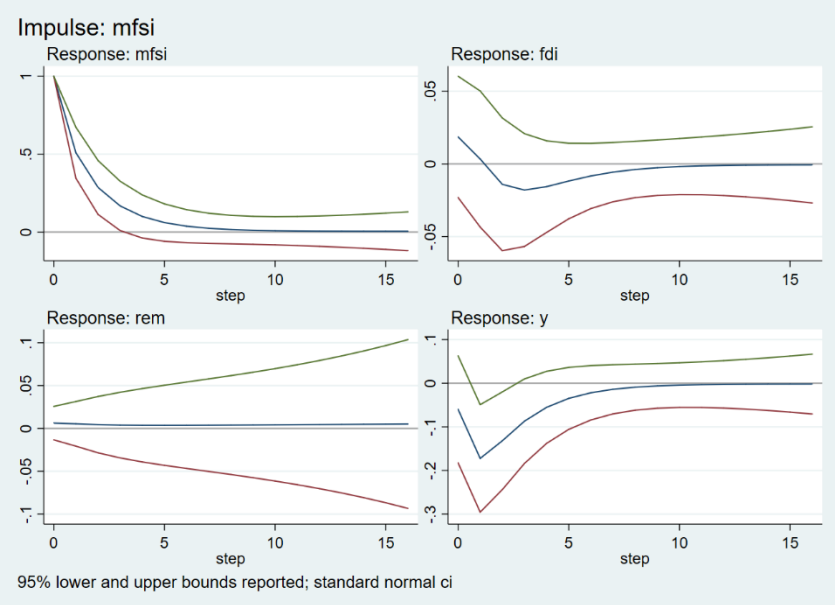
Source: Own Elaboration

Figure 22: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region I with economic and institutional variables.



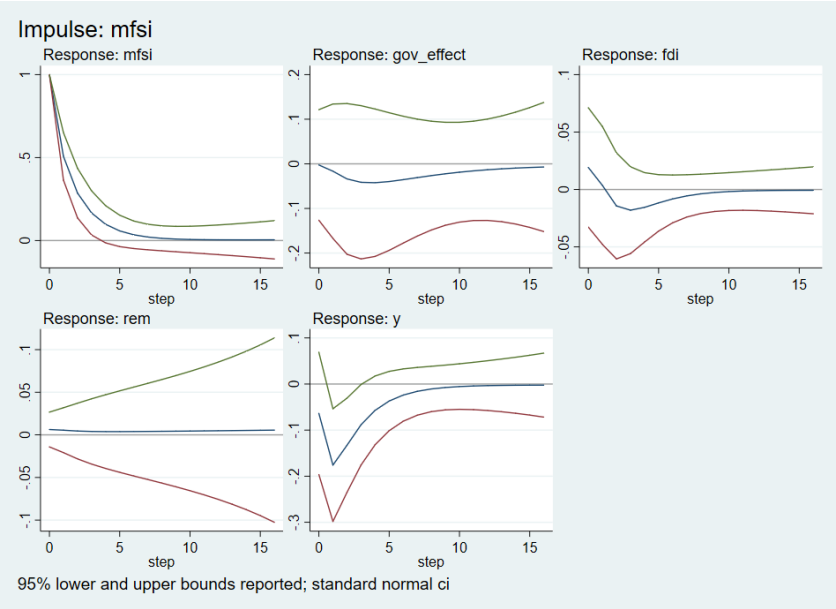
Source: Own Elaboration

Figure 23: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region II



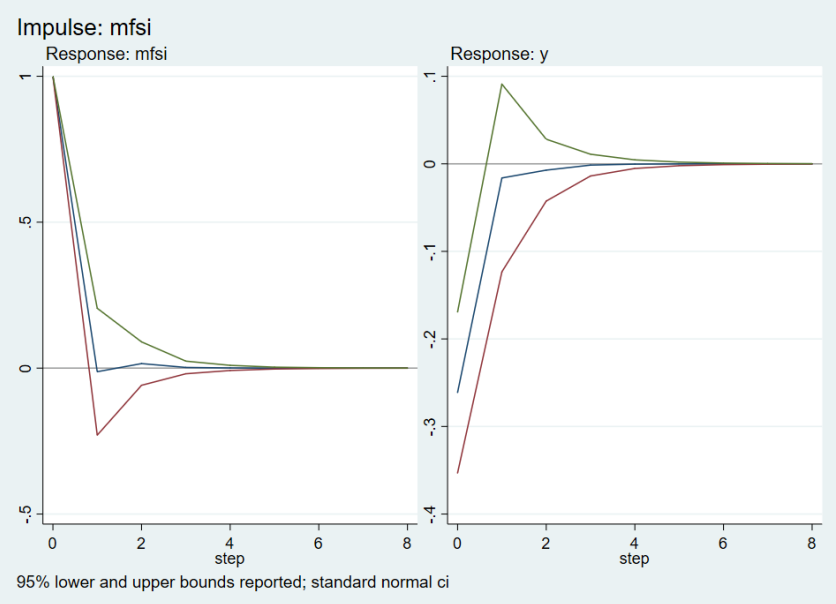
Source: Own Elaboration

Figure 24: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region II with economic variables.



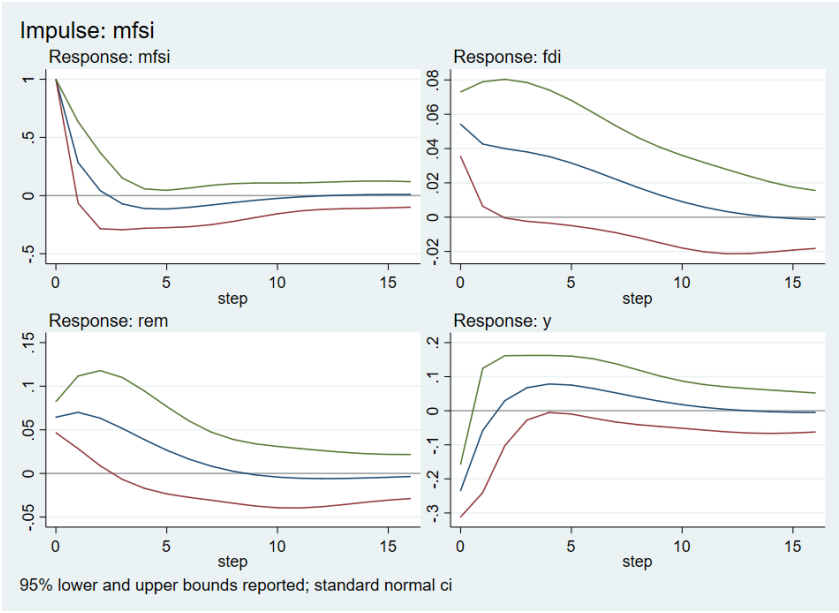
Source: Own Elaboration

Figure 25: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region II with economic and institutional variables.



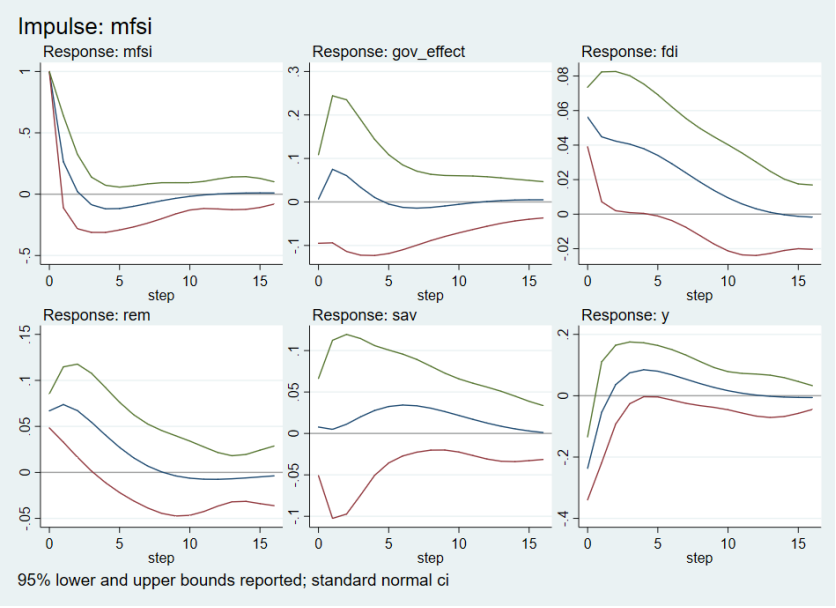
Source: Own Elaboration

Figure 26: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region III.



Source: Own Elaboration

Figure 27: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region III with economic variables.



Source: Own Elaboration

Figure 28: Panel VAR estimation on the Effect of MFSI Indexes on Economic Growth for Region III with economic and institutional variables.