Does International Monetary Fund Favor Certain Countries During the Fiscal Forecasting – Evidence of the Institutional Biases?

Rybacki, Jakub

SGH Warsaw School of Economics - Collegium of Economic Analysis

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Jakub Rybacki[1]

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Abstract

The process of forecasting in international institutions, such as the International Monetary Fund (IMF), is unlikely to be completely independent from the fund's policy recommendations and political agenda. Therefore, we aim to discover if institutional characteristics of a country can influence their forecasts errors. We analyzed the squared errors of the IMF's government net lending and borrowing forecasts that were presented in the World Economic Outlook report in the years 2011 to 2018. Based on a panel of 143 countries; which includes both advanced, emerging, and developing economies; we attempt to answer whether a fund's analysis was positively biased towards some characteristics of debtors. IMF analysts were overly pessimistic in the cases of low-income and middle-income economies. Our fixed effects panel models show that a better assessment of institutional quality has not led to improvement of economic predictability. On the contrary, forecasts' errors were bigger for countries with more established regulations. There is no consistent evidence that suggests that IMF is more favorable to democratic countries than to autocracies.

Keywords: Fiscal forecasts, The International Monetary Fund, Political influence

JEL classification codes: H62, H68

[1] SGH Warsaw School of Economics - Collegium of Economic Analysis, e-mail: jr70663@sgh.waw.pl ORCID ID: 0000-0001-7248-9536

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1. Introduction

The aim of this paper is to analyze the accuracy of fiscal forecasts, which are provided by the International Monetary Fund (IMF) in the World Economic Outlook (WEO) series in the years of 2011 to 2018. First, we attempt to answer whether the IMF's analysts were biased in the assessment of the countries, and whether this bias depends on country income. Second, we attempt to answer whether public finances in countries with greater institutional quality are more predictable. The assessment is based on the Heritage Foundation's Economic Freedom indices and the World Bank's World Governance Indicators. Last, we wish to highlight whether the IMF is preferring democratic governments over autocracies.

The IMF forecasts play an important role in the assessment of economic policy. In the case of some low-income countries, the IMF's reports are the sole reliable source of information about their economic conditions. Therefore, they directly shape the development policy of the United Nations and the governments of advanced economies. They also affect the cost of debt in the emerging markets. Consequently, the knowledge about the IMF's forecast performance – as well as potential defects – may assist in the improvement of policymaking.

Our research confirms a disparity between errors for low-income and middle-income economies, when compared to a group of advanced countries. The expected forecasts errors for this group of countries can be greater by above two percentage points. The bias is directional, and yields overly negative perceptions of the poorest countries' economic outlook.

We also find that the IMF analysts make larger errors in the case of forecasting short-term performance of heavily indebted countries with either middle or high-income economies. The analysts are frequently too optimistic about the current performances. This evidence may be related to motivational biases; analysts may be willing to avoid a situation in which their forecast triggers financial markets to move based on speculations of public finances instability. However, the longer horizon forecasts for such countries seems to be rather conservative.

Our panel models show that a solid assessment of institutional quality does not lead to a better forecasting of public finances. On the contrary, forecast errors are greater in countries with stable institutions. On the other hand, we do not see evidence that suggests that the IMF favors certain types of governments—compared to autocracies and anocracies.

This paper is structured as follows: section 2 provides an insight into research papers, which summarizes an analysis of fiscal forecast errors. Section 3 describes content of the IMF WEO

report and summarizes forecast errors made by the IMF's analysts. Section 4 presents the institutional indices used during the estimation. Section 5 describes applied methodology. Section 6 discuss the model's output. Finally, section 7 concludes the paper.

2. Literature review

The research on forecast accuracy of the IMF is relatively common in the literature. Multiple papers attempt to verify whether the Fund's estimates are statistically effective and unbiased (An et al., 2018; Artis & Marcellino, 2001; Atoyan & Conway, 2011). The authors do not provide a single conclusion. In the case of Gross Domectic Product (GDP) growth forecast, there is evidence that points towards forecasts being weakly efficient for the G7 countries (Artis & Marcellino, 2001; Pons, 2000)–that their revisions are rational (Ashiya, 2006). Still, some authors highlight strong country specific effects; including, for example, excessive optimism for industrialized economies (Aldenhoff, 2007). Furthermore, a forecast provided by the IMF tends to be less accurate when compared to the private consensus (Batchelor, 2001).

The more sensible area is, more than likely, related to the forecasting of the fiscal balance. In doing so, an international organization can directly review economic policy of a given government. There are several papers that highlight general problems related to the fiscal estimates: the presence of excessive optimism and fragility to the political cycles (Frankel & Schreger, 2013; Merola & Pérez, 2013). Recent papers also underline problems related to motivational biases. Analysts often avoid presenting projections with conclusions that a country will not comply to precautionary fiscal rules; for example, the Stability and Growth Pact in Europe. Therefore, the existence of such a mechanism may not reduce errors, but – instead – creates a statistical artefact (Baldi, 2016).

The subject that is relatively less established is a consistency of forecast errors between the countries. The IMF, in a similar fashion to other international institutions, has its own political agenda. Top executives are usually linked towards cosmopolitanism and neoliberalism; the recommendation often exceeds purely technical governance (Ban, 2015; Best, 2006). Some authors showed evidence that both forecasts and loans conditions are more favorable for the countries that vote in a similar way to the United States in the United Nations assembly (Barro & Lee, 2005; Dreher et al., 2008, 2009). Research papers highlight a strong support for democratic governments (Acemoglu et al., 2019). Such views may impact forecasting performance—as well.

Therefore, we attempt to answer whether the IMF's analysts are prone to making greater mistakes in forecasting public finances for democratic countries that are strictly committed to the neoliberal agenda. So far, the academic literature were rather focused on the experiences of advanced economies. Our study provides a more global approach that also focuses on the emerging markets.

3. World Economic Outlook Forecasts

This chapters describes the WEO report and summarizes the basic characteristics of forecasts errors made by the IMF's analysts.

The WEO report is published semiannually in both April and October. Since the global financial crisis, the IMF provides the coverage of nearly every country in the world. Our dataset contains forecasts for 133 countries ranging from the years 2011 to 2018. During this timeframe, we excluded countries that were dealing with armed conflicts and war (such as Libya or Afghanistan) and countries that were experiencing a disintegration of government (such as Venezuela). Simultaneously, we exclude the years 2020 and 2019 from the sample due to the unpredictable nature of the COVID-19 pandemic, as well as the low availability of information regarding oil rents.

We attempt to analyze the forecast of government net lending in relation to GDP. The IMF provides a forecast for the five-year horizon. For practical purposes, our analysis will focus on the estimates for the first three consecutive years; these forecasts are usually presented in the media and are compared by financial experts. The root mean squared errors (RMSE) statistics of the government net lending are presented in Table 1.

Table 1. Root Mean Squared Errors – continents

Horizon / Region	Current year	Next year	Next two years
Africa	3.45	4.26	4.59
Asia	2.65	3.46	3.98
Europe	1.58	1.85	1.96
North America	1.37	1.89	2.10
Oceania	1.02	1.67	1.98
South America	1.24	1.97	2.32

This simple comparison confirms that the IMF's analysts are more likely to make significant errors in the cases of African and Asian economies; when compared to the more developed Europe, North America, and Oceania ones. However, such errors can be partially justified. The correct prediction of fiscal deficit in underdeveloped or emerging economies is much more complicated; this is due to the greater volatility of results, the bigger share of gray economy,

and the lower access to reliable data. Although there is no unified methodology on how to compare such forecasts, the common approach is to normalize RMSE by dividing it by the range of values that are present in the data. The result of such an exercise is presented in Table 2.

Table 2. Normalized Root Mean Squared Errors – continents

Horizon / Region	Current year	Next year	Next two years
Africa	8.3%	12.0%	12.9%
Asia	4.8%	6.2%	7.2%
Europe	5.7%	6.7%	8.0%
North America	10.2%	14.1%	15.7%
Oceania	11.2%	20.8%	24.8%
South America	10.0%	16.0%	21.1%

The normalized forecasts error for both African and Asian economies are comparable to what is presently seen in European and North American economies. Normalized Root Mean Squared Error (NRMSE) statistics are greater in Oceania, most likely due to the lower number of countries with volatile public finance. South America emerges as a continent with greater errors. However, it is hard to imagine some prejudice based on these figures.

Another well-known stylized fact that is related to fiscal forecasting, is the greater propensity to surprise among both oil exporting countries and other commodity producers. In case of such entities, forecasts errors are multiple times higher when compared to the continent median. The economic theory explaining this evidence has been relatively well studied. Authors (El Anshasy & Bradley, 2012; Lopez-Murphy & Villafuerte, 2010) present consistent evidence that the governments of oil exporting countries tend to significantly increase fiscal spending during a sustained period of higher oil prices. The policy is often procyclical and leads to fiscal imbalances after the collapse of commodity prices, which is usually not easily predictable. This phenomenon is also visible in the IMF's forecasts errors. The countries where mistakes are the biggest, on average, are presented in Table 3.

Table 3. Countries with the biggest forecasts' errors

			Average Squared Error		
	Country	ISO code	T	T+1	T+2
Africa					
1	Congo	COG	142.75	327.48	478.34
2	Eritrea	ERI	173.78	189.41	203.24
3	Equatorial Guinea	GNQ	20.20	38.65	59.82
Continent Average:			11.90	20.47	27.09
Asia					
1	Kuwait	KWT	34.52	88.15	151.01

2	Saudi Arabia	SAU	19.27	70.83	136.70
3	Oman	OMN	16.68	49.70	86.70
Continent Average:			7.00	13.48	20.38
South America					
1	Ecuador	ECU	4.54	11.90	12.46
2	Brazil	BRA	3.03	10.44	19.02
3	Bolivia	BOL	2.24	10.13	19.52
Continent Average:			1.53	4.36	6.90
Europe					
1	Azerbaijan	AZE	27.50	30.30	28.70
2	Kazakhstan	KAZ	5.20	18.21	35.30
3	Belarus	BLR	10.57	17.30	14.33
Continent Average:			2.50	3.86	4.97

Notes: Values sorted by T+1 forecasts' error. The huge numbers in Congo and Eritrea are related to a low number of available forecasts—where the economy was stable.

Finally, fiscal forecast relies on the assumption of business cycle development. The strongest downturns are, most frequently, unpredictable. Although there are papers that present models predicting recession based on financial variables (Mishkin & Estrella, 2005; Rudebusch & Williams, 2009), their performance is often debatable—even for the most advanced economies. Therefore, we decide to exclude the observations where squared error exceeded 50 percentage points; the remaining observations constitute 93-96% of the overall sample. The listing is presented in Table 4.

Table 4. Distribution of squared forecasts errors

Squared error	Horizon		
	T0	T1	T2
[0, 50)	96.0	94.5	93.1
[50, 100)	1.7	2.0	2.8
[100, 150)	0.6	1.0	1.2
[150, 200)	0.3	0.7	0.7
200+	1.5	1.8	2.2

4. Institutions and predictability of public finances.

The aim of our research is to verify whether institutional factors indeed improve predictability of the economy. Furthermore, we wish to determine whether there exist specific biases in the forecasts that are related to economic policy. This section describes the theory and explains the transformations applied to institutional data.

The economic consensus that is present in the academic literature supports the thesis that better organized institutional framework is more supportive for disciplined public finances (Winer et al., 2013). However, their impact of institutional framework on the predictability of public

finances is more puzzling. The presented research is mainly focused on the European Union and the Organisation for Economic Co-operation and Development (OECD) countries. While some authors find evidence that countries with stringent fiscal rules are more often realizing their long-term policy target (von Hagen, 2010), others show their ineffectiveness during periods of stress (Schick, 2010). Finally, some authors claim that they even create incentives for making greater errors (Baldi, 2016; Gilbert & de Jong, 2017; Rybacki, 2021).

Our analysis is focused on a more global view. We are using three independent datasets, all of which describe more heterogenous institutional frameworks: the World Bank's Governance Indicators, the Heritage Foundation's Index of Economic Freedom, and the Systemic peace project's Polity IV index. The detailed information about these indicators are briefed in Table 5.

Table 5. Institutional indices – list of variables.

Dataset	Provider	Variables	Index values
Worldwide Governance Indicators	World Bank	1. Control of Corruption 2. Government Effectiveness 3. Political Stability and Absence of Violence /Terrorism 4. Rule of Law 5. Regulatory Quality 6. Voice and Accountability	• Normalized scale; results usually lie within values from -2 to 2. • Survey based data with experts' adjustments. • The greater number denotes a more positive assessment of country policy.
Index of Economic Freedom	Heritage Foundation	1. Property rights 2. Judicial effectiveness 3. Government integrity 4. Tax burden 5. Government spending 6. Fiscal health 7. Business freedom 8. Labor freedom 9. Monetary freedom 10. Trade freedom 11. Investment freedom 12. Financial freedom	• Scale from 0 to 100 • Data based on selected macroeconomic indicators. • The greater number denotes a more positive assessment of country policy.
Polity IV	Systemic peace project	Single Polity IV index	Index takes ordinal values from -10 to +10. The following scale is applied: • Autocracies (-10 to -6) • Anocracies (-5 to +5) • Democracies (+6 to 10)

In regard to the World Bank Index case, we have used the raw data without any transformations. The case of the Heritage index is more complex. Due to shifts in methodology of producing

the index, only nine amongst 12 indicators have relatively long history. We have normalized their values to achieve a greater comparability of errors senility on WGI and Heritage indices. The used indices, as well as their descriptive statistics, are presented in Table 6.

Table 6. Heritage Foundation's Economic Freedom Index – 2020 edition.					
Pillar	Index	Mean	Max	Min.	Std. Dev.
Government size	Government spending	67.4	96.5	0.0	21.2
Government size	Fiscal health	70.5	99.9	0.0	29.1
Market openness	Financial freedom	50.0	90.0	10.0	18.4
Market openness	Investment freedom	58.8	95.0	0.0	20.6
Market openness	Trade Freedom	74.4	95.0	23.8	11.9
Regulatory efficiency	Business freedom	64.5	95.4	28.0	14.5
Regulatory efficiency	Labor freedom	60.1	90.9	20.0	13.6
Regulatory efficiency	Monetary Freedom	75.7	87.0	42.6	7.4
Rule of law	Property rights	58.0	96.8	16.4	17.8

Source: Heritage foundation

For the Polity IV index, we calculated dummies that describe the type of government. The statistics are presented in Table 7.

Table 7. Polity IV Index – descriptive statistics.		
Government type	Number of countries	Percentage of countries (%)
Autocracies	19	12.4
Anocracies	40	26.2
Democracies	94	61.5
Total	153	100

5. Methodology

This section describes both methodology and data sources that are used throughout the estimation. Let us define the following notations:

$e_{t.h}$ denotes forecast error for the year t with horizon h. For example, $e_{2015,1}$denotes forecast for the year 2015—published one year earlier (in 2004).

μ_i stands for individual effect of i-th country, estimated via fixed effects.

θ_t denotes period fixed effect.

ε_t represent random disturbance, β_x are estimated parameters.

The forecast error is described as the difference between the realized value and the estimate, in line with equation 1.

$$e_{t.h} = realization_t - forecast_{t,h} \quad (1)$$

Our aim is to create a fixed effect panel model, which will explain the root of squared forecast errors based on the institutional characteristics of the country. But before that, we would need to distinguish between potential systematic biases and the more justified errors.

First, we would like to explain what proportion of the fiscal forecasts errors is related to wrong macroeconomic assumption—regarding GDP growth. We used two parameters related to these assumptions: the first parameter describes error in the year corresponding to deficit forecasts; the second parameter describes cumulative errors related to the trajectory of GDP growth from the previous years.

Second, we need to exclude the impact of volatile revenues from the fossil fuels; we used World Bank's oil rent estimates, which is expressed as the percentage of GDP (Oil_t). We then decided to use the difference between the current reading and the five-year moving average. Negative values should occur within the period of a sudden oil price drop.

Third, we represent the level of income by two indicators. The basic relationship is described by the standardized values of the GDP per Capita ($GDPPC_t$). Still, this relationship is not linear. Therefore, we decided to add dummies that represent the income threshold used by World Bank in order to classify Low/Middle and High-income economies ($GDPPCT_t$).

Fourth, we wish to represent the trends visible in both the World Bank Governance Indicators (WGI) and the Heritage foundation ranking in the sparse manner. Therefore, we decided to use principal component analysis (PCA) in order to extract the first component from each dataset. We use a vector of institutional variables ($Inst_t$) containing two of three indicators: Polity IV headline index, which is the first component derived from the WGI indicators, and the first component derived from the Heritage indices.

Finally, we use standardized values of public debt ($Debt_t$). International institutions can present an overly optimistic picture for countries with the biggest debt in order to not trigger their collapse. Such problems were documented in the works of (Rybacki, 2021).

Our final formula is presented as follows:

$$\sqrt{e_{t.h}^2} = \beta_1 + \beta_2 * \sqrt{eGDP_{t.h}{}^2} + \beta_2 * \sqrt{Oil_t^2} + \beta_3 * GDPPC_t + \beta_4 * Debt_t + \beta_X * GDPPCT_t + \beta_Y * Inst_t + \mu_i + \theta_t + \varepsilon_t \quad (2)$$

Furthermore, we would like to check if institutional factors do not play role in a directional bias.

$$e_{t,h} = \beta_1 + \beta_2 * eGDP_{t,h} + \beta_2 * Oil_t + \beta_3 * GDPPC_t + \beta_4 * Debt_t + \beta_X * GDPPCT_t + \beta_Y * Inst_t + \mu_i + \theta_t + \varepsilon_t \quad (3)$$

This equation should help to distinguish whether the IMF's analyst perform directional one-sided errors.

6. Estimation Results

This section summarizes our results. We estimated two models. The first model uses World Bank Governance Indicators, and the second model uses the Heritage foundation index. The results are presented in Tables 8 and 9. Potential directional biases are studied in Table 10.

Both models confirm that forecasts errors are dependent on the macroeconomic assumptions; however, the overall effects are rather low. The GDP forecasts errors amounting 1 percentage point increase, on average, the errors of fiscal forecasts by approximately 0.05-0.15pp.

A similar situation is seen in the case of oil revenues. While big price drops are destructive for the public finances of oil exporters, small ones seem to be manageable. The impact is negative, but it is projected to be low.

There is a strong divide between forecasts errors for developing, emerging, and advanced economies. Apart from the nowcasts, the errors are lower for countries with a larger GDP per capita. First, countries that have a higher than average income by the one standard deviation are expected to have lower errors by 0.3-0.6pp. Second, dummy variables show that errors for both low- and middle-income economies are greater by 0.6-1.2pp—compared to advanced countries. The major issue here, is that bias is often directional; the IMF analysts tend to be more pessimistic towards these less developed economies.

Another interesting phenomenon is related to public debt. Most indebted countries are more likely to have bigger errors—in the case of shortest horizon (current year T). On the other hand, their errors for the lower horizons are lower than less indebted economies. The greater predictability for the long run is relatively easy to rationalize; indebted countries are often advanced economies with many fewer volatile public finances. However, the first phenomenon is more puzzling. It could be that these instances of greater error may be intentional; the IMF analysts may try to avoid situations that could trigger speculation about the unsustainability of public debt in such countries.

The government type seems to be insignificant; depending on the model specification, one can show either positive or negative impact. Moreover, parameters may even be statistically significant. Nevertheless, such results do not seem to be robust and potential impact is relatively low.

Finally, public finances in countries with better assessment of institutional policy are not more predictable than in the other countries. On the contrary, forecasts' errors are even greater in the short horizon. The model based on equation 3 does not provide information about specific directional biases. The relatively stable situation may backfire with surprises during structural changes.

Table 8. World Governance Indicators – model for the root of squared errors

	T	T+1	T+2
GDP Forecasts - error	0.04 (0.02, 0.08)	0.01 (0.02, 0.47)	0.02 (0.02, 0.36)
GDP Forecasts - cumulated error		0.04 (0.02, 0.02)	0.02 (0.01, 0.16)
Oil Rent	-0.04 (0.02, 0.04)	-0.08 (0.02, 0.00)	-0.05 (0.02, 0.03)
Low-income economies	0.55 (0.41, 0.17)	0.98 (0.43, 0.02)	1.28 (0.52, 0.01)
Lower-middle-income economies	0.62 (0.29, 0.03)	1.00 (0.33, 0.00)	1.19 (0.40, 0.00)
Upper-middle-income economies	0.46 (0.23, 0.05)	0.67 (0.23, 0.00)	0.75 (0.31, 0.01)
GDP per capita	0.05 (0.26, 0.86)	-0.33 (0.29, 0.26)	-0.30 (0.35, 0.39)
Public debt	0.39 (0.12, 0.00)	-0.31 (0.14, 0.03)	-0.11 (0.17, 0.52)
Polity IV	0.04 (0.02, 0.05)	0.03 (0.02, 0.20)	-0.03 (0.03, 0.19)
WGI - first component	0.30 (0.13, 0.02)	0.05 (0.13, 0.70)	-0.05 (0.15, 0.74)
R-Squared	0.36	0.33	0.35
Periods	16	16	16
Cross sections	141	141	141
Observations	2190	2154	2134

The model formula is based on equation 2. Models show limited relevance of GDP growth assumption and oil rent in the standard times. There is a great disparity of errors between advanced, low-income, and middle-income economies. Surprisingly, the IMF's analysts are performing worse in the cases of countries with strong institutional quality and high debt – especially in the short term.

Table 9. Heritage Foundation Indicators – model for the root of squared errors.

	T	T+1	T+2
GDP Forecasts - error	0.15 (0.12, 0.22)	0.05 (0.03, 0.16)	0.04 (0.04, 0.29)
GDP Forecasts - cumulated error		0.05 (0.03, 0.08)	0.03 (0.02, 0.12)
Oil Rent	0.04 (0.15, 0.78)	-0.03 (0.03, 0.22)	-0.02 (0.03, 0.56)
Low-income economies	-1.70 (2.25, 0.45)	0.92 (0.70, 0.19)	2.62 (0.69, 0.00)
Lower-middle-income economies	0.95 (1.37, 0.49)	1.15 (0.43, 0.01)	1.19 (0.50, 0.02)
Upper-middle-income economies	-1.49 (0.75, 0.05)	0.91 (0.27, 0.00)	0.81 (0.32, 0.01)
GDP per capita	1.04 (2.00, 0.60)	-0.58 (0.59, 0.33)	-0.95 (0.86, 0.27)
Public debt	3.35 (1.28, 0.01)	-0.54 (0.28, 0.05)	0.10 (0.31, 0.75)
Polity IV	0.02 (0.17, 0.92)	-0.12 (0.04, 0.01)	-0.15 (0.04, 0.00)
Heritage - first component	4.06 (1.13, 0.00)	0.34 (0.25, 0.16)	-0.14 (0.25, 0.58)
Constant	0.95 (0.68, 0.16)	-0.06 (0.16, 0.69)	0.15 (0.17, 0.38)
R-Squared	0.47	0.44	0.47
Periods	8	8	8
Cross sections	139	139	139
Observations	1042	1035	1040

The model formula is based on equation 2. The model that uses Heritage ranking confirms the findings of the previous model.

Table 10. World Governance Indicators – model for the forecasts' errors

	T	T+1	T+2
GDP Forecasts - error	0.11 (0.02, 0.00)	0.00 (0.03, 0.96)	0.03 (0.02, 0.21)
GDP Forecasts - cumulated error		0.08 (0.02, 0.00)	0.07 (0.01, 0.00)
Oil Rent	-0.03 (0.02, 0.29)	0.00 (0.03, 0.95)	-0.10 (0.03, 0.00)
Low-income economies	0.82 (0.65, 0.20)	1.26 (0.68, 0.06)	1.08 (0.75, 0.15)
Lower-middle-income economies	0.58 (0.48, 0.23)	1.14 (0.53, 0.03)	1.32 (0.59, 0.03)
Upper-middle-income economies	0.66 (0.36, 0.06)	0.76 (0.35, 0.03)	0.78 (0.42, 0.06)
GDP per capita	-0.71 (0.43, 0.09)	-1.06 (0.58, 0.07)	-1.05 (0.59, 0.08)

Public debt	-0.08 (0.21, 0.70)	1.26 (0.24, 0.00)	1.76 (0.30, 0.00)
Polity IV	-0.03 (0.04, 0.44)	0.03 (0.03, 0.43)	0.09 (0.03, 0.01)
WGI - first component	0.11 (0.21, 0.61)	0.50 (0.22, 0.02)	0.32 (0.22, 0.15)
R-Squared	0.24	0.30	0.37
Periods	16	16	16
Cross sections	141	141	141
Observations	2190	2154	2134

The model formula is based on equation 3. This model highlights that the majority of biases discussed in Tables 8 and 9 are directional. The IMF's analysts tend to be pessimistic for low- and middle-income economies, while being simultaneously optimistic in the case of advanced countries. Forecasts related to indebted countries are usually cautious—expect shortest horizon.

7. Policy conclusions

This research investigated the forecast errors of the IMF's analysts. The collected evidence suggests that economists are overly pessimistic towards both low- and middle-income economies. Such behavior can be rationalized, however. Not only is the forecasting state of these economies harder to gauge, but emerging markets are also more likely to fall into a crisis. Still, these directional biases have consequences.

The IMF is an institution that certainly help shape expectations of both policymakers and financial markets with regards to the economic outlook in less developed areas. Regarding such countries, there is a scarce number of analysts that provide their estimates; Therefore, potential investors are most likely to follow international institution forecasts. Given the negative bias towards authorities in such economies, they may be forced to pay additional risk premiums in the form of higher interest; all while financing the investments like infrastructural projects.

The worse performance of forecasting public finances in the indebted economies is also worrisome. Such forecasts are limiting trust in the institution. Financial investors prefer information about the exact scale of country risk. Unfortunately, historical evidences suggest that the IMF may miss the important signals and avoid difficult topics—all together.

Another problem is that the improvement of institutional quality does not improve the accuracy of forecasts. The IMF recommendations highlight the importance of institutions for the long run growth prospects. Still, the public finances are similarly puzzling for the analysts, like in the case of other economies. This problem may have very various explanations. Large errors

may be related to the crisis situations; the IMF staff may have excessive thrust in the macroeconomic projections of governments etc. Regardless, in the end, the evidence does not encourage a resignation from flexibility when shaping economic policy to limitations like fiscal rules. Therefore, the recommendation may be more readily, and often, questioned.

References

Acemoglu, D., Naidu, S., Restrepo, P., & Robinson, J. A. (2019). Democracy does cause growth. *Journal of Political Economy*, *127*(1), 47–100. https://doi.org/10.1086/700936

Aldenhoff, F. O. (2007). Are economic forecasts of the International Monetary Fund politically biased? A public choice analysis. *Review of International Organizations*. https://doi.org/10.1007/s11558-006-9010-x

An, Z., Jalles, J. T., Loungani, P., & Sousa, R. M. (2018). Do IMF fiscal forecasts add value? *Journal of Forecasting*. https://doi.org/10.1002/for.2527

Artis, M., & Marcellino, M. (2001). Fiscal forecasting: The track record of the IMF, OECD and EC. *The Econometrics Journal*. https://doi.org/10.1111/1368-423x.00051

Ashiya, M. (2006). Testing the rationality of forecast revisions made by the IMF and the OECD. *Journal of Forecasting*. https://doi.org/10.1002/for.979

Atoyan, R., & Conway, P. (2011). Projecting macroeconomic outcomes: Evidence from the IMF. *Review of International Organizations*. https://doi.org/10.1007/s11558-011-9109-6

Baldi, G. (2016). Fiscal policy rules, budget deficits, and forecasting biases. *Journal of Economic Policy Reform*. https://doi.org/10.1080/17487870.2015.1057509

Ban, C. (2015). From designers to doctrinaires: Staff research and fiscal policy change at the IMF. *Research in the Sociology of Organizations*. https://doi.org/10.1108/S0733-558X20150000043024

Barro, R. J., & Lee, J. W. (2005). IMF programs: Who is chosen and what are the effects? *Journal of Monetary Economics*. https://doi.org/10.1016/j.jmoneco.2005.04.003

Batchelor, R. (2001). How useful are the forecasts of intergovernmental agencies? The IMF and OECD versus the consensus. *Applied Economics*. https://doi.org/10.1080/00036840121785

Best, J. (2006). Co-opting cosmopolitanism? The International Monetary Fund's new global ethics. *Global Society*. https://doi.org/10.1080/13600820600816316

Dreher, A., Marchesi, S., & Vreeland, J. R. (2008). The political economy of IMF forecasts. *Public Choice*. https://doi.org/10.1007/s11127-008-9318-6

Dreher, A., Sturm, J. E., & Vreeland, J. R. (2009). Global horse trading: IMF loans for votes

in the United Nations Security Council. *European Economic Review*. https://doi.org/10.1016/j.euroecorev.2009.03.002

El Anshasy, A. A., & Bradley, M. D. (2012). Oil prices and the fiscal policy response in oil-exporting countries. *Journal of Policy Modeling*. https://doi.org/10.1016/j.jpolmod.2011.08.021

Frankel, J., & Schreger, J. (2013). Over-optimistic official forecasts and fiscal rules in the eurozone. *Review of World Economics*. https://doi.org/10.1007/s10290-013-0150-9

Gilbert, N. D., & de Jong, J. F. M. (2017). Do European fiscal rules induce a bias in fiscal forecasts? Evidence from the Stability and Growth Pact. *Public Choice*. https://doi.org/10.1007/s11127-016-0372-1

Lopez-Murphy, P., & Villafuerte, M. (2010). Fiscal Policy in Oil Producing Countries During the Recent Oil Price Cycle. *IMF Working Papers*. https://doi.org/10.5089/9781451962536.001

Merola, R., & Pérez, J. J. (2013). Fiscal forecast errors: Governments versus independent agencies? *European Journal of Political Economy*. https://doi.org/10.1016/j.ejpoleco.2013.09.002

Mishkin, F. S., & Estrella, A. (2005). The Yield Curve as a Predictor of U.S. Recessions. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.249992

Pons, J. (2000). The accuracy of IMF and OECD forecasts for G7 countries. *Journal of Forecasting*. https://doi.org/10.1002/(SICI)1099-131X(200001)19:1<53::AID-FOR736>3.0.CO;2-J

Rudebusch, G. D., & Williams, J. C. (2009). Forecasting recessions: The puzzle of the enduring power of the yield curve. *Journal of Business and Economic Statistics*. https://doi.org/10.1198/jbes.2009.07213

Rybacki, J. (2021). Fiscal deficit forecasts in Europe: evidence for a double standard? *Baltic Journal of Economics*, *21*(1), 26–42. https://doi.org/10.1080/1406099X.2021.1888439

Schick, A. (2010). Post-Crisis Fiscal Rules: Stabilising Public Finance while Responding to Economic Aftershocks. *OECD Journal on Budgeting*.

von Hagen, J. (2010). Sticking to fiscal plans: The role of institutions. *Public Choice*. https://doi.org/10.1007/s11127-010-9680-z

Winer, S., Shibata, H., & Kirchgassner, G. (2013). The effects of fiscal institutions on public finance: a survey of the empirical evidence. In *Political Economy and Public Finance*. https://doi.org/10.4337/9781843767527.00019