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More of an Art than a Science: The IMF's Debt Sustainability Analysis and the Making of a Public Tool

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This paper examines the origins of the IMF's Debt Sustainability Analysis (DSA), a template to facilitate the measurement of a country's debt sustainability that was introduced in 2002 and further developed in 2003. The template provides a pre-set format for governing the way debt sustainability analyses will be conducted by IMF staff economists. This paper examines how economic knowledge is embedded in the policy template and shows how expertise is shaped to resolve the IMF's legitimation problems. This paper draws out the role of the public as an indispensable aspect of this process. Previous practice was publicly derided for being unsound and the introduction of the template attempted to make practices comparable across countries. This paper shows that the *actual* theoretical underpinnings of debt sustainability analysis were less important than how the "public" perceived them. Within the Fund, this "public" was perceived through reference to "the market," governments as well as an undefined external scrutineer. The paper uses archival material from the Executive Board to show that a significant source of authority that the IMF used to enhance its legitimacy in the public domain arises from the *perception* of soundness in policy design, in turn relying on a *perception* of underlying theoretical rigour.

Keywords: International Monetary Fund (IMF), debt sustainability, debt crisis, public science, public reason, legitimacy, role of economists

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Plus un art qu'une science : l'analyse de soutenabilité de la dette par le FMI, ou la création d'un outil public

Cet article examine les origines de l'Analyse de Soutenabilité de la Dette (ASD), un modèle fait pour faciliter la mesure de viabilité de l'endettement d'un pays. Ce modèle a été introduit en 2003. Il offre un cadre prédéfini pour régir la façon dont les économistes du FMI doivent mener leurs analyses de soutenabilité de la dette. Cet article examine la manière dont la connaissance économique est conditionnée par ce modèle, et montre comment l'expertise a été façonnée pour solutionner les problèmes de légitimation du FMI. L'opinion publique apparaît comme un élément indispensable de ce processus. Les pratiques antérieures ont été publiquement ridiculisées parce que considérées comme peu fiables ; l'introduction du modèle ASD a tenté de les rendre comparables d'un pays à l'autre. Cet article montre que les fondements théoriques *réels* de l'analyse de soutenabilité de la dette ont eu moins d'importance que la façon dont le « public » les recevait. Au sein du Fonds, ce « public » a été perçu à travers la référence au « marché », aux gouvernements ainsi qu'à un contrôleur externe non défini. L'article utilise des documents d'archives du Conseil d'Administration pour montrer que la *perception* de la fiabilité de sa politique, qui repose à son tour sur une *perception* de la rigueur théorique sous-jacente, a été une source d'autorité importante pour le FMI, qui l'a utilisée dans le but de renforcer sa légitimité dans l'opinion publique.

Mots-clés : Fonds Monétaire International (FMI), soutenabilité de la dette, crise de la dette, science publique, raison publique, légitimité, rôle des économistes

JEL: F34, H63, B20

The welcoming words of Stanley Fischer towards Indonesia's decision to float its currency (Fischer, 1997) sparked controversy over the International Monetary Fund's (IMF's) handling of the South East Asian crisis. Jeffrey Sachs, for instance, reignited the debate about the legitimacy of the IMF's interventions, commenting that instead of "dousing the fire" of the financial crisis spreading through Asian countries, the IMF "screamed fire in the theatre" (Sachs, 1998). Concerns about legitimacy have been usually premised on the IMF's unequal governance structure and its policy advice. Covered widely in several works, the IMF's legitimacy issues are often explored through the prism of political influence over the use of its resources (Breen, 2013; Buira, 2005; Momani, 2004; Thacker, 1999).

There is a consensus that the IMF is not free from various economic and political pressures, and this paper suggests that important aspects of these concerns are to be found in the role of economists and the way economic reasoning is applied to policy. The majority of the Fund's staff are economists, who, *inter alia* develop policy tools to guide the organisation's activities. Their role is crucial for they are the key experts within the organisation, both generating and operationalising economic knowledge. Described as "powerful and pervasive," De Vries—a former official Fund historian—concluded that "professional economists, both in the staff and the Executive board, are the key instruments through which the International Monetary Fund develops and implements its policies" (De Vries, 1986, 65). While some have pointed to coalescence through professional training and epistemic communities that allow for the formation of an ideational consensus around market reform programmes (Babb, 2001; Chwieroth, 2007), others have shown the fluidity and divergence between policy and formal models (Bird, 1996; Spraos 1986), describing as it were, an "oral tradition" that has underpinned Fund policy (IMF, 1987, 1).[1]

Although the IMF's policy design is rooted in economic expertise, the political complexity of IMF's missions and operations makes difficult to disentangle the theoretical and policy aspects. In their comparative study of economists in international organisations, Endres and Fleming (2002, 5) noted that it is "not always possible to separate out the operational from the analytical dimension of work done by economists in international organisations." This is at least partly due to the conceptual snares Donald Winch warned about, namely the danger of "an over-optimistic conception of the technocratic status of economics, and a naive view of the processes of political decision-making" (Winch, 1969, 19).[2] In line with previous investigations of economists as experts (Coats, 1986; Mata and Medema, 2013), this article shows how the role of economists at the IMF goes beyond mere knowledge production. They are "doers," communicators, problem makers and solvers. Drawing on the work of Harper (1998, 112), the Fund's authority emerges through the production of IMF documents which "instruct as well as explain, they predict the future as well as account for the past." An IMF document "is an *artfully* created document" (emphasis in original) arranged to enable expeditious response from the Board so that "Analysis … should be organised so that 'what it ought to be' is what was predicted beforehand" (Harper, 1998, 122, 113). This sheds light on

[1] In the IMF's own account of its justification for policy: "there is surprisingly little readily accessible written material on its theoretical underpinnings" (IMF, 1987, 1). This is not to deny the heritage of financial programming, but rather to acknowledge the lack of explicit formulisation of how policies will lead to stated objectives (see Fine and Hailu, 2000, 6, for an examination). For a view of IMF as drawing from an 'eclectic' economics see Williamson (1980) and for a satirical view on the role of Fund economists see Woods (2006).

[2] How ideas guide policy was often studied through the prism of ideology, a framework that drifted out of fashion as it became associated with crude interpretations of ideas. For an elaboration see Woods (1995); for older treatments see Fine (1981), McCloskey (1992) and McCloskey (1998). Recent work on the policy influence of economists points to the range of 'cognitive infrustructures,' socio-technical tools, and ways of reasoning of economists (Hirschman and Berman, 2014).

how institutional habits are built through the day-to-day operational work of the organisation and how Fund economists build a kind of institutional authorship.

This paper examines how economic knowledge is embedded in policy templates and shows how expertise is shaped to resolve the IMF's legitimation problems. Barnett and Finnemore (2004), for instance, draw on Porter (2001) to examine how expertise, by appearing objective, is a defence to the longstanding accusations towards the Fund's politicised behaviour. Existing work on the politics of knowledge within the Fund, identifies the use of policy templates as a source of "cognitive authority" and "indirect political power" (Broome and Seabrooke, 2011, 9). Seabrooke assesses whether policy templates used to benchmark the financial sector are "tools of domination in the quest for transparency" or whether these templates allow for a "pragmatic use of numbers" to allow for "reasoning and sense-making" (2012, 490, 500, 493). This paper draws out the role of the public as an indispensable aspect of how IMF expertise is shaped to resolve legitimacy problems by taking as a case study the creation of the IMF's Debt Sustainability Analysis (DSA) template.

The IMF's Debt Sustainability Analysis (DSA) is a template to facilitate the measurement of a country's debt sustainability that was introduced in 2002 and 2003 (IMF, 2002a; 2003). The template provides a pre-set format for guiding the way debt sustainability will be assessed by staff economists. This is a crucial policy area for the Fund; current policy prescribes that the IMF can only lend to its members if their debt is deemed sustainable in the medium term, and if it is not, the IMF is precluded from lending until restructuring or further concessional financing is secured (IMF, 2019). This paper shows the history of this policy device as arising from an attempt to correct previous practice that was publicly derided for being unsound. The introduction of the template attempted to make practices comparable across countries and to introduce a rules-bound quantification of access to Fund resources. This paper shows that the *actual* theoretical underpinnings of policy however are less important than how the 'public' perceived them. The paper uses archival material from the Executive Board from 2002 and 2003 to show that a significant rationale for introducing the DSA was to guide and quantify its decision making over the loan-giving process in order to attempt to constrain large loans and enhance its legitimacy in the public domain. This would arise from the *perception* of soundness in policy design, in turn relying on a *perception* of underlying theoretical rigour. Collective authorship is significant in raising the status and credibility of economic reasoning within and outside the Board, as a variety of audiences, as imagined by the Board, are drawn into policy design. Staff documents are written and presented to enhance the credibility of IMF expertise to external publics, and at the same time, the role of the public acts as a discipling device on IMF Staff. The paper first provides a brief overview of the Fund and its legitimacy issues in Section 1. Section 2 introduces the new policy, lays down its theoretical rationale and illustrates the template's use. Section 3 covers some of the Board's difficulties in applying theory in a practical setting. Section 4 discusses the introduction of the template to aide its decision-making process, Section 5 discusses the template as an internal disciplining device for Fund staff, and Section 6 as a public communication tool.

1. Problematic Governance

Governance structure is a longstanding source of criticism towards the Fund. Its senior organ is the Board of Governors, consisting of representatives from each member country, which delegates all but a few responsibilities to the Executive Board. The Executive Board represents all 185 member countries by grouping them into 24 constituencies where the voices of the single-country constituencies far outweigh those of the multi-country constituencies.[3] While decisions at the Executive Board are made through a form of mood-sensing as opposed to voting (Gold, 1969, 517), the relative influence that a country has corresponds to each country's assigned quota—the participation in the IMF's capital—which favours higher income countries and gives effective veto power to the US (see Buira, 2005). A country's quota determines the amount of financial support it is eligible to receive, governed by rules about access limits. As will be developed in subsequent sections, extraordinary loans beyond what would ordinarily be permitted through normal access limits created the need to quantify the criteria with which such access could be given.

The IMF was initially set up in order to make its resources temporarily available to its members in need of balance of payments support (for a detailed account, see De Vries, 1987). Following the US suspension of gold convertibility in 1971 and the movement of countries off the adjustable peg system by 1973, the IMF's role evolved into a more general financial crisis manager. The 1970s financial turmoil included the breakdown of Bretton Woods, but also the oil price and interest rate increases, which pushed much of the developing world into a debt crisis in the 1980s and a resulting 'lost decade' in development. The growing IMF's involvement in crisis management was accompanied with far reaching conditionality programmes, which have since been the focus of most criticisms of the Fund's influence on national policies. Such influence ranges from stipulating macro targets, for instance, on fiscal balances, to a perennially growing array of issues which include

[3] For further information on the Executive Board and how voting power is allocated according to constituency, see "IMF Executive Directors and Voting Power," at https://www.imf.org/external/np/sec/memdir/eds.aspx [Last Updated October 2019].

privatisation of public assets, liberalising trade and product markets, and a host of market reforms (for a review of Fund conditionality, see Babb and Buira, 2004; Kentikelenis, *et al*., 2016).

These broad programmes were rolled out with great social and political costs (Cornia *et al.,* 1987). Across Latin America and Africa, governments fell frequently while trying to implement IMF programmes or resigned rather than accept them, often amidst widespread rioting with many casualties.[4] In spite of the obvious influence of conditionality on borrowing countries, the details of IMF programmes as well as their economic rationale remained shrouded in mystery, if only because for the first fifty years of its existence, its constitution merely required the publication of one official document, the annual report (Chowla, 2007). This gave easy credence to the view of the IMF as a secretive institution, which, while something of an old adage, is still relevant if we compare it to other institutions of equivalent clout—such as the Bank of England's Monetary Policy Committee or the Federal Open Market Committee of the Federal Reserve, both of which publish minutes soon after policy decisions are made. The IMF still requires the passing of three full years before minutes of the Executive Board meetings can be made public, and even this is not always guaranteed.[5]

In a series of capital account crises during the 1990s, the IMF provided loans far larger than what normal eligibility criteria would permit that were used to repay fleeing private creditors. The loan in Mexico (1994-1995) and the handling of the South East Asian crisis in the 1990s fragilised the IMF's reputation. Hastily drafted draconian policy programmes (as in South Korea), the figure of Manging Director Michel Camdessus looming over Indonesia's military leader and President Suharto while he signed a loan agreement, coupled with a narrative of the crisis later dubbed the 'discursive demolition' (Hall, 2003) of the Asian state-oriented development model, were, like previous

[4] Examples include Peru 1980 and 1984, Argentina 1983, and Brazil 1984. In Africa, in 1985, Julius Nyerere, President of Tanzania, resigned rather than agree to an IMF programme; Zambia's programme was suspended by its President in 1987 following extensive food riots; in Burkina Faso, military leader and President Thomas Sankara, resisting the IMF programmes, called for widespread debt repudiations. Numerous riots have broken out, at times with hundreds left dead as in the Dominican Republic and in Venezuela, following implementation of IMF policy that led to skyrocketing increases in the price of medicines and basic food stuffs. Eliminating subsidies on basic goods and liberalising sectors places constraints upon on governments' capacity to provide public services, leading to increased poverty, with knock-on effects on a range of human rights concerns (see Lumina, 2006; 2013). For recent evidence of adverse socioeconomic impacts of IMF conditionality see Kingston (2011), Lang (2020), Oberdabernig (2013) and Stubbs et al., (2017) and for recent evidence of failure to meet its policy promises see Stubbs *et al*. (2020).

[5] Exceptions to this rule include Board minutes relating to members' request for resources, where the wait is five years. For documents classified as confidential or similar, release depends on the discretion of the Managing Director.

crises, followed by growing poverty and civil unrest. The IMF was accused of bullying its members and of being secretive (see Driscoll and Clark, 2003) as well as being ideologically driven and ultimately undemocratic (Stiglitz, 2002).[6]

Russia defaulted in 1998 amidst an IMF programme, and in 2001, the IMF decided to further increase Argentina's already exceptionally large programme whilst the economy deteriorated amidst people's seething fury. Economists in the Fund were divided given the whimsical credulity in the projected debt dynamics on which this decision was based (Blustein, 2006; IEO, 2004). These had assumed sustainability where none was forthcoming, as Argentina's subsequent deposit freeze, default on its debt and abandonment of the fixed exchange indicated. The IMF's reputational costs only multiplied.

These events generated a political desire inside the Fund not only to address the weak analysis that loan-giving relied on, but also to introduce policies to constrain large loans. This reinvigorated the debate on the ways in which countries are given access to IMF resources, prompting the IMF to reconsider the criteria a country needed to fulfil in order to gain extraordinarily large access to its resources. In the early 2000s, the IMF reconfigured the bar of exceptional access to standards that included a more rigorous assessment of debt sustainability.[7] This could, in principle, provide grounds for the IMF to withhold financing absent of strong assurances of sustainability, and pressurise private creditors to accept reductions in their claims. In 2001, in the context of these debates, the first Deputy Managing Director Anne Krueger put forward a proposal of how countries' debts could be reorganised when they are deemed unsustainable. Although this proposal was defeated, the creation of the DSA was intimately linked to this reconfiguration of the IMF's role in crises.[8]

Along with these political changes that prompted the creation of the DSA, the crises of the late 1990s and early 2000 also forced the IMF to address demands for openness, transparency and accountability.[9] The task went to the External Relations Department, whose rationale was to respond to a broader public making demands upon it and whose strategy was to try to educate the public so that its actions were better

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[6] The IMF's handling of the South East Asian Crisis was heavily criticised for the politicisation of conditionality through reforms far severer than deemed necessary (see Feldstein, 1998; Stiglitz, 2002; Sachs, 1998; 2000; Wade and Veneroso, 1998). IMF blunders were put to the US Senate via the Meltzer Commission (see Helms et al., 2000; Mikesell, 2001; Feldstein, 1998; and for a defence, Fischer, 2005).

[7] The relevant decision by the Board can be found in IMF (2002b).

[8] For the impact of subsequent crises on the IMF see Ban and Gallagher (2015), Clift (2018) and Stubbs *et al*. (2020).

[9] The attempt by the IMF to address concerns about transparency is critically examined in Best (2005), Best (2006), Koivisto (2016) and Soedeberg (2001).

understood.[10] For instance, the Public Information Notices (PINS) were inaugurated in 1997 in response to the East Asian crisis (IMF, 2001). The staff issued public summaries of the agreements between countries and the Fund, and offered the details of the IMF's assessment of members' policies to public scrutiny, and thus professional exposure to its policy advice (Soederberg, 2001). In response to the criticisms over its handling of the crises in Russia and Argentina, the IMF established the Independent Evaluation Office (IEO) to strengthen its external credibility (IEO, 2002). The same year, it allowed external access to a broad range of documents.

2. The Template and its Theoretical Rationale

It was in this context that the IMF introduced a new framework to monitor the debt sustainability of its members.[11] IMF (2002a; 2003) proposed to introduce debt sustainability analyses into all country reports.[12] Having a way to form an opinion on whether a country's debt will be repaid was key to the design of Fund's programmes. Following the South East Asian crisis, the defaults in Russia and Argentina, the staff understood that judgements over loan size and repayment required a more rigorous and scientific basis. The DSA template was a means to attempt to provide the needed rigour.

The template is organised around an externally provided macroeconomic baseline, which is used to produce a projected future time path of the annual debt-to-GDP ratio. The details of the underlying macro-framework that produce the baseline are not published in the DSA analysis. Rather, the DSA focuses on the debt-to-GDP ratio as a product of the evolution of the deficit, the growth rate, the interest rate, inflation and the exchange rate. The results are used to check whether the future path of the debt ratio is on a stable, declining or explosive path. The rationale for looking at the trajectory of the future debt-to-GDP ratio is provided by the economics of the intertemporal government budget. The debt is defined as sustainable if it fulfils a theoretical condition of solvency, that is, where expected future surpluses cover current debt. This captures the idea that current debts cannot be greater than what in present value terms all future primary balances must

[10] When a member of EXR published a pamphlet on the IMF's organisation, evolution and activities in 1981 (Hooke, 1981) it was the *first* comprehensive description that had been made available to the public since the early 1960s.

[11] The template pertains to assessments of debt sustainability for countries with market access; for lower income countries reliant predominantly on concessional financing a separate template was subsequently introduced in 2005. For evidence of malleability in the mechanical application of the low-income country framework see Lang and Presbitero (2018).

[12] The IMF produces periodic country reports for countries that are in an IMF programme as well as annually for all its members as part of routine surveillance.

service.[13] The solvency requirements are analytically identical whether referring to external or public debt sustainability so that when discussing the debt of a country or that of a government, sustainability is respectively linked to the evolution of the current account and the evolution of the budget deficit. Sustainability, thus defined, is a forward-looking idea, in which future primary balances matter. Accordingly, the balance (fiscal or non-interest current account) could develop in various ways and remain consistent with the solvency criterion. Therefore, within this formal definition, borrowers with any size of debt could be solvent as long as sufficient primary balances satisfying the solvency criterion arise at some point in the future.[14]

The policy implementation of this theoretical rationale presented difficulties. The Fund's measurement of debt sustainability was framed by the concerns of the Fund to provide its resources under adequate safeguards (i.e. conditionality) through its loan programmes and their repayment. The proposed policy template was to rest upon the debt dynamics equation to trace the future time path of the debt-to-GDP ratio over a specified time horizon. Initially, the suggested time horizon was for a minimum of five years, although this has since changed. The link to the theoretical rationale was that if the debt-to-GDP ratio was on a stable or declining path within the specific time horizon, the solvency criterion would be met.

The template was made available to country desk teams as an Excel file and remains to this day organised around two core sections—see examples below.[15] The primary section of the template lays out a baseline medium-term scenario of the evolution of the debt ratio. This was done using a set of assumptions about underlying macroeconomic variables which are compiled by the country desk economists. These are shown in Figure 1. The projected path of the debt ratio appears on Line 1, with changes in external debt referenced line 2, as a result of the summation of the next lines. Stock-flow adjustments are indicated in line 10.

[13] The dynamic budget constraint is solved through the transversality condition, a terminal condition that ensures that debts will not be repaid by some last-minute dash for further borrowing, but rather, that over the infinite time horizon, debts will be repaid through surpluses.

[14] See IMF (2002, 5) for a fuller exposition.

[15] Over time, the template has become widely distributed and publicly available. The IMF has increased its resources to educating both country officials and members of the public on conducting debt sustainability analyses.

Figure 1: External Debt Sustainability Analysis in Mexico's 2003 Article IV Consultation

Mexico: External Sustainability Framework, 2000-08
(In percent of GDP, unless otherwise indicated)

	Actual 2000	Actual 2001	2002	Projections 2003	2004	2005	2006	2007	2008
Baseline scenario									
1 **External debt**	**28.4**	**27.3**	**27.9**	**30.2**	**30.2**	**30.0**	**29.9**	**29.6**	**28.1**
2 Change in external debt	-8.5	-1.1	0.6	2.3	-0.1	-0.2	-0.1	-0.3	-1.5
3 Identified external debt-creating flows (4+5+6)	-5.1	-2.3	-0.3	1.2	-0.4	-0.2	-0.3	-0.4	-0.4
4 Current account deficit, excluding interest payments	0.7	0.9	0.5	0.6	0.9	0.9	0.7	0.7	0.8
5 Net non-debt creating capital inflows (negative)	-1.8	-3.2	-1.8	-1.6	-1.7	-1.7	-1.7	-1.7	-1.7
6 Automatic debt dynamics	-4.0	0.1	1.0	2.3	0.4	0.6	0.7	0.6	0.5
7 Contribution from nominal interest rate	2.3	2.0	1.7	1.7	1.8	2.1	2.3	2.3	2.3
8 Contribution from real GDP growth	-2.0	0.1	-0.2	-0.4	-1.0	-1.1	-1.1	-1.2	-1.3
9 Contribution from price and exchange rate changes	-4.3	-2.0	-0.4	1.0	-0.3	-0.5	-0.5	-0.5	-0.5
10 Residual, incl. change in gross foreign assets (2-3)	-3.5	1.2	0.9	1.1	0.3	0.1	0.2	0.2	-1.1
Key Macroeconomic and External Assumptions									
Real GDP growth (in percent)	6.6	-0.5	0.9	1.5	3.5	3.8	4.0	4.3	4.5
Exchange rate appreciation (US dollar value of local currency, change in perc	1.1	1.2	-3.3	-8.4	-1.8	-1.5	-1.5	-1.5	-1.5
GDP deflator in US dollars (change in percent)	13.2	7.9	1.2	-4.4	0.9	1.5	1.5	1.5	1.5
Nominal external interest rate (in percent)	7.6	7.7	6.3	5.8	6.0	7.4	8.0	8.0	8.2
Growth of exports (US dollar terms, in percent)	21.3	-4.2	0.6	3.0	5.5	7.8	9.3	9.0	8.4
Growth of imports (US dollar terms, in percent)	22.6	-198.6	-0.7	3.1	7.9	9.7	9.0	8.5	8.7

Source: IMF (2004, 45)

Medium-term projections of a country's balance of payments and fiscal situation, although a long-time staple of IMF policy work, are conducted in a decentralised way. While the World Economic Outlook (WEO) is purported to produce a globally consistent projection, such was not the case of the individual country projections (IMF, 2002). These were produced by teams of economists working at the country or regional level who relied on local information, without a unified homogenous approach to making projections across countries, and where the underlying macro-framework is concealed from the public eye. While this enabled projections to be tailored to data availability across a great diversity of countries, there had been within and beyond the IMF a long-standing concern that some of these assumptions were biased.[16] It was this bias that could enable less scrutiny over loan approval and bad policy advice. The new framework proposed a way for baseline macroeconomic projections to remain autonomously compiled by each country's desk team, as previously, but introduced two novelties.

The first was to make explicit the underlying macroeconomic assumptions on which IMF policy were grounded, while not revealing the way they were made nor proposing to homogenise the way projections were made across country desks. The second was to evaluate those underlying assumptions, by testing the sensitivity of the projected path to them. Figure 2 illustrates sensitivity tests to the key parameters of the baseline. These tests are conducted by setting key parameters to historical averages, and by shocking the macro variables separately and combined, by sizes that have been differently calibrated over time. For instance, instead of using assumptions of the baseline, the assumption could be that policy remains unchanged, by setting values to historical averages (Figure 2, Line 1), or that the country experiences a one-time depreciation shock (Figure 2, Line 7). This was done with the purpose of identifying possible underlying optimism in the baseline projection.

[16] For the recent shift towards growth optimism and how this yields risky programmes by design see IMF (2019). New and older studies also find that the larger the IMF loan, the more optimistic the projection (IEO, 2014; Schavey and Beach, 1999).

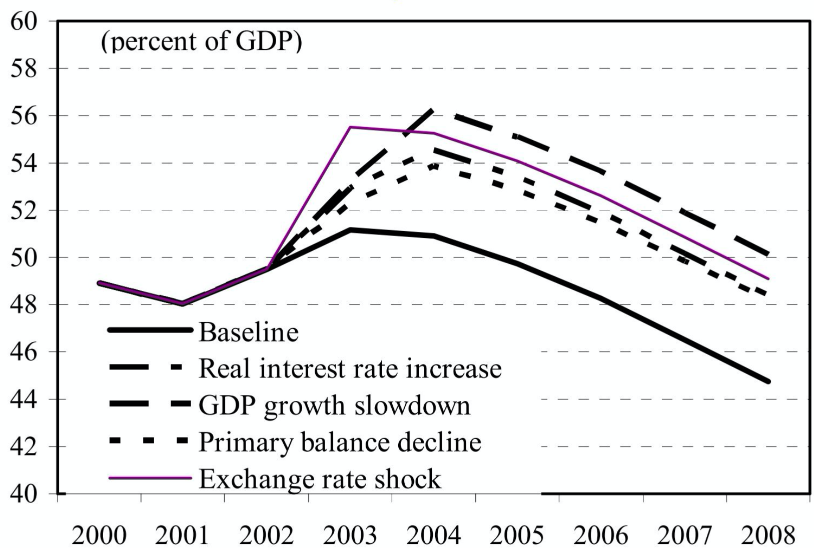
Figure 2: Stress Tests for External Debt Ratio in 2003 Mexico Article IV Consultation

II. Stress Tests for External Debt Ratio							
1. Real GDP growth, nominal interest rate, non-interest current account, and non-debt inflows are assumed to be at historical average; real GDP deflator assumed zero. 1/	27.9	28.4	28.3	28.0	27.8	27.5	26.0
2. Nominal interest rate is at historical average plus two standard deviations in 2003 and 2004 1/	27.9	31.1	32.0	31.8	31.7	31.5	30.1
3. Real GDP growth is at historical average minus two standard deviations in 2003 and 2004 1/	27.9	31.5	33.5	33.4	33.4	33.1	31.7
4. Change in US dollar GDP deflator is at historical average minus two standard deviations in 2003 and 2004. 1/	27.9	30.4	32.3	32.2	32.1	31.9	30.4
5. Non-interest current account is at historical average minus two standard deviations in 2003 and 2004 1/	27.9	30.8	31.1	30.9	30.8	30.5	29.1
6. Combination of 2-5 using one standard deviation shocks. 1/	27.9	30.1	31.7	31.6	31.5	31.2	29.8
7. One time 30 percent nominal depreciation in 2003	27.9	38.7	38.7	38.7	38.8	38.7	37.4

Source: IMF (2004, 45)

The rationale for the approach was precisely to create a standardised template in which specifications such as the chosen length of time horizons, the type and size of shocks, and the calibration of the realism tests were homogenised. This would enable the practice of measuring debt sustainability and therefore the results of the exercises, to be comparable across countries.[17] Finally, the information was presented in tables (such as Figure 1 and 2) and/or in figures comparing the evolution of debt ratio for various specifications as in Figure 3 (see IMF, 2003).

Figure 3: Example of a Visual Representation of Debt Sustainability Shocks



Source: IMF (2004, 19)

3. The Academic-to-Policy Tension

The fundamental concerns about the IMF's attempt to measure debt sustainability are detailed in a flourishing academic and policy literature. These contributions emphasise the difficulty of adequately capturing a country's ability to repay, one that is conditional upon a wider array of factors than the few macro variables included in the DSA. For instance, the DSA did not incorporate the volatility of commodity

[17] The staff state that the precise formulation of the template is ongoing and subject to continuous modification and revision. The 2003 template builds on the 2002 version by adding more features, ushering in new methods to hone down the accuracy of the exercise. It has since been clarified and revised several times with details of revisions available at IMF (2018).

prices, a key determinant of export earnings which determine part of debt repayment abilities. The DSA did not indicate the overall composition of a country's capital flows, even though short-term portfolio flows raise the danger of 'sudden stops' and currency crises. Other concerns included the lack of emphasis on contingent liabilities, in particular bank liabilities or other private debt bubbles that oftentimes end up being treated as fiscal problems. The accounting of government or country-level assets and the broader balance sheet was another criticism, as was the interaction between variables in debt dynamics (these and many more are raised in Nissanke and Ferrarini, 2004; Wyplosz, 2007; 2011; UNCTAD, 2009; Guzman and Heymann, 2015; Bonizzi *et al.*, 2019).[18] Further criticisms arise from the human rights implications of sovereign debt that reveal the narrowness of focusing on the ability to repay debts to the detriment of ability to provide basic social services (see Bantekas and Lumina, 2019; Lumina, 2013).

These concerns are echoed in the discussion at the first Executive Board meeting in 2002 that discussed the introduction of the template. The inherent uncertainty surrounding projections and the practical limitations created by data constraints led Directors to issue a chorus of warning towards the staff to proceed "with extreme care" (Portugal, GRAY/02/728).[19] The focus on the trajectory of the debt-to-GDP ratio was criticised as insufficient to assess liquidity burdens of debt service that a country may face: the template does not capture the volatilities that export earnings or government revenue are exposed to. The choice of time horizon over which sustainability is judged is deemed too short, yet lengthened horizons could misrepresent structural change that countries may be experiencing. The Board also pointed that the template said little about how to interpret the starting level or finishing level of the debt ratio. Whether the IMF should develop and include in its template specific threshold figures that would warn of a danger zone being entered into is heavily debated. Developing a formal benchmark would somewhat automate the point at which sustainability is breached. The staff asked for the Board's opinion in a carefully curated way that enabled a clear response: should they continue to bring all relevant information into one place (as proposed) or take a different approach and try to generate an index that "would largely remove the need for judgement?" (IMF, 2002a, 40). Framed as it was, the suggestion was unsurprisingly rejected: Directors unanimously stressed that sustainability assessments were always a matter of judgement. Callaghan (GRAY/02/721) stated that "the idea of an indicative threshold or composite indicator of debt sustainability is at odds with the thrust

[18] Subsequent template vintages have sought to address some of the concerns.
[19] Statements are referenced by the name of director(s) followed by the document type and are listed in the Reference list along with the country or countries that Directors' statements represent.

of the paper [IMF, 2002].” Attempts to compare the future trajectory of the debt-to-GDP ratio to a highly arbitrary rule of thumb, indicating a “danger level,” were judged illogical (Portugal, GRAY/02/728).

However, the application of a theoretical notion of solvency to a policy template raises more fundamental issues. Solvency is deemed a theoretically clear idea, but it is difficult to quantify and usefully measure. To operationalise the notion of debt sustainability and make it useful for the IMF’s loan programmes, practical assessments or “pragmatic” assessments, as the IMF calls them, are required. The reason why the IMF begrudges the abstract formal definition of debt sustainability, calling it “precise” but “unobservable” is that it is quite simply possible to postpone generating primary surpluses to cover initial levels of debt far into the future:

> The theoretical concept of sustainability based on solvency is problematic because it does not impose specific constraints on debt and deficits at any point in time … any level of debt and deficits could be compatible with the present-value budget constraint (Akyuz, 2007, 3).

The difficulty in translating the solvency criterion from academic to pragmatic terms is evident in IMF statements. For instance, in IMF (2002a, 3), judgments about debt sustainability are in fact about “whether a country’s debt can be serviced without an unrealistically large future correction in the balance of income and expenditure.” Further on, it reads:

> It is difficult to assess the feasibility of the primary surplus consistent with debt sustainability without first specifying the tax and expenditure measures that would be needed to achieve it, and judging whether these measures are sustainable over time, both technically and politically (IMF, 2002a, 20).

Far from theoretical clarity, the notion of debt sustainability is framed in terms of “social and political” feasibility of the stipulated adjustment plans (IMF, 2002a, 5). The evaluation of whether an adjustment path is considered to be too politically or socially unfeasible is wholly controversial, and the role of the Fund in determining it contested. Bar the litmus test of social implosion, the IMF does not come up with a means to judge whether a future correction will be unrealistic and hence to accurately assess debt sustainability. Debt sustainability in practice therefore is not determined by the economics of the present value budget constraint, but rather by the cautious balance of finding the adjustment path that lies just shy of preferring default and halting debt service:

> Solvency needs to be viewed in relation to the adjustment path that is not only economically feasible, but also socially and politically acceptable such that default is not a preferred option (IMF, 2002a, 5).

Being a creditor itself, often the only one willing to supply funds in a crisis granting it the status of preferred creditor over other creditors, undermines the IMF's neutrality in measurement. It also reconfigures debt sustainability as a political notion grounded upon the conflict between creditors and debtors. If the debt-to-GDP path is on an upward or explosive trend, this would put pressure on the IMF to mediate with private creditors, who, if defaulted upon, would not receive full repayment. As there is no explicit rationale for the Fund's view on whether an adjustment path is considered to be too politically or socially unfeasible, the other indication that it relies on is based on the comparison with the costs of a debt restructuring—choosing adjustment over collision with other creditors. In the words of the IMF:

> In principle, assessing whether bringing down debt ratios through a primary adjustment is too costly requires looking at the alternative by evaluating the costs of bringing down debt ratios through debt restructuring (IMF, 2011, 6).[20]

The difficulty of defining a practical solvency criterion was confronted head-on, with Board members calling it "an imprecise concept" (Callaghan, GRAY/02/721) and acknowledging the "difficulty of clean distinctions between liquidity and solvency" (Lundsager and Ralyea, GRAY/02/734). As the Board members acknowledged that debt sustainability is "theoretically clear but practically ambiguous'" (Padoan and Bossone, GRAY/02/730), the discussions at the Executive Board reveal the difficulty of grounding IMF policy work in academic theory.[21] In the words of two directors, they "would be hard pressed to explain how the framework would feed into the judgment of what is a politically and socially feasible adjustment effort" a core aspect of the IMF's pragmatic definition of debt sustainability (Zoccali and Maino, GRAY/02/742). Despite technical improvements, outputs from templates alone could not determine sustainability, resulting in a mixed reception by the Board. As one of the Board directors put it, "while not a breakthrough of mythical proportions, the proposal strikes me as plain common sense" (Wijnholds, GRAY/02/726).

4. Quantifying Exceptional Access to Fund Resources

Section 1 provided an overview of how the IMF's public reputation was damaged by its handling of several crises. The failures of IMF's policy advice and lending provoked an internal investigation, which concluded that the decision to augment the Argentinian programme in 2001 was not grounded in serious economic analysis.[22] This prompted the rethinking of access to IMF resources with a view to defining more

[20] In subsequent DSA templates, cross-country comparisons of size and rapidity of fiscal adjustment are introduced to ascertain how the stipulated adjustment compares.
[21] For a historical example of the World Bank's efforts see Alacevich (2016).
[22] See the discussion in Blustein (2006) and IEO (2004).

precisely the circumstances under which accessing funds over the normal limits would be granted. Prior to this, loans greater than what would ordinarily be justified were simply "exceptional", without any formal specification by the Board about what this meant.[23] This made the Fund "more vulnerable to pressure to provide exceptional access even when prospects for success are quite poor and debt burden of the sovereign is likely to be unsustainable" (IEO, 2016, 18). The revised policy laid out four explicit criteria to guide approval of exceptional access to Fund resources, one of which, in the initial wording, was "a rigorous and systematic analysis indicat[ing] that there is a high probability that debt will remain sustainable" (IMF, 2002b).

In the Executive Board meeting that discussed the new criteria to guide lending, the Acting Chair, Anne Krueger, summed up the rationale that the DSA tool would quantify the second criteria and "raise the burden of proof" that the new guidelines necessitated:[24]

> In discussing the aforementioned criteria, Directors emphasized in particular the importance of rigorous debt sustainability analyses to support requests for exceptional access (Krueger, EBM/02/94).

Board members strongly supported the introduction of a robust DSA as a qualification of the exceptional access criteria:

> Debt sustainability assessments should play a crucial role in restricting exceptional access to truly exceptional cases, as well as in making it clear when required that drastic measures such as debt restructuring are necessary to help avoid prolonged Fund lending that is undesirable (Yagi and Miyoshi, EBM/02/94).

The reasons for this were both to "strengthen accountability and ownership" but also to necessitate "a more systematic analysis of a country's capacity to repay the Fund, which would be closely linked with debt sustainability analyses" (Lundsager and Baukol, EBM/02/94). If exceptional finance combined with domestic adjustment as stipulated in an IMF programme could not guarantee debt sustainability in the medium term with a high probability, then a debt restructuring would be needed. Bischofberger, the Executive Director for Germany, made it clear that if the sustainability condition is not met, then the onus ought to be on private creditors accepting a reorganisation of their claims. Hence, he joked that

> while staff seem to assume that 'Capital Account Crisis plus Assumed Debt Sustainability justifies Exceptional Access,' we would argue that 'Capital

[23] As noted by Schadler (2016) this was left rather vague until the impetus to introduce a formal framework emerged from the IMF's experiences in the 1990s and early 2000s.
[24] The meeting took place on September 6, 2002, three months after the first Board meeting on the template.

> Account Crisis plus Uncertain Debt Sustainability requires Debt Restructuring' (Bischofberger, GRAY/02/1222).

Although the new methodology that was being developed at the Fund was deemed crucial in determining access levels and whether the repayment of the Fund was being jeopardised, there was no full faith in the newly developed methodology either. Some Directors noted that

> we are afraid that we are still far away from having an adequate analysis of debt sustainability. The new methodology that was approved by the Board recently to assess sustainability (SM/02/166) is a step in the right direction, but it is still work in progress. (Oyarzábal and Beauregard, GRAY/02/1210).

While the discussion about the introduction of the template emphasised the supremacy of judgement over strict quantification, the same could not be said for the rationale for introducing the template in the first place which was intricately tied into providing a means to quantify the exceptional access criteria requiring a rigorous analysis that showed that debt was sustainable with a high probability.

5. Disciplining the Staff Experts through Public Scrutiny

The 2002 introduction of the template was meant to mitigate the adhocness and undue optimism with which some country desks pursued their assessments enabling programme approval without adequate economic rationale. Although the IMF tried to redress problems of credibility through greater transparency by making known on what basis decisions were made, the way macro variables were constructed remained concealed. This left ample discretion still available for each country desk to make projections and hence model the economy in whatever way it deemed appropriate, rather than imposing a common way to generate the underlying projections. Discussions at the Board swarm around the cumbersome fact that the Fund's baseline is inaccurate, and Directors expressed concern that the IMF's projections were not taken seriously in the eyes of the public:

> Given that debt sustainability assessments are central to key Fund decisions in program contexts, … it is important *that they be viewed as* being based on solid judgments and are reasonably credible (Shaalan and Farid, GRAY/02/727; *emphasis added*).

Board members appeared confused as to how those projections were crafted, and what their relationship is to WEO projections. One member explained:

> the paper confirms that there is a clear bias towards over optimism in the projections, either because of a bias in the WEO projections, or because of a bias in the policy assumptions underlying the baseline scenario. If the WEO projections are biased towards over-optimistic debt projections, it is not only a problem for the debt sustainability assessments, but even more so

for the credibility of the Fund's projections in general (Egilsson, EBM/03/64).

Faced with a general unwillingness to delve into the sources of possible systematic biases, the Board attempted to reduce them. One suggestion was "to include explanations in staff reports of why the most recent forecasts were faulty" (Jacklin and Dohlman, EBM/03/64). This was deemed "useful as a disciplining device, though…is not likely to eliminate systematic bias in projections" (Jacklin and Dohlman, EBM/03/64). Another suggestion was to include scenarios that would capture how staff projections differ from consensus forecasts (Martí, EBM 03/64). The problem "with over-optimism is not one of making mistakes, but rather that of not learning from them," Directors noted (Padoan and Bossone, GRAY/02/730). As another Directors' statement puts it: "The goal of the exercise is to [make] it more difficult to justify programs where there is insufficient adjustment or staff use unrealistic assumptions to make programs appear 'sustainable'" (Lundsager and Ralyea, GRAY/02/734). The US Director, who represents the most powerful country within the Fund, explicitly argued that publication of the DSA outputs would enhance the "discipline imparted by the framework" (Lundsager and Ralyea, GRAY/02/734). Publication would mean that "there are improved incentives on the Executive Board not to support a program that appears to have a limited chance of success" (Callaghan GRAY/02/721). The publication of the template was therefore seen not only as a way to make the staff more accountable to the Board, but also, as the Members argued, to make the whole institution more accountable to whoever would be affected by its policy decisions: "sustainability assessment in the public domain is in everyone's best interest, especially the country's," one Director claimed (Bennett GRAY/02/729).

The role of a public was crucial—the Board seemed to believe that IMF expertise may be somehow disciplined by being made public. The IMF surreptitiously used the public to provide the appearance of rigour and to enhance its external credibility. "A program's credibility may be enhanced if it is apparent that the Fund has considered a range of potential outcomes when making its decision" (Callaghan GRAY/02/721). Nevertheless, the IMF staff described the interpretation of the debt sustainability outputs as "still more of an art than a science, with a large element of judgment required" (IMF, 2003, 40). The art of the debt sustainability exercise far dominated any discussion of its scientific basis at the Board level.

6. Institutional Authorship Needs the Public

The DSA was revised between 2002 and 2003 by introducing two new scenarios: a "no policy change" scenario and a historical scenario as well as an indication of the debt stabilising primary balance. The template was tailored so that the economic reasoning that arises can yield specific and desired results. For instance, the template output could yield a sustainable trajectory by being predicated on dramatic fiscal adjustments and optimistic assumptions about growth, implying less need for debt relief. As part of the dialogue with country authorities, the template outputs could be used to pressure a country into adopting policies to compress demand and reduce incomes. Were the DSA output to suggest unsustainability, it would mean that an IMF programme was ill-defined, as domestic adjustment and IMF financing could not guarantee repayment of IMF resources, and would require an alternative course of action. If debt cannot be made sustainable through adjustment, the pressure would be on creditors to accept a restructuring of their contracts.

With this in mind, one of the Directors remarked: "Our goal should be to ensure that the authorities face the right incentives when confronted with very high debt burdens" (Bennett, EBM/03/64). When the Board discussed the addition of more scenario analysis, the rationale was that these "could provide more persuasive arguments for the need to adjust policies" (Portugal and Tombini, EBM/03/64). To achieve this, Directors remarked that the staff needed to explain the objective of the template, its mechanics, and proposed refinements more clearly. Communication is key for soliciting the desired changes, for making it more likely that the new template can leverage policy response:

> Better technical understanding by the authorities should not only lead to improved scenario identification and analysis but also, and perhaps more importantly, enhanced ownership of the courses of action that such scenarios may prompt (Callaghan and Amador, EBM/03/64).

The importance of the DSA template was also as a communication tool, "increasing the authorities' receptivity to the findings of these analyses" (Callaghan and Amador, EBM/03/64). In particular, the introduction of a "no policy change" scenario was deemed "helpful as it quantifies the cost in terms of indebtedness of failing to carry out the measures contained in the baseline" (Martí, EBM 03/64).[25] One Director admitted that "one country of my constituency recently made

[25] Two Directors remarked that "the addition of a 'no-policy-changes' scenario is the most useful suggestion in the staff paper. It would provide an indirect estimate of the potential benefits of the discussed policy changes, thus providing both staff and authorities with a powerful argument for the need of the measures" (Zurbrügg and Siegenthaler, EBM/03/64).

successful use of a 'no policy change' scenario to win public support for the introduction of some unpopular fiscal reforms" (Kiekens, EBM 03/64). The introduction of the historical scenario compared the adjustment plans with past experiences of the country, in response to the concern that the 2003 version of the template still yielded results "that may be too extreme or unrealistic, and thus not worthy of a policy response" (Callaghan and Amador, EBM/03/64). The ability of a table, which shows the future time path of a variable, to prompt current policy change when there is only a small chance of the time path occurring is limited. Nevertheless, this trajectory about the future would put pressure to act in the present. Improving this was part of a broader methodological discussion into new methodologies that would assign specific probabilities to the likelihood of scenarios developing.

The disputatious aspect of the Board was most obvious in the dilemma over whether the DSA's results should be published. Opinions broadly fell within two main groups: one that saw publication as a means to enhance the credibility of the Fund via greater transparency, and another that saw publication as exposing the Fund.[26] These opinions were underpinned by diverging views of the "public" that the publication was aimed at. A public which could react positively to publication, and thus come closer to the Fund's view, was financial market participants:

> in a capital market crisis, what matters is not the Fund's assessment, but what the markets think about sustainability. The best chance of the markets sharing the Fund's view is if as much information as possible which underlines the decision is made available (Callaghan, GRAY/02/721).

In particular, releasing the information could reduce market participants' monitoring costs (Yagi and Toyama, GRAY/02/724). Publication was vociferously opposed by those Directors who believed that the operational value of the exercise was internal decision guidance about how to use the IMF's resources and ascertain repayment prospects (Shaalan and Farid, EBM 02/7). Representing the views of several Directors, one mentioned: "The new framework does not in itself provide sufficient grounds to 'elevate' the status of our debt sustainability assessments by making them public" (Shaalan and Farid, GRAY/02/727). This was because of the confidential nature of the information that the IMF is privy to, itself a product of the "special" role of the IMF in the international financial architecture.

The "public" was also summoned by those Directors who warned against publication because of a "risk of a considerable misinterpretation by the public" (Al-Turki, GRAY/02/735). Accepting that there may be reasons to keep certain elements confidential, for example, information on the financial sector, "the information should be provided

[26] The rhetorical foundation and deceptiveness of the call for greater transparency in international financial architecture is examined by Best (2005).

to the Board through a separate channel" to the published version (Wijnholds, GRAY/02/726). Such a view was in keeping with the IMF's overall transparency policy which enabled members to request suppression of sensitive economic information. Would "the market" even "understand accurately the meaning of the analytical result," some Board members worried (Yagi and Toyama, GRAY/02/724)? Concerns were also raised regarding "some country authorities' limited analytical capabilities to fully understand and make use of the results of the debt sustainability analysis" (EBM, 03/64), to which another Director responded with a proposal to send technical assistance to those authorities.[27] This prompted further discussion on how to improve the readability of the set of tables and graphs that presented the results. Visual representation was seen as a "translation" for public use. Finally, some directors judged publication premature and suggested to wait and see. Various provisos and middle grounds were put forward, such as making publication voluntary or only partly publishing the results but not their underlying assumptions. It was decided to publish a selection of results for a year, as an experiment. After positive feedback, in 2003, quite the contrary, having been relegated to an annex in staff Reports, the main lament in this meeting was that the assessments were not public enough.[28] Few however saw publication as inherently good. The sentiment that publication can "encourage open debate" was mentioned by one (Ísleifsson and Fidjestøl, GRAY/02/723) and that publication might be good because it may genuinely make "known risks that would make debts unsustainable" was only mentioned in one statement (Yagi and Toyama, GRAY/02/724).

Given the origins of the template, the discussion about publication was also related to the outcome of other Fund policy developments, specifically, the proposal by Krueger to establish a sovereign debt restructuring mechanism (SDRM). One director mentions that "the introduction of an SDRM would strengthen the case for publication" (Yagi and Toyama, GRAY/02/724). Had the discussion in the Fund about a SDRM been fruitful, the DSA may have been destined for a far more pivotal role; if a SDRM was in place, the analysis of the newly proposed DSA template "would indicate whether an application of a debtor country to activate the SDRM is justified" claimed Wijnholds (GRAY/02/726). In that case, DSA analysis could be used more directly to effect private sector involvement by indicating how much debt had to be reduced for it to be brought to levels deemed sustainable and what the expected contribution of private sector creditors to that

[27] Technical assistance is a core element of Fund work; see Barnett and Finnemore (2004) for an overview.

[28] The Public Information Notices intended to inform the general public about the discussions that took place were released with some delay; in the case of the 2002 meeting 27 days after it took place, and two months and three days after the 2003 meeting took place.

reduction would be. The DSA was understood as important not only as a means to guide IMF policy, but to define the "need—and scope—of private sector involvement" (Von Kleist and Fabig, EBM 03/64). Though the idea for a SDRM was formally dropped in 2003 at the IMF Ministerial meeting, the life of the DSA continued with the focus on domestic contraction and surplus generation for debt repayment fortified.

7. Conclusion

This paper showed the creation of the IMF's Debt Sustainability Assessment template as the development of a socio-technical tool to guide decision-making of the IMF. The introduction of the template was part of a broad effort to redress policy blunders and improve appearance in the public sphere. The paper established that analytical issues are not free from political interpretation when put to operational use. The DSA embeds surplus generation instead of favourable debt dynamics for debt repayment, despite the ostensible academic clarity, the need for pragmatic definitions muddies the process of measuring debt sustainability in practice. The IMF relies on a pragmatic definition of debt sustainability that rests upon a notion of politically and socially feasible adjustment and a technical tool that provides little means to assess it. Instead, the key driver of establishing the DSA was the political decision to curtail access to extraordinary IMF loans through the introduction of a seemingly rigorous process to guide policy action. This reveals a tense amalgam of the technocratic and political dimensions of IMF work, overshadowed by an attempt to resolve credibility problems.

The pre-formatted framework for analysis can be interpreted as a disciplinary activity to tame country desk teams to be more accountable for what they do. Introducing the template was part of an institutional curb to the tendency of producing biased analyses and a means to discipline IMF experts. In this respect, the theoretical underpinnings of the framework were less important than public perceptions in driving the analytical approach. The template attempted to resolve legitimacy problems by revealing the numbers on which decisions were made but provided little insight into how those numbers arose. This allowed continued room for reliance on overoptimism, and hence, less debt relief by creditors and placement of the burden of adjustment on the debtor. The use of collective authorship of staff documents enhanced the credibility of expertise and elicited desirable responses from the Board by framing requests for feedback in specific ways and developing scenarios to encourage policy response. There was not much on offer however as to how revealing numbers and introducing prefabricated routines for economists to fulfil could absolve the Fund from long standing legitimacy issues arising from its governance structure and nature of its policy advice.

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