Rating Agency Disagreement on Sovereign Debt Levels

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26 September 2025

[Preliminary and incomplete. Please do not distribute]

Keywords: sovereign financial reporting standards; credit agency disagreement on sovereign debt; sovereign bond yields; sovereign bond ratings

JEL Classifications: M41, F340, G1

Acknowledgements: We are grateful for helpful comments from Anne Beatty, Hans Christensen, Claudio Columbano, Joachim Gassen, Daniel Yang, and seminar participants at the Seoul National University, Lancaster University, Universitas Airlangga, the Egyptian Online Seminar in Business, Accounting and Economics and the XIX International Accounting Research Symposium. We appreciate insights from anonymous interviews with senior analysts covering the sovereign debt area and officials at the IMF and the World Bank. We appreciate financial assistance from Judge Business School at Cambridge University and from Columbia Business School.

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Abstract

Despite its importance as an economic indicator, the measurement standards underlying the general government debt number remain non-comparable across countries. In response, credit rating agencies (CRAs) perform accounting adjustments to transform inconsistent fiscal data into best possible comparable figures for rating purposes. This study investigates how and why CRAs disagree on the level and composition of sovereign debt owed by countries. We examine dispersion in the three major CRAs' assessment of general government debt for 132 countries from 2006 to 2019. The dispersion is economically significant, averaging 3.13% of GDP in our sample, with values ranging from 0% to 41.31% of GDP. The cross-agency dispersion mainly derives from differences in the types of instruments considered as debt and whether the debt owed by specific government and quasi-government institutions is included. Dispersion in cross-agency sovereign debt assessment is (i) positively correlated with contingent liabilities, (ii) lower in countries where fiscal rules pertaining to debt are enforced at the supranational level such as those in the European Union (EU), and (iii) higher in countries where political power is more centralized. Periods of higher sovereign debt dispersion are associated with (i) higher likelihood of split ratings, (ii) fewer (more) rating upgrades (downgrades), and (iii) higher sovereign bond yields. Overall, our evidence underscores the importance of coordinated international efforts to define and unify fiscal reporting standards.

Credit Agencies Disagreement on Sovereign Debt Levels

1. Introduction

The recent 2025 downgrade of US general government debt by Moody's to align with lower ratings previously assigned by S&P and Fitch made headlines around the world, challenging the notion that sovereign debt owed by the largest economy in the world is "risk-free."[1] Soaring public debt was a key topic of concern at the 2025 World Economic Forum meeting in Davos.[2] Despite the economic importance of sovereign debt levels, national governments' fiscal reporting is accounted for by national statistical institutes and is not subject to common worldwide reporting standards.[3] International organizations such as the International Monetary Fund (IMF) and the World Bank attempt to produce more comparable key fiscal figures by making ad-hoc adjustments to country reported fiscal data, yet they acknowledge that it is impossible to fully reconcile country-specific idiosyncratic reporting conventions.[4] In this complex data environment, credit rating agencies (CRAs) undertake various additional quantitative adjustments for each country and conduct ad-hoc adjustments to produce proprietary estimates of key fiscal figures, resulting in cross-agency dispersion of their assessment of national debt levels. We exploit this unique setting to study the antecedents and implications of this cross-agency dispersion of national debt assessments.

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[1] https://www.bbc.co.uk/news/articles/c4ge0xk4ld1o

[2] https://www.weforum.org/stories/2025/01/public-debt-problem-davos-global/

[3] In theory, the Government Finance Statistics Manual (GFSM), published by the IMF in 2014, offers a formally harmonized accrual-based framework for government finance statistics. However, implementation across countries remains uneven. Adoption is voluntary, leaving scope for divergent interpretation, and many governments face technical challenges in aligning primary accounting data with the standards. For example, some countries only produce national statistics on a cash basis, and the fiscal reporting may not cover all levels of government. These factors limit a government's willingness and capacity to fully comply with GFSM standards in practice.

[4] The IMF publishes their estimates of national statistics in their World Economic Outlook (WEO) database as well as an additional and distinct Government Finance Statistics (GFS) database. The WEO data includes IMF staff idiosyncratic country-level adjustments and only partially conforms to the 2008 version of the System of National Accounts (SNA 2008). Source: https://www.imf.org/en/Publications/WEO/weo-database/assumptions-and-data-conventions. On the other hand, the IMF GFS data attempts whenever possible to conform to the 1993 version of the System of National Accounts (SNA 1993). Source: https://www.imf.org/external/pubs/ft/gfs/manual/index.htm. The World Bank publishes external debt levels by country based on staff estimates: https://www.worldbank.org/en/programs/debt-statistics/ids/technical-guide

This setting is interesting to accounting researchers as it is a unique financial reporting environment where there are no universally accepted reporting standards, auditors, regulators, nor enforcement agencies. The setting augments the literature's understanding of state and municipal accounting in the US where governmental accounting is audited and subject to national standards (Baber et al., 2013; Kido et al., 2012). It also adds to the debate on the usefulness of international comparability in corporate financial reporting standards (Christensen et al., 2013; De Franco et al., 2011; De George et al., 2016; Wang, 2014). In addition, the setting extends existing work on CRA adjustments for corporate bond ratings (Kraft, 2015). This paper also contributes to the literature on sovereign credit ratings. Sovereign credit ratings act as a key measure of a nation's creditworthiness and are central to shaping its access to international capital markets, national cost of borrowing, and longer-term economic growth prospects (Chen et al., 2016). Moreover, since sovereign credit ratings serve as the lower bound of corporate bond ratings, they have significant spillover effects on corporate borrowing costs and growth (Almeida et al., 2017).

In our sample of three major CRAs' (S&P, Moody's, and Fitch) assessments of general government debt for 130 countries from 2006 to 2019, the dispersion in national debt assessments averages 3.13% of GDP, with values ranging from 0% to 41.31% of GDP. Given the economic significance of this dispersion, we first investigate the underlying antecedents along four dimensions: accounting, institutional, political, and economic. We find that CRA sovereign debt assessment dispersion is higher in countries with higher contingent liabilities. These results indicate that accounting practices and the disclosure environment play a role in the variation of CRA sovereign debt assessment dispersion. Institutional factors also matter, as countries with national and supranational debt rules tend to have lower CRA sovereign debt assessment dispersion. In particular, countries with supranational debt rules that are enforced by a supranational agency such as EU member states, have lower debt assessment dispersion

than those whose supranational debt rules are not enforced such as certain countries in Africa. In terms of political factors, we find that dispersion in CRA sovereign debt assessments is higher in countries with presidential rather than parliamentary political systems. These results suggest that CRAs disagree more on their assessments of national debt levels of countries with centralized political decision making even though national statistical institutes are meant to be independent of the executive branch of government. As for economic factors, debt levels and inflation are both positively correlated with debt assessment dispersion, perhaps because they represent higher levels of economic uncertainty. Taken together, our results suggest that adverse accounting disclosure environment, lack of supranational oversight, centralized government power, and economic uncertainty make it more difficult for professional intermediaries to assess the true level of sovereign indebtedness.

Next, we study the implications of dispersion of CRA debt assessments. First, we find that dispersion is positively correlated with sovereign credit ratings disagreement after controlling for known determinants for sovereign ratings. We also find that higher CRA sovereign debt assessment dispersion is associated with fewer rating upgrades and more rating downgrades. Furthermore, our results suggest that CRA sovereign debt assessment disagreement is positively correlated with sovereign bond yield spreads after controlling for other known determinants from the literature. Taken together, these findings suggest adverse financial implications when a country's financial disclosure environment is more difficult for professional intermediaries to assess its fiscal data.

Our paper contributes to the literature in several important ways. First, we extend the emerging body of literature on macro-level accounting (Boisseau-Sierra et al., 2024; Kido et al., 2012; Lyu et al., 2018; Shevlin et al., 2019; Shivakumar and Urcan, 2017). Our measure of CRA debt assessment dispersion expands existing literature on the interplay between financial disclosure environment and information intermediaries from firm-level work on CRA

adjustments for corporate bond ratings and analyst forecast dispersion in earnings estimates to the macro-level (Frankel et al., 2006; Gu and Chen, 2004; Kraft, 2015; Lehavy et al., 2011). The measure we use, unlike the proprietary adjustments that CRAs make, can be easily replicated and tracked by investors, policy makers, international organizations, and other users of fiscal data. Our conversations with senior officials at multiple CRAs and international organizations indicate strong interest in our findings. We hope that the study will encourage more work by other accounting scholars to expand the boundaries of the accounting literature to topics in macroeconomics and political economy.

Second, we add to the literature on government accounting by extending the debate from state or municipal accounting in the US to international sovereign accounting (Allen and Petacchi, 2023; Baber et al., 2013). In contrast to state or municipal accounting in the US, sovereign nations can establish idiosyncratic conventions and not fully conform to common standards such as the System of National Accounts (SNA) promoted but not enforced by international organizations. Moreover, there are no universally recognized regulators or enforcement agencies in the area. To make matters worse, unlike investors in corporate equity or bonds or even municipal bonds, creditors of sovereign bonds have much more limited recourse in the case of default (Shleifer, 2003).

Third, we add international, sovereign-level evidence to the debate on the importance of financial statement comparability. Our results suggest that the existence of supranational accounting standards and oversight such as in the European Union (EU) improves fiscal reporting comparability and reduces CRA debt assessment dispersion for member states. This augments existing literature which finds financial statement comparability is negatively related to analyst forecast dispersion of corporate earnings and that the adoption of supranational accounting standards such as the International Financial Reporting Standards (IFRS) improves financial statement comparability (De Franco et al., 2011; De George et al., 2016; Wang, 2014).

Our finding that CRA debt assessment dispersion is increasing in contingent liabilities also extends existing work on the implications of contingent reporting for users of financial information (Allen and Petacchi, 2023; Amir, 1993; Graham et al., 2005).

The remainder of the paper is organized as follows. Section 2 discusses the institutional background and prior research as well as develops our predictions. Section 3 discusses the sample and provides descriptive statistics. Section 4 presents empirical results and section 5 concludes.

2. Institutional details and prediction development

2.1. Institutional background of sovereign accounting

In contrast to corporate accounting, which is generally prepared in accordance with either IFRS or US Generally Accepted Accounting Principles (GAAP) rules, sovereign accounting suffers from significant definitional heterogeneity, both in terms of measurement principles and institutional boundaries. Countries inconsistently implement the System of National Accounts (SNA), the international statistics framework jointly produced and maintained by the European Commission (EC), IMF, Organization for Economic Co-operation and Development (OECD), United Nations (UN), and the World Bank. While the 2008 SNA revision introduced methodological improvements such as broader balance sheet accounting and treatment of pension liabilities, countries vary in how and when they adopt these changes, resulting in data discontinuities and reduced comparability (Bloch and Fall, 2016; de Vlieger and Mügge, 2018; Irwin, 2015). Primary sources for national debt figures are not common, as a recent IMF working paper finds that very few countries currently have national legal requirements for debt reporting (Vasquez et al., 2024).

International organizations have developed parallel reporting frameworks that reflect divergent priorities and methodologies. The IMF publishes fiscal statistics through the

Government Finance Statistics (GFS) and the World Economic Outlook (WEO), while the World Bank maintains the Debtor Reporting System (DRS), each focusing on different coverage and accounting bases (Dippelsman et al., 2012; Irwin, 2015). The GFS adopts an accrual basis and emphasizes the "general government" perimeter (GL3), which includes central, state, and local government units, and reports debt on a gross basis with recommended full instrument coverage (D4)[5]. In contrast, the WEO typically relies on member-submitted data that may deviate from international standards due to political or technical constraints (Irwin, 2015). The World Bank's DRS provides data mainly on external debt contracted by public and publicly guaranteed borrowers, omitting domestic liabilities and contingent obligations (Bloch and Fall, 2016). These differences in scope and valuation result in wide variation in the reported debt figures reported by the international organizations (Dippelsman et al., 2012).

2.2. Prediction development

CRAs need to navigate this complex and inconsistent fiscal disclosure framework to assess sovereign fiscal data and generate comparable sovereign bond ratings. Interviews with CRA officers and prior research suggest that they tend not to use primary financial reporting data, and instead adopt a general definition of general government debt consistent with the IMF's GFS framework (Columbano, 2025).[6] However, the CRAs tend to focus narrowly on focus on traditional debt securities and loans may omit significant sovereign liabilities (Abbas et al., 2019). Therefore, the CRAs subsequently refine their debt assessment through a country-

[5] The D1 definition of debt includes debt securities, loans. D2 debt adds special drawing rights (SDRs), currency and deposits. D3 debt further adds other accounts payables such as arrears in payments. D4 extends D3 by including insurance, government employment-related pensions, and standardized guarantee schemes (Dippelsman et al., 2012)

[6] The Moody's Statistical Handbook, which accompanies their publications, explains that the agency compiles government finance data from multiple sources, including the IMF, OECD, Eurostat, Official National Sources, supplemented by proprietary data and estimates.

by-country approach. This allows them to account for consolidation issues such as central bank debt issuance, sovereign debt held by social security and public-sector pension funds, liabilities held by public corporations and quasi-governmental agencies guaranteed by the national government, and variations in fiscal reporting conventions across countries. These adjustments are not uniform across CRAs, resulting in cross-agency sovereign debt assessment dispersion. Our careful examinations of the three major CRAs' published methodology manuals reveal that differences in the definition of general government debt do not systematically vary across CRAs.[7] We therefore investigate the antecedents of cross-agency sovereign debt assessment dispersion across accounting, institutional, political, and economic dimensions.

In terms of sovereign accounting environment, we conjecture that cross-agency sovereign debt assessment dispersion is likely to be driven by the CRAs having diverging views on the variations in primary fiscal reporting practices as well as the appropriate amounts of contingent liabilities to be included as general government debt in a country-by-country basis. On the one hand, the existence and economic significance of contingent liabilities increases the likelihood that CRAs will have different assessments of general government debt levels as the agencies have proprietary estimates for these liabilities that tend to be either under or mis-reported in primary fiscal disclosures (Dafflon and Rossi, 1999). On the other hand, CRAs may agree to exclude all contingent liabilities from government debt assessments and therefore agree on narrowly defined debt levels. The above discussion suggests that the relation between contingent liabilities and debt assessment levels is not trivial. Previous research suggests that countries obscure their true fiscal condition by using stock flow adjustments (SFA), which represent the difference between the reported annual change in debt levels and the reported deficit (Bernoth and Wolff, 2008; Seiferling, 2013; von Hagen and Wolff, 2006). Therefore,

[7] A systematic methodological discrepancy across CRAs would imply that our CRA debt assessment dispersion measure captures a mechanical methodological divergence.

higher SFA may signal poor fiscal reporting environment and higher cross-CRA debt assessment dispersion. National debt rules such as the Australia's fiscal rule that requires public debt as a percentage of GDP to be falling over a set period, and supranational debt rules such as the Maastricht treaty that requires debt to GDP ratios to stay below a certain threshold for EU member states, typically have provisions on what exactly constitutes public debt in order to calculate the debt to GDP ratios specified in the rules. Moreover, some supranational debt rules are associated with active supranational enforcement of these rules. An example is Eurostat, the statistical office of the EU that actively monitors and corrects fiscal reporting by EU countries. Therefore, the existence of national and supranational debt rules likely improves the fiscal reporting environment (Boisseau-Sierra et al., 2024). Finally, as recent research suggests that GDP reporting may also be manipulated, we include a measure that captures cross-CRA assessment dispersion of GDP (Lyu et al., 2018).

Prior research suggests that a country's political system can influence the reliability of national fiscal statistics. In particular, autocratic countries are more likely to manipulate fiscal data (Martínez, 2022). Another stream of research in political science investigates economic, social, and policy outcomes of government political systems. In a parliamentary regime, the executive branch is formed and held accountable to the legislative branch, and the government can be ended by a vote of no confidence and replaced by either a new governing coalition or a call for new elections. In contrast, the presidential political system is distinguished by having an elected head of state with fixed terms in office. Therefore, parliamentary systems have lower propensity than presidential political systems for executives to rule at the edge of the constitution. A large body of research suggests that parliamentary systems are positively associated with economic growth, social equality, political stability, human development, and negatively associated with corruption (Altman et al., 2017; Gerring et al., 2009; Gerring and

Thacker, 2004; Linz, 1990).[8] In addition, parliamentary systems tend to adhere more closely to rule of law and exhibit higher bureaucratic quality (Andrews and Montinola, 2004; Gerring et al., 2005). Following the above discussion, we expect that CRA sovereign debt assessment dispersion to be lower for countries with parliamentary political systems.

Motivated by prior research in sovereign ratings determinants as well as in GDP manipulation, we consider the relation between CRA sovereign debt assessment dispersion and the following economic factors that measure a country's economic development and fiscal health: GDP levels, GDP growth, and CRA GDP assessment dispersion, debt levels and interest payments scaled by GDP, and inflation (Afonso, 2003; Cantor and Packer, 1996). We also include the average rating of sovereign bonds as a further potential antecedent. On the one hand, more advanced economies in better fiscal health may be associated with lower CRA sovereign debt assessment dispersion. On the other hand, if the dispersion likely comes from differential debt instrument classification and the accounting of contingent liabilities, then economic conditions may not play a significant role. Therefore, whether economic factors drive CRA sovereign debt assessment dispersion is an open empirical question.

Taken together, the above discussion leads to the following prediction.

Prediction 1. CRA sovereign debt assessment dispersion is i) positively (negatively) related to accounting practices that weaken (improve) fiscal reporting environment and ii) positively related to political systems that centralize power.

Next, we consider the implications of CRA sovereign debt assessment dispersion. First, given the importance of sovereign debt levels in a country's creditworthiness, if CRAs disagree about a country's debt levels, it should be more likely that they also disagree on the country's

[8] These findings should be interpreted with the understanding that economic advancement, bureaucratic independence and professionalism, judicial independence, and other institutional factors vary significantly within parliamentary and presidential political systems (Cheibub et al., 2014; Scartascini et al., 2013). The United States is the only surviving presidential democracy with a long history of constitutional continuity in the world (Linz, 1990).

sovereign debt ratings. In addition, if higher CRA sovereign debt assessment dispersion captures a poorer fiscal reporting environment, then it should also be positively related to split ratings (Akins, 2018). Second, if higher CRA sovereign debt assessment dispersion is associated with worsening fiscal health, it should be correlated with a lower (higher) likelihood of rating upgrades (downgrades). Third, investors should care about both poorer fiscal reporting environment and fiscal health, therefore increases in CRA sovereign debt assessment dispersion should be correlated with higher sovereign bond yields (Boisseau-Sierra et al., 2024). This discussion leads to our second prediction.

Prediction 2. CRA sovereign debt assessment dispersion is positively related to sovereign credit ratings disagreement and downgrades, as well as sovereign bond yields.

3. Sample and descriptive statistics

Our sample consists of 5,820 quarterly observations covering 130 countries from 2006 to 2019.[9] Our CRA debt assessment dispersion measure, *DebtAssessDispersion,* captures the variability of the assessment of a country's general government debt levels by the three leading CRAs: S&P, Moody's, and Fitch. First, we hand collect the general government debt levels (expressed in % of GDP) for each country in our sample from the following CRA publications: Moody's Country Credit Statistical Handbooks, Fitch's Sovereign data comparator and S&P's Sovereign risk indicators. Our sample stops in 2019 because Moody's stopped publishing the Country Credit Statistical Handbooks after this date. We construct our main variable of interest *DebtAssessDispersion*, as the standard deviation of the three debt ratios (as a percentage of GDP) reported by the three CRAs. Our analysis relies on ex-post *historical* debt levels published by CRAs, which correspond to the values they would have used in their rating decisions. For example, the debt level for the first quarter of 2013 is measured using the

[9] The dataset covers 14 years of quarterly data for 130 countries, yielding a theoretical number of 7,280 observations. Due to occasional gaps in quarterly reporting by CRAs, our actual number of observations is lower.

historical debt figures published by CRAs at the end of the first quarter in 2014. We focus on historical debt values rather than forecasted future values in order to capture differences in debt measurement rather than differences in the CRAs' predictions of future economic conditions.

Similarly, we construct a CRA GDP assessment dispersion variable (*GDPAssessDispersion)* by computing the standard deviation across figures reported by the three agencies to capture CRA disagreement on their assessment of a country's historical GDP output. We control for this variable as GDP is the denominator of our main variable of interest, and existing research suggests that countries may also manipulate GDP figures (Lyu et al., 2018). Also in a similar fashion, we construct a measure of CRA sovereign ratings dispersion (*RatingAssessDispersion*) by computing the standard deviation of sovereign ratings, converted to numerical scale, across the three CRAs for each country-quarter. We also obtain a country's debt (*Debt*) and GDP (*GDP*) figures by averaging the three CRA's assessments for each measure. In addition, we obtain rating upgrades (*Upgrade*) and downgrades (*Downgrade*) data from the CRA publications.

We obtain data on the level of inflation (*Inflation*), and interest on public debt scaled by GDP (*Interest*), the existence of national fiscal rules on debt levels (*DebtRuleNational*), the existence of supranational fiscal rules on debt levels as well as the existence of supranational enforcement agencies (*DebtRuleSupraEnforced* and *DebtRuleSupraUnenforced*) from the IMF. The degree of autocracy of a country's political system (*Autocracy)* is the inverse of a level of political competitiveness from the Database of Political Institutions by the World Bank. We hand collect data on financial contingent liabilities (*HighFinContingentLiab*) from S&P's Sovereign Risk Indicators, and data on non-financial contingent liabilities (*HighNonFinContingentLiab*) from a special report on sovereign contingent liabilities

published by Fitch 12 January 2023.[10] We compute change in stock flow adjustments (*ΔSFA*) over the past four quarters. *SFA* is the difference between a country's annual debt growth and the annual deficit, scaled by GDP, from CRAs figures. Finally, we obtain 10-year dollar denominated sovereign bond yields and calculate the spread between the focal country and the US 10-year dollar denominated sovereign bond yields (*YieldSpread*) from Datastream.

Our descriptive analysis reveals that cross-agency disagreement over sovereign debt levels is both sizeable and variable over time. Panel A of Figure 1 plots the trajectory of this dispersion expressed both as a percentage of GDP (blue line) and in USD billions (orange line) from 2006 to 2019. The time-series fluctuate around the 3 - 4% level with no strict linear trend, but it exhibits distinct spikes during certain periods. Notably, cross-agency debt assessment dispersion tends to widen during episodes of fiscal stress or transition, suggesting that major economic events and policy shifts can exacerbate measurement discrepancies. For example, the dispersion measure rises sharply around global and regional crises (e.g. the late-2000s global financial crisis and the early-2010s European sovereign debt crisis), then receded in more stable periods. The spikes may reflect divergences among CRAs in how they accounted for government interventions, such as bank recapitalizations and nationalizations. Interestingly, the debt assessment dispersion rises again towards the end of the sample period between 2016 and 2018. This could be due to the increasing use of complex and opaque financing instruments that make it even more difficult for CRAs to assess the true underlying sovereign debt levels.[11]

[10] We note several limitations in the contingent liability data. S&P data on financial contingent liabilities is only available for 2006–2013. We assume countries remain in the same category – *HighFinContingentLiab* or not - as in 2013 for 2014-2019. Fitch data on non-financial contingent liabilities are not provided in panel form. We therefore assume that countries remain in the same category - *HighNonFinContingentLiab* or not - for the entire sample period.

[11] Kristalina Georgieva, Managing Director of IMF said the following in a speech on May 14, 2025: "We have high level of debt and on top of it, countries are increasingly using complex forms of financing that are often opaque. New debt instruments have emerged such as guaranteed, securitized and collateralized debt contracts linked to. public-private partnerships, state-owned enterprises and pension funds. And because of the novelty and complexity of these instruments, our experience is that too much debt remains hidden from the eyes of policymakers and from the public. And too often it comes to light only when it is late, through the debt restructuring process." Source : https://www.imf.org/en/News/Articles/2025/05/14/sp051425-managing-director-remarks-public-debt-transparency

Figure 1, Panel B also illustrates the dispersion in absolute terms (USD billions), which has trended upward over the sample years. This reflects the generally rising nominal debt levels worldwide. Even when the relative (% of GDP) differences stay moderate, the sheer growth in debt stocks means the dollar-value gap between agencies' assessments has expanded. Thus, by 2018 the typical cross-agency dispersion in sovereign debt assessments amounts to tens of billions of dollars, underlining the materiality of these disagreements for larger economies. Our sample period concludes before any potential impact from the COVID-19 pandemic on sovereign debt assessment discrepancies can be observed. However, we would anticipate an increase in the dispersion in 2020–2021, as variations in the accounting treatment of government interventions may lead to discrepancies in sovereign debt assessments among CRAs.

Figure 2 and Table 1 together demonstrate that the extent of CRA debt assessment dispersion varies markedly across countries and regions. Figure 2 presents the dispersion of CRA assessments of sovereign debt levels over the available quarters as a percentage of GDP around the world, with darker shading representing more pronounced dispersion. Figure 2 indicates pockets of high disagreement in certain regions, contrasted with more uniform assessments elsewhere. Untabulated results suggest that China (10.48%), Japan (9.11%), Barbados (6.76%), Canada (6.38%) and the US (5.48%) have some of the highest CRA debt assessment dispersion.

Table 1 reports the descriptive statistics of the dispersion by region expressed as a percentage of GDP in Panel A, and in US$ billion in Panel B. On average, the standard deviation of the three CRAs' debt-to-GDP assessments is about 3.13% of GDP, with a median around 1.85% (Table 1, Panel A). This implies that for a typical country with public debt near the sample mean (approximately 54.38% of GDP), agencies differ on the reported debt figure by roughly 6–7% of that country's total debt stock. Such dispersion is economically significant,

and indeed in extreme cases the gap is much larger – values range from essentially zero in some quarters up to about 46% of GDP, indicating occasions of stark disagreement on their assessments of national debt levels. Table 1, Panel A indicates that countries in East Asia and Pacific experience the highest average dispersion at about 4.77% of GDP, partially driven by the high disagreement on debt levels in Hong Kong and Japan as previously described. Similarly, elevated levels of dispersion are observed in the Middle East and North Africa region (3.60%) and the Latin America and Caribbean region (3.86%). North America, which is represented mainly by the United States and Canada, also exhibits a high mean dispersion (4.24%), indicating that even some advanced Western economies are difficult for CRAs to assess true debt levels.

In contrast, European countries exhibit markedly lower dispersion. Across all of Europe, the average CRA debt assessment dispersion is only 1.73% of GDP, roughly half the level seen in East Asia. In fact, Europe not only has the lowest mean dispersion but also a very compressed distribution: the 75th percentile of European dispersion (1.86%) is below the median dispersion in most other regions. This finding is likely due to the EU's institutional setting where the European Commission (EC) has established Eurostat which imposes a set of common national accounting and reporting standards called the European System of National and Regional Accounts (ESA 2010) on EU member states. In addition, Eurostat monitors and evaluates the fiscal reporting by EU countries and has the authority to amend member states' fiscal accounting data. CRAs therefore are less likely to modify Eurostat's debt figures for their own evaluations.

Other regions such as Sub-Saharan Africa (3.10%) and Central Asia (2.84%) have moderate CRA debt assessment dispersion close to the overall sample average, while South Asia is slightly lower at 2.16%. The debt assessment dispersion map (Figure 2) reinforces this conclusion: much of Europe is lightly shaded (low dispersion), whereas many countries in East

Asia, Africa, the Middle East and Latin America show darker shades signaling higher dispersion. This clustering implies that countries in certain regions face systematically greater difficulty in producing debt figures that different CRAs agree upon, possibly due to regional idiosyncrasies in debt reporting and definitions.

Panel B from Table 1 indicates that mean dispersion in CRA sovereign debt assessments represents US$27.34 billion on average for a country. Not surprisingly, cross-country and regional variation is heavily dictated by the size of the economy in a country. In North America, the region stands out with an exceptionally high average dispersion (mean of US$332.25 billion), driven by a few large economies such as US and Canada, while regions such as Sub-Saharan Africa and Middle East and North America exhibit much smaller average dispersions (US$1.76 billion and US$3.97 billion, respectively) reflecting the smaller economies in these regions. This underscores the fact that even modest dispersion in percentage-of-GDP terms can translate into substantial variation in monetary values for large economies. The map in Figure 2 and the regional patterns from Table 1 highlight that higher debt assessment dispersion is not confined to emerging economies but is also present in advanced and high-income countries. This supports the notion that CRA sovereign debt assessment dispersion is a global phenomenon, shaped by institutional, political, and accounting antecedents rather than on the stage of economic development alone.

Appendix B provides illustrative examples of how the three major CRAs can agree or disagree on a country's reported debt level. Panel A suggests that the CRAs more or less agree on Germany's general government debt levels in 2018, with Fitch's assessment at 61.60%, Moody's at 61.90% and S&P at 60.11%. These assessments yield a dispersion of 0.96% of GDP. Importantly, all three assessed levels are very close to the reported value by Eurostat, the supranational statistical office of the EU. In contrast, Panel B of Appendix B indicates a larger debt assessment dispersion for the US. Fitch assesses US debt at 98.55% of GDP, Moody's at

92.6%, versus 89.70% by S&P, corresponding to a 4.51% of GDP dispersion measure which translates into US$928.79 billion given the large size of the US economy. After discussions with senior officers at the CRAs as well as international organizations, we attempted to reconstruct the assessed values by the three CRAs by going directly to the reported figures by the US Treasury as well as the GFS data from the IMF. For Fitch, we find that adding general government debt securities and loans from the GFS data from the IMF yields the closest approximation of their assessed US general government debt levels. This is close to the D1 definition of debt by the IMF and the World Bank. For Moody's, adding debt held by the public to insurance and guarantee program liabilities as reported by the US Treasury Department, as well as credit market instruments of state and local governments from the GFS data produced by the IMF yields the closest approximation. This is a curious mix of instruments if it were indeed what Moody's chose to include, as it adds insurance and guarantee program liabilities that only appear in the D4 definition of debt to the D1 definition of debt, skipping over currency and deposits, SDRs, and other accounts payable in theoretically narrower D2 and D3 definitions. It is also possible that Moody's has a proprietary D4 definition of debt which includes D2 and D3 debt instruments while introducing an undisclosed haircut to the reported insurance and guarantee program liabilities figure. Finally, it is curious that S&P's assessed debt figure is about the level of the narrowest D1 general government debt securities figure of US$18.1 trillion as reported in the IMF's GFS data. The US example illustrates the inconsistencies and opaqueness in general government debt assessments across the CRAs in the absence of national or supranational debt rules. In summary, the examples in Appendix B demonstrate that while Germany and the US are both large G7 economies, there is significant variation in the sovereign disclosure environment and CRA debt assessment dispersion. This variation plausibly reflects the existence of supranational debt rules and debt rule enforcement mechanisms in the EU.

Table 2 presents descriptive statistics for the main variables used in our regression analysis. The average *Debt* level in our sample is 54.38% of GDP with substantial variation across observations (SD = 36.82), indicating heterogeneity in sovereign debt levels. As discussed above, the mean of *DebtAssessDispersion* is 3.13% of GDP. The mean value of *RatingAssessDispersion* is 0.51, reflecting moderate variation in credit rating assessments across agencies since ratings range from 0 to 22 when transformed to a numerical scale.[12] *GDPAssessDispersion* is relatively low on average (mean of 0.03), indicating general agreement by CRAs on countries' GDP assessments.

In terms of political characteristics, Table 2 reveals a relatively low *Autocracy* worldwide average of 0.60 on a scale from 1 to 7. In addition, 58% of countries in our sample have a presidential system (*Presidential*). Left and right political orientations are closely distributed, with mean distributions of 29% and 25% for *PolOrientationLeft* and *PolOrientationRight*, respectively. As for institutional characteristics, debt rules are present in a significant share of the sample, both at the national level (55% for *DebtRuleNational*) and at the supranational level (sum of means of *DebtRuleSupraEnforced and DebtRuleSupraUnenforced is* 45%).[13] The relatively high incidence of supranational debt rules is noteworthy, reflecting the prevalence of fiscal coordination frameworks across multiple monetary unions. Notable examples include the Eastern Caribbean Currency Union (ECCU), the East African Monetary Union (EAMU), the West African Economic and Monetary Union (WAEMU), the Central African Economic and Monetary Community (CEMAC), and the EU. These unions differ in the design, legal basis, and enforcement mechanisms of their fiscal rules, suggesting considerable heterogeneity in supranational fiscal governance across regions.

In terms of accounting practices, the average value of the indicator variable for high

[12] Untabulated results suggest that the CRAs have slightly difference preferences for issuing ratings. The average ratings by Moody's are higher than those of Fitch and in turn S&P for the same issuers.
[13] According to untabulated descriptive statistics, 12% of the observations in our sample are subject to both a national and a supranational debt rule.

financial contingent liabilities (*HighFinContingentLiab*) is 0.42 meaning that 42% of our regression sample have above-median financial contingent liabilities as assessed by S&P (median is calculated from our original sample not constrained by data availability of regression variables). In contrast, 19% of observations in our sample are assessed by Fitch to have high or moderate non-financial contingent liabilities (*HighNonFinContingentLiab* indicator variable has an average of 0.19). This is partly due to the fact the Fitch considers nonfinancial contingent liabilities in absolute terms, not in relative size to other countries, when assigning high or moderate scores for each country. The average composite indicator *HighContingentLiab* has an average of 0.61 on the scale from 0 to 2, reflecting the sum of *HighFinContingentLiab* and *HighNonFinContingentLiab* means.

Credit rating actions are relatively infrequent: downgrades and upgrades occur in 23% and 22% of observations over the next quarters, respectively. *Interest* payment obligations on public debt represent on average 0.56% of GDP, and the average sovereign annual *Yield* (where available) is 5.39% for 10-year US dollar denominated sovereign debt, though with considerable dispersion (SD = 4.31%). The average yield spread over 10-year US Treasuries is 2.58% with a standard deviation of 4.36%.

4. Empirical Results

4.1. Antecedents

In this section, we adopt the following model to investigate the antecedents of CRA sovereign debt assessment dispersion along four dimensions: institutional, political, economic, and accounting.

$$DebtAssessDispersion_q = \beta_0 + \beta_1\, DebtRuleNational_{q-4} + \beta_2\, DebtRuleSupraEnforced_{q-4} + \beta_3\, DebtRuleSupraUnenforced_{q-4} + \beta_4\, Autocracy_{q-4} + \beta_5\, PolOrientationLeft_{q-4} + \beta_6\, PolOrientationRight_{q-4} + \beta_7\, Presidential_{q-4} + \beta_8\, Debt_{q-4} + \beta_9\, Inflation_{q-4} + \beta_{10}\, Interest_{q-4} + \beta_{11}$$

$GDP_{q-4} + \beta_{12}\,\Delta GDP_{q-1-(q-5)} + \beta_{13}\,\text{Rating}_{q-4} + \beta_{14}\,GDPAssessDispersion_{q-4} + \beta_{15}\,\Delta SFA_{q-1-(q-5)} + \beta_{16}\,HighContingentLiab_{q-4} + \varepsilon_q$ (1)

Table 3 presents OLS regression results. All independent variables are lagged by four quarters, and the model includes quarter-year fixed effects with standard errors clustered by country. We do not include country fixed effects in this model as many of the institutional and political variables do not vary within country in our sample period. Column 1 presents results using a composite measure for contingent liabilities, while column 2 presents our results for financial and non-financial contingent liabilities separately.

As far as institutional factors are concerned, in Table 3 column 1, the coefficient on *DebtRuleSupraEnforced* (an indicator for countries subject to supranational debt rules that are enforced, such as EU-wide fiscal rules) is – 3.400, and it is statistically significant at the 1% level. In addition, the coefficient on *DebtRuleSupraUnEnforced* (an indicator for countries subject to supranational debt rules that are not enforced, is -2.262 ($p<0.05$). Substantively, this implies that countries with enforced supranational debt restrictions exhibit, on average, a roughly three percentage-point lower cross-agency debt assessment dispersion than other countries, all else equal. Untabulated F-test results for equality of coefficients suggest that the difference in coefficients on *DebtRuleSupraEnforced* and *DebtRuleSupraUnEnforced* is statistically significant ($p<0.01$). By contrast, a national-level debt rule (*DebtRuleNational*) shows a negative but smaller coefficient (–1.258), suggesting that purely domestic fiscal rules are associated with a more modest reduction in CRA disagreement on sovereign debt assessment. Consistent with our prediction, these findings indicate that stronger external oversight and enforcement of fiscal discipline (as provided by supranational bodies) may enhance the ability for CRAs to assess sovereign debt levels.

As for political characteristics, the results in column 1 of Table 3 suggest that In addition, the *Presidential* system indicator is associated with an increase of 1.169% in

dispersion, with this effect being statistically significant at the 5% level. The coefficient on the *Autocracy* index is not statistically significant at the 10% level. Untabulated results suggest that presidential-system countries have significantly higher *Autocracy* index values (subsample average of 0.976) than those in parliamentary system countries (subsample average of 0.084). The difference is statistically significant at 1% confidence levels. Therefore, the statistical significance on the *Autocracy* index is likely subsumed by the *Presidential* system indicator. Consistent with our expectations, these results suggest that when political power is more concentrated, there is less agreement among CRAs about the true debt load, possibly reflecting greater opacity or flexibility in fiscal reporting under such regimes. By contrast, the ideological orientation of the government does not appear to matter. Neither left-leaning nor right-leaning governments show a significant effect on CRA debt assessment dispersion. In sum, our results indicate that institutionalized fiscal constraints and decentralized governance tend to be associated with lower cross-agency debt assessment dispersion.

Turning to accounting and fiscal disclosure factors, in column 1 of Table 3, the indicator for high contingent liabilities (*HighContingentLiab*) has a coefficient of 0.939 and is statistically significant at the 5% level. This result suggests that when a country carries substantial contingent liabilities (such as government guarantees, obligations of state-owned enterprises, or unfunded pension promises), the three agencies' reported debt figures can diverge by close to an additional one percentage point in GDP on average, compared to countries with lower contingent liabilities. In column 2, the regression separates this effect into financial versus non-financial contingent liabilities. The positive impact appears to come mainly from financial contingencies: a high level of financial-sector contingent liabilities (e.g., potential bank bailouts or financial guarantees) corresponds to a roughly 1.43% increase in dispersion, statistically significant at the 1% level. In contrast, high non-financial contingencies (e.g., guarantees on public infrastructure projects) assume a smaller and statistically

insignificant coefficient. This difference suggests that hidden financial liabilities are particularly problematic for debt measurement consistency because credit rating analysts may disagree on whether or how to incorporate these implicit debts into the reported totals.

Other accounting-related variables show more limited effects. The coefficient on changes in *SFA*, which capture discrepancies between yearly deficits and changes in debt (often due to one-off accounting maneuvers or recognition of previously off-balance items), is positive but not significant. Thus, cross-country variation in these one-time fiscal adjustments does not have a clear statistical link to CRA sovereign debt assessment dispersion potentially because all CRAs are relatively likeminded about the impact of such shenanigans to obscure debt. Likewise, the model includes a control for GDP assessment dispersion (*GDPAssessDispersion*) to account for any inconsistency in the GDP denominator used by different CRAs. This variable's coefficient is not statistically significant. The lack of significance for cross-agency GDP measurement implies that CRA sovereign debt assessment dispersion is not primarily driven by disagreements about the size of the economy, but rather by what is counted as debt. In summary, among fiscal accounting factors, it is the contingent liabilities and disclosure quality especially related to financial contingencies, that stand out as a significant source of cross-agency debt assessment dispersion, whereas creative accounting adjustments (SFA) or GDP data discrepancies play a relatively minor role in explaining these differences.

Table 3 also includes key economic indicators including the sovereign debt-to-GDP ratio, inflation, interest expense, GDP, GDP growth, and sovereign debt ratings. After controlling for the above institutional and accounting factors, our analysis suggests that only debt-to-GDP ratio (coefficient 0.024; $p<0.01$ in column 1) and inflation (coefficient 0.383; $p<0.05$ in column 1) to continue to be associated with differences in debt assessments across CRAs. These results suggest that a country's overall levels of indebtedness and inflation make

it more difficult for CRAs to agree on their assessments of a country's reported debt levels.

Taken together, the empirical results from Table 3 indicate that weaknesses in the fiscal reporting environment and certain political-institutional settings are key contributors to CRAs' disagreements on sovereign debt levels. In countries with adverse disclosure practices, for example, where substantial liabilities are kept off the official balance sheet, CRAs find it harder to agree on a single debt figure. Similarly, in the absence of strong external oversight, or under centralized political power structures, a country's true debt position is opaquer, leading to greater dispersion in assessments. By contrast, countries that are subject to enforced supranational fiscal rules and those with more transparent, decentralized governance tend to exhibit more consistent debt evaluations across agencies. Notably, these patterns are mostly not driven by basic economic conditions; instead, they underscore the importance of institutional factors and accounting standards in financial transparency.

In essence, an adverse accounting disclosure environment, lack of supranational fiscal enforcement, and concentrated government power each make it more difficult for professional analysts to ascertain and agree upon a country's true debt burden. These findings suggest that improving the comparability and transparency of sovereign accounting, e.g., through internationally harmonized reporting standards or stronger fiscal rules, could reduce cross-CRA debt assessment dispersion.

4.2. Implications

In this section, we investigate the implications of CRA sovereign debt assessment dispersion along three dimensions: CRA rating assessment dispersion, ratings changes, and sovereign bond yield spreads. First, we use the following model to investigate the relation between CRA sovereign debt assessment dispersion and rating assessment dispersion.

$$RatingAssessDispersion_{q+1} = \beta_0 + \beta_1\, DebtAssessDispersion_q + \beta_2\, Debt_q + \beta_3\, Inflation_q$$

$+ \beta_4 \ Interest_q + \beta_5 \ GDP_q + \beta_6 \ GDPAssessDispersion_q + \beta_7 \ \Delta GDP_{q-(q-4)} + \beta_8 \ HighContingentLiab_q + \beta_9 \ \text{Rating}_q + \beta_{10} \ \Delta \text{SFA}_{q-(q-4)} + \varepsilon$ (2)

Table 4 presents OLS regressions where the dependent variable is the dispersion in sovereign credit ratings (*RatingAssessDispersion*) in the subsequent quarter (q+1), and our variable of interest is the dispersion in cross-CRA debt assessments (*DebtAssessDispersion*) in the current quarter. Both quarter-year and country fixed effects are included in this specification, and we exclude the within-country invariant institutional and political factors used in regression (1). The results show a positive and statistically significant relation between debt assessment dispersion and rating disagreement. In the baseline specification (column 1), the coefficient on *DebtAssessDispersion* is 0.017 ($p < 0.01$), indicating that a one-unit increase in the dispersion of debt estimates (measured as a percentage of GDP) is associated with a 0.017 higher standard deviation in credit ratings across agencies in the next period. This effect remains robust after adding macroeconomic controls and fixed effects (column 2), where the coefficient on debt dispersion is slightly reduced to 0.014 ($p < 0.05$) but remains positive and statistically significant. In contrast, none of the control variables such as the average debt-to-GDP level, GDP size, inflation, or interest expense exhibit a significant impact on rating dispersion in this model. Interestingly, disagreement in GDP assessments (*GDPAssessDispersion*), is statistically significant (coefficient 0.65, $p<0.10$). In addition, the coefficient on *Rating* is -0.070 and statistically significant ($p<0.01$), indicating that CRAs tend to agree more on their ratings for countries with lower overall default risk.

Taken together, the empirical results in Table 4 suggest that when CRAs disagree more about a country's debt level, they also tend to disagree about the country's credit rating. In other words, a higher *DebtAssessDispersion* signals a higher likelihood of split ratings among credit agencies. The economic magnitude of the coefficient (on the order of 0.014–0.017) may appear modest, but given the typically low variance in sovereign ratings, it represents a

meaningful increase in rating disagreement. Overall, the evidence from Table 4 indicates that inconsistent fiscal data (specifically, divergent debt figures) undermines the consensus of credit risk evaluators, leading to greater dispersion in sovereign ratings even after controlling for underlying debt levels and macroeconomic conditions. This underscores the link between a poor fiscal data environment and difficulties in achieving a unified assessment of sovereign creditworthiness.

Next, we use the following model to examine whether changes in dispersion in debt assessments are associated with rating changes.

$$Upgrade_{q+1\ to\ q+4} \text{ or } Downgrade_{q+1\ to\ q+4} = \beta_0 + \beta_1\ DebtAssessDispersion_q + \beta_2\ Debt_q + \beta_3\ GDP_q + \beta_4\ GDPAssessDispersion_q + \beta_5\ \Delta GDP_{q-(q-4)} + \beta_6\ HighContingentLiab_q + \beta_7\ Inflation_q + \beta_8\ Interest_{q-} + \beta_9\ Rating_q + \beta_{10}\ \Delta SFA_{q-(q-4)} + \varepsilon \quad (3)$$

Table 5 reports logistic regression results for the likelihood of a rating upgrade (columns 1-2) or rating downgrade (columns 3-4) in the following four quarters as a function of changes in CRA debt assessment dispersion. In the upgrade regression, the coefficient on the change in debt dispersion (*DebtAssessDispersion*) is -0.059 in both columns 1 and 2) ($p < 0.05$ in column 1 and $p<0.10$ in column 2). These results suggest that higher disagreement by CRAs on debt levels is negatively associated with the likelihood of a rating upgrade. By contrast, in the downgrade regression, *DebtAssessDispersion* has a positive and significant coefficient. A one-unit rise in debt assessment dispersion is associated with an increase in the odds of a downgrade, with coefficients of 0.072 ($p < 0.05$) in the baseline model and 0.055 ($p < 0.10$) when controls are included. Taken together, the results indicate that, consistent with our expectations, higher debt assessment dispersion is associated with higher likelihood of downgrades and lower likelihood of upgrades.

The control variables in Table 5 provide additional context. Higher debt-to-GDP levels (*Debt*) are associated with a lower likelihood of upgrades (coefficient = -0.031, $p < 0.05$) and

a higher likelihood of downgrades (coefficient = 0.040, $p < 0.05$). Interestingly, GDP levels (*GDP*) are associated with higher likelihood of downgrades (coefficient = 2.108, $p < 0.05$) while the association with upgrade likelihood is not statistically significant. In addition, countries with higher ratings (*Rating*) are less likely to have further upgrades (coefficient = 0.518, $p < 0.01$) and are more likely to have downgrades (coefficient = -0.764, $p < 0.01$). One interpretation is that many advanced economies have high debt loads, leaving room for outlook deterioration. In addition, countries with higher increases in SFA (*ΔSFA*) face higher likelihood of rating changes in both directions (*Upgrade* coefficient = 0.113, $p < 0.10$) and (*Downgrade* coefficient = 0.096, $p < 0.05$). Importantly, even after accounting for these factors, the effect of CRA debt assessment dispersion on downgrades remains significant. In sum, the evidence from Table 5 suggests that an increase in CRA debt assessment dispersion is a warning signal in sovereign credit markets as it may manifest in fewer future upgrades and more frequent future downgrades.

Lastly, in Table 6 we use the following model to examine whether CRAs' debt assessment dispersion translates into higher sovereign borrowing costs.

$$YieldSpread_{q+1} = \beta_0 + \beta_1\ DebtAssessDispersion_q + \beta_2\ Debt_q + \beta_3\ GDP_q + \beta_4\ GDPAssessDispersion_q + \beta_5\ \Delta GDP_{q-(q-4)} + \beta_6\ HighContingentLiab_q + \beta_7\ Inflation_q + \beta_8\ Interest_q + \beta_9\ Rating_q + \beta_{10}\ \Delta SFA_{q-(q-4)} + \varepsilon \quad (4)$$

Table 6 presents OLS regressions of sovereign bond yield spreads (measured as the difference between the focal country's and the US 10-year US-denominated government bond yield, in percent per annum) on CRA debt assessment dispersion and control variables. In column 1, which includes both country and quarter-year fixed effects, the coefficient on *DebtAssessDispersion* is 0.068 ($p < 0.05$). This estimate implies that a 1% increase in cross-agency debt dispersion is correlated with roughly a 0.068% rise in the country's borrowing cost (about 7 basis points) in the next quarter. The effect remains robust after control variables are

added in column 2 with the coefficient on debt dispersion as 0.066 ($p < 0.05$). Thus, consistent with our expectations, higher disagreement among CRAs over a country's debt figure is associated with an economically significant increase in that country's bond yields.

The control variables behave largely as expected in Table 6. Higher domestic interest rates, which proxy for tighter monetary conditions or risk-free rate shifts, translate into higher sovereign yields (coefficient on *Interest* = 2.211, $p < 0.01$). We also find a significant positive effect of cross agency disagreement on GDP assessment (coefficient on *GDPAssessDispersion* = 2.881, $p < 0.05$) on yield spreads, consistent with the idea that unreliability in reported economic output indicators raise investor concerns.

In this context, the positive impact of CRA debt assessment dispersion on yield spreads suggests that when rating agencies cannot agree on the true debt figure for a sovereign which effectively signals uncertainty or opaqueness in the fiscal accounts, investors require a risk premium for holding that country's debt. This finding underscores the market implication of a poor fiscal data environment: lack of clarity and consensus on public debt levels is not only associated with rating disagreements and more negative ratings outlook but may also translate into financially meaningful increases in the cost of government financing.

5. Conclusions

This study exploits a unique fiscal reporting setting in which sovereign accounting practices are not subject to universally agreed common standards nor subject to regulatory oversight and enforcement in order to study the interplay of financial reporting environment, financial intermediaries, and market implications. We find that in this complex information environment, CRAs do not agree on their assessments of even reported *historical* levels of general government debt, and the dispersion is economically significant. Overall, our results indicate that weak fiscal reporting environments, lack of institutional debt constraints, and

concentrated political power make it difficult for CRAs to agree on a country's true debt level. Importantly, elevated dispersion is associated with negative market implications in terms of higher likelihood of split sovereign credit ratings, fewer (more) rating upgrades (downgrades), and higher sovereign bond yields after controlling for common indicators of sovereign reporting manipulation and fiscal health.

These findings raise important policy and institutional implications. National debt data informs important decisions in investment by both domestic and foreign investors, international aid, and other important political and economic decisions, yet professional intermediaries do not even agree on their assessments of historical, reported figures. Our evidence underscores the benefits of fiscal rules and emphasizes the importance of coordinated international efforts to harmonize sovereign accounting standards. Without a universally accepted and regulated global framework, countries use idiosyncratic reporting conventions, forcing international organizations and CRAs to adjust reported fiscal data on their own. Supranational oversight and enforceable fiscal rules, as seen in the EU, are effective in improving comparability. Therefore, extending such frameworks could potentially improve the sovereign disclosure environment and may help alleviate sovereign borrowing costs. Because sovereign borrowing costs constitute the lower bound of a country's corporate borrowing costs, there are potential wide-ranging implications for a country's fiscal balance as well as investment and economic growth. Finally, our study opens avenues for future research into sovereign accounting, financial disclosure comparability, and information intermediation at the macroeconomic level.

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Appendix A: Variable Definitions

Variables	Definitions
Autocracy	Level of political competitiveness in a country (on a scale of 0 to 7 with 0 being full competitiveness and 7 being no competitiveness) based on the inverse of the legislative and executive indices of electoral competitiveness index from the Database of Political Institutions by the World Bank (https://datacatalog.worldbank.org/search/dataset/0039819).
Debt	Average gross general government debt as a percentage of the country's GDP assessed by the three CRAs.
DebtAssessDispersion	Standard deviation of general government debt as a percentage of the country's GDP across the three CRAs.
DebtRuleNational	Indicator variable equal to 1 if there is an existing debt rule at a national level, and 0 otherwise. Source: IMF Fiscal Rules Dataset (https://www.imf.org/external/datamapper/fiscalrules/map/map.htm).
DebtRuleSupraEnforced	Indicator variable equal to 1 if there is an existing debt rule at a supranational level with a formal enforcement procedure in place, and 0 otherwise. Source: IMF Fiscal Rules Dataset (https://www.imf.org/external/datamapper/fiscalrules/map/map.htm).
DebtRuleSupraUnenforced	Indicator variable equal to 1 if there is an existing debt rule at a supranational level without a formal enforcement procedure in place, and 0 otherwise. Source: IMF Fiscal Rules Dataset (https://www.imf.org/external/datamapper/fiscalrules/map/map.htm).
Downgrade	Indicator variable equal to 1 if there is a rating downgrade by any CRAs in the next four quarters, and 0 otherwise.
GDP	Logarithm of the country's GDP, expressed in billions of U.S. dollars, as assessed by the average of the CRAs.
ΔGDP	GDP Growth over the last year, expressed in percentage as assessed by the IMF (WEO).
GDPAssessDispersion	Logarithm of standard deviation of GDP assessment across the three CRAs.
EU	Indicator variable equal to 1 if the country is an EU member state, and 0 otherwise.
HighContingentLiab	Composite measure made of the sum of two indicator variables *HighFinContingentLiab* and *HighNonFinContingLiab.* Value is 0, 1 or 2.
HighFinContingentLiab	Indicator variable equal to 1 if the country's financial sector contingent liabilities (% of GDP) as assessed by S&P (sovereign risk indicators publication) is above our sample mean for the quarter, and 0 otherwise.
HighNonFinContingLiab	Indicator variable equal to 1 if the country's non-financial sector contingent liabilities (% of GDP) as assessed by Fitch is to be high or moderate. Fitch assessments do not follow a normal distribution. Source: Sovereign Contingent Liabilities: Materialisation Risk from Non-Financial Sector Exposures is Key for Rating Impact. Special Report. 12 January 2023. Fitch Ratings.

Inflation	Quarterly inflation computed from annual inflation in % as assessed by the IMF (WEO).
Interest	Interest on public debt as a percentage of the country's GDP by IMF Datamapper (https://www.imf.org/external/datamapper/ie@FPP/ITA).
PolOrientationLeft	Indicator variable equal to 1 if the ruling party's orientation with respect to economic policy is left, and 0 if right or center from the Database of Political Institutions by the World Bank (https://datacatalog.worldbank.org/search/dataset/0039819).
PolOrientationRight	Indicator variable equal to 1 if the ruling party's orientation with respect to economic policy is right, and 0 if right or center from the Database of Political Institutions (Scartascini et al., 2020).
Presidential	Indicator variable equal to 1 if the country's political system is presidential, and 0 if parliamentary or other from the Database of Political Institutions by the World Bank (https://datacatalog.worldbank.org/search/dataset/0039819).
Rating	Foreign currency long term issuer ratings across the three CRAs. Ratings are mapped to natural numbers such that higher numbers indicate higher rating quality, that is, C=0, ..., Aaa/AAA=22.
RatingAssessDispersion	Standard deviation of foreign currency long term issuer rating across the three CRAs. Ratings are mapped to natural numbers such that higher numbers indicate higher rating quality, that is, C=0, ..., Aaa/AAA=22.
ΔSFA	Change in stock flow adjustments over the last year. SFA is the difference between a country's annual debt growth and the annual deficit, scaled by GDP, calculated using annual debt levels and deficit measures as assessed by CRAs.
Upgrade	Indicator variable equal to 1 if there is a rating upgrade by any CRAs in the next four quarters, and 0 otherwise.
YieldSpread	Quarterly mean of the difference between daily reported values of 10-Year US dollar-denominated government bond yields of the focal country and the 10-Year U.S. Treasury Bonds from Datastream.
ΔYieldSpread	Change over the next four quarters in the difference between the quarterly mean of daily reported values of 10-Year government bond yields of the focal country and the 10-Year U.S. Treasury Bonds from Datastream.

Appendix B: Illustrative Examples for the Debt Assessment Dispersion Measure

Panel A: Debt Assessment Dispersion for Germany

2018 General Government Debt

Germany	Fitch	Moody's	S&P
Pub. Date	04-Oct-19	27-Nov-19	12-Dec-19
Debt (%GDP)	61.60	61.90	60.11
Debt Assessment Dispersion (%GDP)		0.96	
GDP (USDbn)	3,953.08	3,947.60	3,949.70
Debt (USDbn)	2,435.40	2,443.56	2,374.16
Debt Assessment Dispersion (USDbn)		37.93	

Reconciliation	Source	
Debt as reported by Eurostat (EURbn)	(A1)	2,069.01
Exchange rate	(A2)	1.1793 USD/EUR
Debt as reported by Eurostat (USDbn)		2,439.98

Difference with CRAs	USDbn	%GDP
Difference with Fitch	4.59	0.12%
Difference with Moody's	-3.58	-0.09%
Difference with S&P	65.82	1.67%

Source A1: GDP, Government deficit/surplus and debt for Germany from Eurostat

		2018
Germany		
GDP mp	(million euro)	3 344 370
Government deficit (-) / surplus (+)	(million euro)	62 426
	(% of GDP)	1.9
Government expenditure	(% of GDP)	44.6
Government revenue	(% of GDP)	46.4
Government debt	(million euro)	2 069 007
	(% of GDP)	61.9
memo: intergovernmental lending	(million euro)	66 966
	(% of GDP)	2.0

Link: https://ec.europa.eu/eurostat/documents/2995521/10064349/2-21102019-AP-EN.pdf/61ae39d7-6764-2a16-ede5-e6da00249c27

Source A2: Average conversion rate in 2018

Link: https://www.exchange-rates.org/exchange-rate-history/eur-usd-2018?utm_source

Panel B: Debt Assessment Dispersion for the United States

2018 General Government Debt

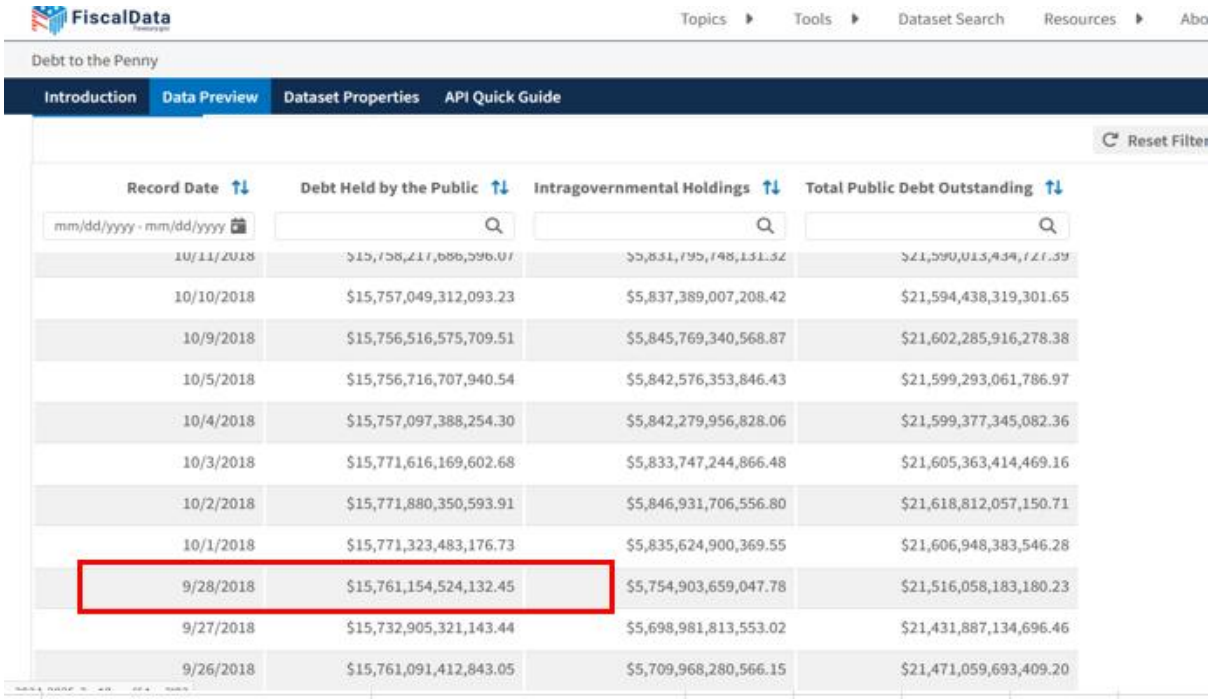
United States	**Fitch**	**Moody's**	**S&P**
Pub. Date	04-Oct-19	27-Nov-19	12-Dec-19
General Government Debt (%GDP)	98.55	92.60	89.70
Debt Assessment Dispersion (%GDP)		4.51	
GDP (USDbn)	20,580.30	20,580.20	20,580.25
Debt (USDbn)	20,282.30	19,057.27	18,460.48
Debt Assessment Dispersion (USDbn)		928.79	
Reconciliation		**Source**	
Fitch			
Debt securities from GG [GG from GFS]		(B1)	18,100.17
+ Loans from GG [GG from GFS]		(B1)	2,295.92
Sum			20,396.09
Difference from Fitch Assessed Value (USDbn)			113.79
Difference from Fitch Assessed Value (%GDP)			0.55%
Moody's		Source	
Debt held by the public in Sept 2018 [CG from Treasury]		(B2)	15,761.00
+ Credit market instruments of state and local governments [GFS]		(B3)	3,106.44
+ Insurance and guarantee program liabilities [CG from Treasury]		(B1)	170.00
Sum			19,037.44
Difference from Moodys' Assessed Value (USDbn)			-19.83
Difference from Moodys' Assessed Value (%GDP)			-0.10%
S&P			
Debt securities from GG [GG from GFS]		(B3)	18,100.17
Difference from S&P Assessed Value (USDbn)			-360.32
Difference with S&P Assessed Value (%GDP)			-1.75%

Source B1: Government Finance Statistics from the International Monetary Fund

	Central Government (incl. social security funds)	State Governments	Sum of sectors	Consolidation	General Government
Instrument and Assets Classification	**2018**	**2018**			**2018**
LIABILITIES	20,336	8,615	28,951	-595	28,356
SDRs	54	0	54	0	54
Currency & deposits	24	0	24	0	24
Debt securities	15,589	3,106	18,696	-595	18,100
Loans	2,276	20	2,296	0	2,296
Equity & investment fund shares	0	0	0	0	0
Insurance, pension, & standardized guarantee schemes (IPSGS)	2,011	4,488	6,499	0	6,499
Financial derivatives & employee stock options	0	0	0	0	0
Other accounts receivable/payable	382	1,000	1,382	0	1,382

Link: https://legacydata.imf.org/regular.aspx?key=61042577

Source B2: Debt to the Penny from the US Treasury



Record Date	Debt Held by the Public	Intragovernmental Holdings	Total Public Debt Outstanding
mm/dd/yyyy - mm/dd/yyyy			
10/10/2018	$15,757,049,312,093.23	$5,837,389,007,208.42	$21,594,438,319,301.65
10/9/2018	$15,756,516,575,709.51	$5,845,769,340,568.87	$21,602,285,916,278.38
10/5/2018	$15,756,716,707,940.54	$5,842,576,353,846.43	$21,599,293,061,786.97
10/4/2018	$15,757,097,388,254.30	$5,842,279,956,828.06	$21,599,377,345,082.36
10/3/2018	$15,771,616,169,602.68	$5,833,747,244,866.48	$21,605,363,414,469.16
10/2/2018	$15,771,880,350,593.91	$5,846,931,706,556.80	$21,618,812,057,150.71
10/1/2018	$15,771,323,483,176.73	$5,835,624,900,369.55	$21,606,948,383,546.28
9/28/2018	$15,761,154,524,132.45	$5,754,903,659,047.78	$21,516,058,183,180.23
9/27/2018	$15,732,905,321,143.44	$5,698,981,813,553.02	$21,431,887,134,696.46
9/26/2018	$15,761,091,412,843.05	$5,709,968,280,566.15	$21,471,059,693,409.20

Link: https://fiscaldata.treasury.gov/datasets/debt-to-the-penny/debt-to-the-penny

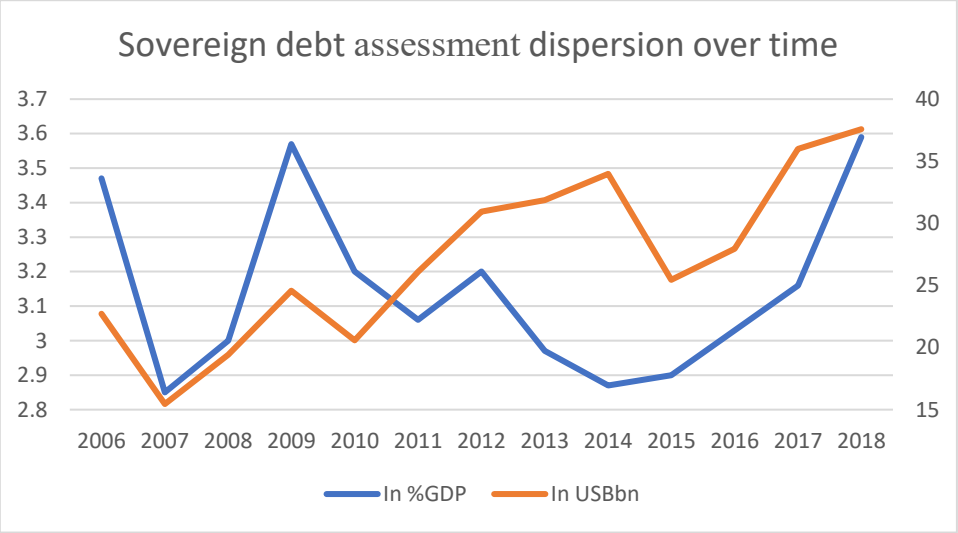
Source B3: Liability side of the US Government Balance Sheet from US Treasury

Liabilities:	
Accounts payable (Note 10)	86.7
Federal debt securities held by the public and accrued interest (Note 11)	15,812.7
Federal employee and veteran benefits payable (Note 12)	7,982.3
Environmental and disposal liabilities (Note 13)	577.3
Benefits due and payable (Note 14)	211.1
Insurance and guarantee program liabilities (Note 15)	170.2
Loan guarantee liabilities (Note 4)	38.2
Other liabilities (Note 16)	479.0
Total liabilities	25,357.5
Contingencies (Note 18) and Commitments (Note 19)	

Link: https://fiscal.treasury.gov/files/reports-statements/financial-report/2018/03282019-FR(Final).pdf

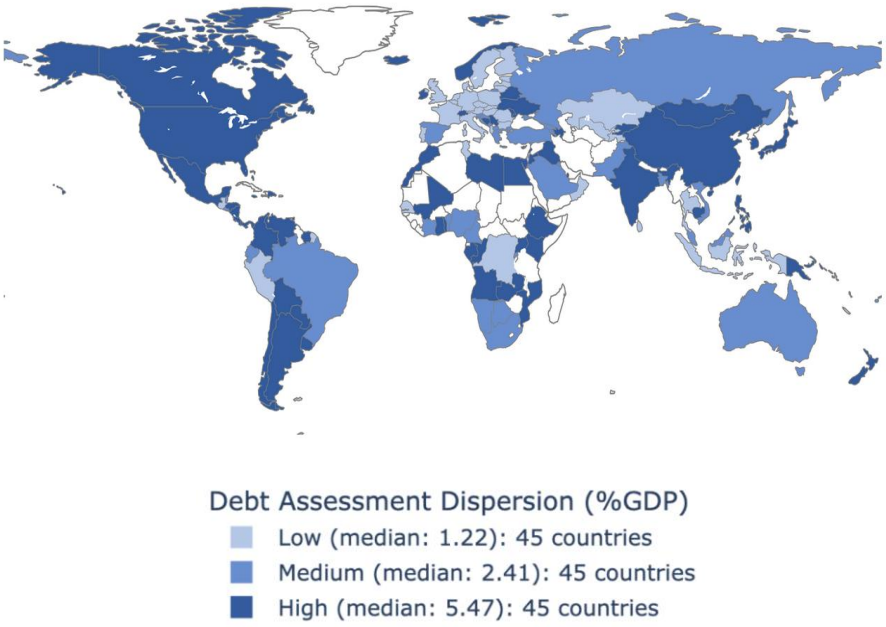
Notes. Appendix B provides details on general government debt levels assessed by the three major CRAs for Germany (Panel) A and the United States (Panel B) in 2018 to illustrate the construction of and variation in our dispersion measure. Debt figures are reported both as percentages of GDP. GFS stands for Government Finance Statistics, CG stands for Central Government and GG for General Government.

Figure 1. Debt Assessment Dispersion Trend



Notes. Figure 1 depicts the dispersion of CRAs' assessments of sovereign debt levels, expressed both as a percentage of GDP and in US$ billion, over time.

Figure 2. Map of Countries by Debt Assessment Dispersion (%GDP)



Notes. Figure 2 presents a map showing the dispersion of CRAs' assessments of sovereign debt levels over the available quarters as a percentage of GDP. Countries appear in white when data coverage is unavailable.

Table 1. Debt Assessment Dispersion Regional Characteristics

Panel A: Debt Assessment Dispersion in % of GDP

	N	Mean	SD	P25	Median	P75
Mean	5820	3.13	3.66	0.70	1.85	4.38
By Region						
Central Asia	607	2.84	3.01	0.65	1.91	3.85
East Asia & Pacific	799	4.77	5.47	0.98	2.94	5.80
Europe	1595	1.73	2.51	0.23	0.95	1.86
EU	1377	1.49	2.13	0.20	0.92	1.64
Non-EU	218	3.24	3.87	0.49	1.46	5.62
Latin America & Caribbean	1178	3.86	3.62	1.41	2.97	5.36
Middle East & North Africa	570	3.60	3.38	0.78	2.31	6.01
North America	153	4.24	3.20	0.60	4.23	7.31
South Asia	189	2.16	1.97	0.65	1.63	3.05
Sub-Saharan Africa	729	3.10	3.28	1.12	2.19	4.01

Panel B: Debt Disagreement in USD $Billions

	N	Mean	SD	P25	Median	P75
Mean	5820	27.34	147.39	0.27	1.30	6.37
By Region						
Central Asia	607	4.50	9.07	0.13	0.67	4.08
East Asia & Pacific	799	98.51	307.02	0.76	5.39	26.10
Europe	1595	8.17	19.03	0.23	1.35	6.51
EU	1377	7.07	16.70	0.21	1.13	5.64
Non-EU	218	15.11	28.91	0.94	4.36	16.99
Latin America & Caribbean	1178	6.65	15.91	0.34	1.06	3.39
Middle East & North Africa	570	3.97	4.69	0.63	2.00	5.82
North America	153	332.25	441.74	0.04	119.38	549.50
South Asia	189	12.74	21.14	0.71	4.23	10.95
Sub-Saharan Africa	729	1.76	3.36	0.14	0.49	1.58

Notes. This table reports the descriptive statistics of the dispersion in CRAs' assessments of sovereign debt levels expressed as a percentage of GDP in Panel A, and in US$ billion in Panel B.

Table 2. Descriptive Statistics

	N	Mean	SD	P25	Median	P75
Autocracy	3509	0.60	1.52	0.00	0.00	0.00
Debt	3509	54.38	36.82	31.48	44.33	70.20
DebtAssessDispersion	5820	3.13	3.66	0.70	1.85	4.38
DebtRuleNational	3509	0.55	0.36	0.48	0.56	1.00
DebtRuleSupraEnforced	3509	0.28	0.39	0.00	0.00	0.39
DebtRuleSupraUnenforced	3509	0.17	0.33	0.00	0.00	0.09
Downgrade	4520	0.23	0.42	0.00	0.00	0.00
GDP	3509	5.10	1.75	3.80	5.21	6.20
ΔGDP	3509	5.39	12.33	-0.82	5.39	11.06
GDPAssessDispersion	3509	0.03	0.04	0.00	0.01	0.04
HighContingentLiab	3509	0.61	0.65	0.00	1.00	1.00
HighFinContingentLiab	3509	0.42	0.49	0.00	0.00	1.00
HighNonFinContingentLiab	3509	0.19	0.39	0.00	0.00	0.00
Inflation	3509	0.95	1.05	0.31	0.70	1.25
Interest	3509	0.56	0.48	0.26	0.45	0.71
PolOrientationLeft	3509	0.29	0.45	0.00	0.00	1.00
PolOrientationRight	3509	0.25	0.43	0.00	0.00	0.25
Presidential	3509	0.58	0.49	0.00	1.00	1.00
Rating	3509	14.37	5.07	10.00	13.67	18.67
RatingAssessDispersion	5820	0.51	0.56	0.00	0.58	0.71
ΔSFA	3509	-0.02	1.58	-0.66	0.01	0.64
Upgrade	4697	0.22	0.42	0.00	0.00	0.00
Yield	2870	5.39	4.31	2.45	4.30	7.29
Yield Spread	2870	2.58	4.36	-0.31	1.25	4.47

Notes. This table reports the descriptive statistics for the variables used in the analysis. Variable definitions are provided in Appendix A.

Table 3. Debt Assessment Dispersion Antecedents

	$DebtAssessDispersion_q$	
	(1)	(2)
Institutional		
$DebtRuleNational_{q-4}$	-1.258**	-1.268**
	(-2.18)	(-2.15)
$DebtRuleSupraEnforced_{q-4}$	-3.400***	-3.517***
	(-3.84)	(-3.81)
$DebtRuleSupraUnenforced_{q-4}$	-2.262**	-2.324**
	(-2.53)	(-2.57)
Political		
$Autocracy_{q-4}$	0.252	0.286
	(1.48)	(1.63)
$PolOrientationLeft_{q-4}$	0.237	0.281
	(0.49)	(0.58)
$PolOrientationRight_{q-4}$	-0.052	-0.134
	(-0.14)	(-0.36)
$Presidential_{q-4}$	1.169**	1.184**
	(2.43)	(2.43)
Economic		
$Debt_{q-4}$	0.024***	0.022***
	(3.75)	(3.49)
$Inflation_{q-4}$	0.383**	0.420**
	(2.03)	(2.12)
$Interest_{q-4}$	-0.271	-0.294
	(-0.40)	(-0.44)
GDP_{q-4}	-0.152	-0.126
	(-0.68)	(-0.59)
$\Delta GDP_{(q-1)-(q-5)}$	-0.007	-0.006
	(-0.71)	(-0.53)
$Rating_{q-4}$	0.128	0.110
	(1.33)	(1.24)
Accounting		
$GDPAssessDispersion_{q-4}$	1.169	0.734
	(0.34)	(0.21)
$\Delta SFA_{(q-1)-(q-4)}$	0.004	0.010
	(0.09)	(0.23)
$HighContingentLiab_{q-4}$	0.939**	
	(2.18)	

HighFinContingentLiab$_{q-4}$		1.438***
		(2.67)
HighNonFinContingentLiab$_{q-4}$		0.300
		(0.40)
p-value for F test on *DebtRuleSupraEnforced* $_{q-4}$ =*DebtRuleSupraUnenforced* $_{q-4}$	0.012	0.010
Constant	1.188	1.310
	(1.00)	(1.06)
Observations	3509	3509
R-squared	0.222	0.232
Quarter-Year FE	Yes	Yes
Country FE	No	No

Notes. This table examines the antecedents of the dispersion in CRAs' assessments of sovereign debt levels, expressed as a percentage of GDP. All independent variables are lagged by a year. Variable definitions are provided in Appendix A. t-statistics based on standard errors clustered at the country level are shown in parentheses below the coefficient estimates. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 4. Debt and Rating Assessment Dispersion

	$RatingAssessDispersion_{q+1}$	
	(1)	(2)
$DebtAssessDispersion_q$	0.017***	0.014**
	(3.54)	(2.61)
$Debt_q$		0.002
		(0.51)
$Inflation_q$		0.003
		(0.07)
$Interest_q$		0.105
		(0.51)
GDP_q		0.073
		(0.52)
$GDPAssessDispersion_q$		0.650*
		(1.67)
$\Delta GDP_{q-(q-4)}$		-0.001
		(-0.54)
$HighContingentLiab_q$		0.053
		(1.01)
$Rating_q$		-0.070***
		(-2.96)
$\Delta SFA_{q-(q-4)}$		0.011
		(1.44)
Constant	0.453***	0.882
	(30.02)	(1.01)
Observations	5820	3494
R-squared	0.447	0.514
Quarter-Year FE	Yes	Yes
Country FE	Yes	Yes

Notes. This table examines the implications of the dispersion in CRAs' debt assessments on sovereign credit ratings assessments dispersion in the next quarter. Variable definitions are provided in Appendix A. t-statistics based on standard errors clustered at the country level are shown in parentheses below the coefficient estimates. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 5. Debt Assessment Dispersion and Rating Changes

	$Upgrade_{q+1\ to\ q+4}$		$Downgrade_{q+1\ to\ q+4}$	
	(1)	(2)	(3)	(4)
$DebtAssessDispersion_q$	-0.059**	-0.059*	0.072**	0.055*
	(-2.47)	(-1.71)	(2.48)	(1.67)
$Debt_q$		-0.031**		0.040**
		(-2.10)		(2.51)
GDP_q		-0.391		2.108**
		(-0.51)		(2.19)
$GDPAssessDispersion_q$		1.170		1.133
		(0.49)		(0.58)
$\Delta GDP_{q-(q-4)}$		0.027***		-0.029***
		(2.88)		(-3.15)
$HighContingentLiab_q$		-0.678		0.087
		(-1.36)		(0.20)
$Inflation_q$		0.012		0.312*
		(0.07)		(1.83)
$Interest_q$		0.406		0.382
		(0.65)		(0.62)
$Rating_q$		-0.764***		0.518***
		(-7.37)		(4.52)
$\Delta SFA_{q-(q-4)}$		0.113*		0.096**
		(1.91)		(2.04)
Constant	-0.430	4.825	-2.437***	-18.099***
	(-1.32)	(1.23)	(-6.34)	(-3.83)
Observations	4697	2843	4520	2757
Quarter-Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

Notes. This table examines how the dispersion in CRAs' debt assessments correlates with the probability of rating upgrades or downgrades in the following year, using a logit regression model. Variable definitions are provided in Appendix A. t-statistics based on standard errors clustered at the country level are shown in parentheses below the coefficient estimates. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.

Table 6. Debt Assessment Dispersion and Sovereign Bond Yield Spreads

	$YieldSpread_{q+1}$	
	(1)	(2)
$DebtAssessDispersion_q$	0.068**	0.066**
	(2.62)	(2.33)
$Debt_q$		-0.012
		(-0.54)
GDP_q		1.353
		(0.59)
$GDPAssessDispersion_q$		2.881**
		(2.47)
$\Delta GDP_{q-(q-4)}$		-0.021
		(-1.64)
$HighContingentLiab_q$		-0.091
		(-0.32)
$Inflation_q$		0.322
		(0.48)
$Interest_q$		2.211**
		(2.15)
$Rating_q$		-0.254
		(-0.85)
$\Delta SFA_{q-(q-4)}$		-0.074
		(-1.13)
Constant	2.382***	-2.513
	(32.24)	(-0.24)
Observations	2870	2111
R-squared	0.791	0.792
Quarter-Year FE	Yes	Yes
Country FE	Yes	Yes

Notes. This table examines the implications of the dispersion in CRAs' debt assessments on future yields spreads. Variable definitions are provided inAppendix A. t-statistics based on standard errors clustered at the country level are shown in parentheses below the coefficient estimates. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, based on two-tailed tests.