

# PROACTIVE RESOLUTION OF SOVEREIGN AND SUBNATIONAL DEBT

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## ABSTRACT

Sovereign debt restructuring strategies have been mostly reactive, applying only once a nation’s debt burden becomes unsustainable. Reactive strategies are suboptimal for many reasons, including that international law does not yet provide mechanisms—in the corporate sector, provided by bankruptcy law—for correcting collective action and other market failures that impede the restructuring of sovereign debt. A financially troubled nation often faces a dilemma: paying its debt would reduce its ability to provide critical public services, but defaulting would further damage the nation’s fiscal integrity and reputation and could even shock the broader economy. Building on “proactive” strategies designed to resolve corporate debt burdens, this Article examines the proactive resolution of government debt burdens, first addressing the problem of unsustainable sovereign debt and then addressing the growing crisis of unsustainable subnational debt.

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## INTRODUCTION

Sovereign nations urgently need help in resolving unsustainable debt burdens.<sup>1</sup> Paying that debt would reduce a nation's ability to provide critical public services,<sup>2</sup> whereas defaulting on that debt would further damage the nation's fiscal integrity and reputation and could even trigger a systemic shock that harms the broader economy.<sup>3</sup> This dilemma is real and growing:

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1. Unsustainable government debt is defined *infra* note 23 and accompanying text.

2. See, e.g., Elizabeth Strassner, *New Approach to Sovereign Debt Restructuring Needed, Bankruptcy Law Expert Says*, MARKETWATCH (Oct. 12, 2017, 4:21 PM), <http://www.marketwatch.com/story/new-approach-to-sovereign-debt-restructuring-needed-bankruptcy-law-expert-says-2017-10-12> [<https://perma.cc/CM4Z-AV33>] (highlighting a discussion of novel debt restructuring approaches following debt crises in the Caribbean); Henry Foy, *A Greek Tragedy: How Much Can One Nation Take?*, FIN. TIMES (Jan. 20, 2017), <https://www.ft.com/content/44478b7e-dd09-11e6-9d7c-be108f1c1dce?mhq5j=e5> [<https://perma.cc/DB2C-XYD9>] (discussing the debt crisis in Greece); Jonathan Watts, *Venezuela on the Brink: A Journey Through a Country in Crisis*, THE GUARDIAN (Oct. 11, 2016, 4:32 PM), <https://www.theguardian.com/world/2016/oct/11/venezuela-on-the-brink-a-journey-through-a-country-in-crisis> [<https://perma.cc/YG7Z-L9XK>] (noting the economic and humanitarian crisis in Venezuela).

3. See, e.g., Associated Press, *Eurozone Seeks to Stop Debt Crisis Domino Effect*, CBS

the median public debt of the sixty low-income developing countries increased from 33.5% of gross domestic product (“GDP”) in 2013 to 47% of GDP in 2017.<sup>4</sup> Eight of these countries are already in debt distress,<sup>5</sup> and sixteen are facing a high risk of debt distress.<sup>6</sup>

This Article seeks to help solve this dilemma by examining “proactive” ways to resolve unsustainable governmental debt. In a separate article, I examined how proactive strategies could help systemically important financial firms resolve unsustainable debt.<sup>7</sup> Whether addressing firms or governments, proactive-resolution strategies should follow the same principles: convert debt that is beginning to become unsustainable (“borderline unsustainable debt”) into sustainable financing, through pre-planning; or try to prevent the debt from approaching unsustainability.

Proactive resolution differs from traditional resolution strategies, which are primarily reactive. Corporate bankruptcy, for example, merely helps firms react to debt burdens that already have become unsustainable.<sup>8</sup> Sovereign debt restructuring strategies have likewise been reactive.<sup>9</sup> Reactive resolution strategies are even less effective for sovereign debt than for corporate debt because sovereigns lack systematic legal mechanisms—

NEWS (Jul. 11, 2011, 12:39 PM), <https://www.cbsnews.com/news/eurozone-seeks-to-stop-debt-crisis-domino-effect/> [<https://perma.cc/XJ7K-5VXK>] (highlighting the concern of a domino effect resulting from a debt crisis in the Eurozone).

4. IMF, *Macroeconomic Developments and Prospects in Low-Income Developing Countries* 35 (Mark Flanagan et al. eds., 2018), <https://www.imf.org/~media/Files/Publications/PP/2018/pp021518-macroeconomic-developments-and-prospects-in-low-income-developing-countries.ashx> [<https://perma.cc/4AEJ-NSYF>].

5. *Id.* at 42. The International Monetary Fund defines a country as being in “debt distress” when “a) the most recent DSA [debt sustainability assessment] yields an assessment of ‘in debt distress’ or b) [the country has] defaulted on sizeable payments for a sustained period since the most recent DSA.” *Id.* at n.29.

6. *Id.* at 43.

7. Steven L. Schwarcz, *Beyond Bankruptcy: Resolution as a Macroprudential Regulatory Tool*, 94 NOTRE DAME L. REV. 709 (2018) [hereinafter *Beyond Bankruptcy*].

8. *See id.* at 716–21 (noting the avenues available for a failing firm).

9. *See, e.g.*, Marco Committeri & Francesco Spadafora, *You Never Give Me Your Money? Sovereign Debt Crises, Collective Action Problems, and IMF Lending* 35, 37 (IMF, Working Paper 13/20, 2013), <http://www.imf.org/external/pubs/ft/wp/2013/wp1320.pdf> [<https://perma.cc/AQ5X-MMWD>] (observing that the official response to European debt crises has been largely reactive); Guillermo de la Dehesa, *Spain and the Euro Area Sovereign Debt Crisis* 5 (Peterson Inst. for Int’l Econ. and Bruegel, 2011), <https://piie.com/publications/papers/dehesa20110913.pdf> [<https://perma.cc/PE5U-LJ6D>] (“Today, it is clear that the building up of the euro area sovereign debt crisis has been mainly due to . . . governments being first in denial and later reacting too late with too little, while dragging their feet and being always behind the curve.”).

such as those provided by corporate bankruptcy law<sup>10</sup>—for correcting collective action holdout problems and other market failures that impede debt restructuring.<sup>11</sup> Nor are such mechanisms likely to be implemented in the foreseeable future.<sup>12</sup> Waiting until a sovereign becomes financially troubled to restructure its debt is also problematic because the sovereign's loss of access to low-cost capital markets can exacerbate its debt burden.<sup>13</sup>

The ongoing drama of Greece's debt restructuring, which already involves the largest sovereign bailout in history, illustrates these inefficiencies. That nation has been using billions of euros of bailout funds solely to pay interest on, without actually reducing, the principal amount of its debt.<sup>14</sup> Furthermore, a portion of that bailout funding is conditioned on Greece taking certain creditor-imposed austerity measures, which may be benefitting its creditors more than the nation.<sup>15</sup>

Changes in the sovereign debt markets are making proactive resolution even more important. Diversification of the types of creditors holding sovereign debt, for example, is creating uncertainty as to relative creditor priorities, further impeding the ability of parties to restructure unsustainable

10. Cf. *Beyond Bankruptcy*, *supra* note 7, at 104 (discussing those legal mechanisms, including the supermajority voting of 11 U.S.C. § 1126(c)).

11. Cf. Steven L. Schwarcz, *Sovereign Debt Restructuring: A Model-Law Approach*, 6 J. GLOBALIZATION & DEV. 343, 344–45 (2016) (discussing the collective action holdout problem). A holdout problem occurs when one or more creditors refuse to agree to a restructuring plan that requires their consent, unless they obtain a disproportionately greater share of the plan's benefits. *Id.* To attempt to solve this problem, multilateral bodies have advocated including collective action clauses ("CAC"s), which would bind holdouts to a specified supermajority's will, in sovereign debt contracts. *Id.* To date, however, the use of CACs has not solved the problem of unsustainable sovereign debt. *Id.* See also JOSEPH E. STIGLITZ & DANIEL HEYMANN, *LIFE AFTER DEBT: THE ORIGINS AND RESOLUTIONS OF DEBT CRISIS 206* (2010) (introducing the model CAC in Euro area).

12. Cf. Sean Hagan, *Designing a Legal Framework to Restructure Sovereign Debt*, 36 GEO. J. INT'L L. 300, 340 (2005) (arguing that the International Monetary Fund's proposed Sovereign Debt Restructuring Mechanism (SDRM) failed to gain widespread sovereign support because it required sovereigns to cede some immunity and faced other political and social constraints).

13. International Monetary Fund, *Sovereign Debt Restructuring—Recent Developments and Implications for the Fund's Legal and Policy Framework* 16 (2013), <http://www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Sovereign-Debt-Restructuring-Recent-Developments-and-Implications-for-the-Fund-s-Legal-and-PP4772> [https://perma.cc/Y62Q-FN88] [hereinafter "IMF"].

14. Kimberly Amadeo, *Greek Debt Crisis Explained*, THE BALANCE (Jan. 25, 2019), <http://www.thebalance.com/what-is-the-greece-debt-crisis-330525> [https://perma.cc/5786-G LRC].

15. *Id.*

debt.<sup>16</sup> The growth of collateralized sovereign debt also “reduces room for maneuver in the event of a crisis, making [debt] restructurings more difficult.”<sup>17</sup> Recent defaults by the Venezuela government and PDVSA (Petróleos de Venezuela, S.A., Venezuela’s state-owned oil company) highlight these changes. The diversified nature of their creditors has created uncertainty as to the relative seniority of their claims,<sup>18</sup> and the fact that a large portion of Venezuelan assets is located outside that country has made it easier for creditors to seize collateral.<sup>19</sup> These factors further undermine the ability to reach a successful debt restructuring.

This Article also examines the proactive resolution of unsustainable subnational debt—meaning the debt of political subdivisions of nations, such as states, provinces, and municipalities.<sup>20</sup> The World Bank and the International Monetary Fund (“IMF”) recognize the increasing urgency of subnational debt problems.<sup>21</sup> Unsustainable subnational debt sometimes also contributes to sovereign debt burdens; the inability of the Provinces of Mendoza and Buenos Aires to pay their debt, for example, appears to have been a major factor in Argentina’s 2001 debt default.<sup>22</sup>

The Article proceeds as follows. Part I conceives and designs an

16. Hugh Bredenkamp et al., *Challenges Ahead*, IMF 22 (IMF, 2018), <https://www.imf.org/~media/Files/News/Seminars/2018/091318SovDebt-conference/chapter-9-challenges-ahead.ashx?la=en> [<https://perma.cc/2QHD-WLRN>].

17. *Id.* at 6. The growth in collateralized debts is one example of debtors’ attempt to create “restructuring resistant” contracts to lower borrowing cost. *Id.* at 7.

18. Mark A. Walker & Richard J. Cooper, *Venezuela’s Restructuring: A Realistic Framework* 3, 27 (Sept 19, 2017), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3039678](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3039678) [<https://perma.cc/GBH3-7RP3>].

19. *Id.* at 4. Also, most bonds issued by the Venezuela government contain collective action clauses, whereas the PDVSA bonds do not, raising the question whether both types of bonds should be restructured. See Lee C. Buchheit & G. Mitu Gulati, *How to Restructure Venezuelan Debt* 5–6 (Duke Law Sch. Pub. Law & Legal Theory Working Paper No. 2017-52), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3006680](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3006680) [<https://perma.cc/S39Z-PVJW>] (describing legal aspects of PDVSA bonds).

20. Steven L. Schwarcz, *Global Decentralization and the Subnational Debt Problem*, 51 DUKE L. J. 1179, 1181 (2002) [hereinafter *Subnational Debt Problem*].

21. Mahesh Uttamchandani, Glob. Practice Manager, Fin. & Mkts., The World Bank Grp., Statement at the UNCITRAL 50th Congress in Vienna, Austria (July 5, 2017). Cf. IMF, *Analyzing and Managing Fiscal Risks—Best Practices* 40 (June 2016), <https://www.imf.org/external/np/pp/eng/2016/050416.pdf> [<https://perma.cc/5LQT-9CWY>] (“Liabilities of subnational governments can be a source of fiscal risk. . . . Expectations of bailouts can weaken market discipline and lead to excessive risk taking by subnational authorities”; and also observing that “the fiscal costs of subnational bailouts averag[es] around 3.5 percent, of GDP, per event”).

22. Lili Liu & Michael Waibel, *Subnational Insolvency: Cross-Country Experiences and Lessons* 3 (The World Bank, Policy Research Working Paper, 2008), <https://openknowledge.worldbank.org/bitstream/handle/10986/6384/wps4496.pdf> [<https://perma.cc/JL9J-9M3H>].

analytical framework for proactively resolving government debt, to prevent it from becoming unsustainable. Part II applies that framework to resolving sovereign debt. Part III applies that framework to resolving subnational debt. The Appendix briefly summarizes the resulting design recommendations, following the Article's more detailed discussion.

There are references throughout this Article to "unsustainable" debt. Although the definition of unsustainability can be elusive in a government-debt context, the following intuitive definition should suffice for analyzing proactive resolution: government debt is unsustainable if the government cannot continue paying principal and interest thereon and still be able to provide critical public services. This definition roughly follows the more technical definition used by the International Monetary Fund, which views government debt as unsustainable if the government is not expected to be able to continue paying principal and interest on its debt given its current levels of income and expenditures.<sup>23</sup>

Because they are examined at length in other literature, certain routine debt practices that some might consider proactive are beyond this Article's scope. These include investing the proceeds of borrowings to try to generate a sufficient return for repayment (analytically, this Article assumes that some nations, like some companies, inevitably will face unsustainable debt burdens); the actions of the IMF as a lender of last resort to governments<sup>24</sup>; and the longstanding dialogue about creating forums to try to facilitate sovereign-debt-restructuring conversations.<sup>25</sup> Also, the Article does not purport to try to solve the "rollover risk" of short-term government debt—that a government will be temporarily unable to borrow sufficient funds to repay its maturing debt.<sup>26</sup> Even proactive resolution strategies may be unable

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23. See IMF, *Assessing Sustainability* 4–5 (May 2002), <https://www.imf.org/external/np/pdr/sus/2002/eng/052802.pdf> [<https://perma.cc/T2DD-DAAJ>] (taking into account liquidity and governmental equivalents to solvency, as well as various indicators of the government's debt size, economic and political status and development, and predictions of future market conditions).

24. See, e.g., Umberto Schwarz, *The International Monetary Fund as International Lender of Last Resort*, Swiss Nat'l Bank, Q. BULLETIN, Mar. 2002, at 64 (discussing the IMF's limited resources and limited ability to extend credit).

25. See, e.g., Richard Gitlin & Brett House, *A Blueprint for a Sovereign Debt Forum* (CIGI, Paper No. 27, 2014) (proposing the establishment of an international forum to facilitate debt-restructuring conversations between sovereign debtors and creditors); Gong Cheng & Javier Díaz-Cassou, *Official Debt Restructurings and Development* (Fed. Reserve Bank of Dallas, Working Paper No. 339, 2018) (discussing the Paris Club as a coordinator among bilateral creditors).

26. See Steven L. Schwarcz, *Rollover Risk: Ideating a U.S. Debt Default*, 55 B.C. L. REV. 1 (2014) (discussing the government's inability to secure additional financing to pay off maturing debt).

to control that risk.<sup>27</sup>

### I. DESIGNING A PROACTIVE-RESOLUTION FRAMEWORK

Conceptually, there are at least two proactive strategies for preventing debt from becoming unsustainable: convert borderline unsustainable debt<sup>28</sup> into sustainable financing, through pre-planning, or try to prevent the debt from approaching unsustainability.<sup>29</sup> Although only conversion involves “resolution” in the strict sense of a debt restructuring, discussions of resolving corporate debt often include both methodologies.<sup>30</sup> This Article adopts that broader usage for discussing the proactive resolution of government debt.<sup>31</sup>

Subpart A next analyzes how to preplan the conversion of government debt that becomes borderline unsustainable debt into sustainable financing (such preplanned debt is hereinafter referred to as “convertible financing”). Thereafter, Subpart B analyzes how to design government debt to try to prevent it from approaching unsustainability.

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27. Cf. Luncheon speech of Lee C. Buchheit at an Imperial College, London conference on sovereign debt restructuring, sponsored by its Brevan Howard Centre for Financial Analysis, the Initiative on Global Markets of the University of Chicago Booth School of Business, and the International Insolvency Institute (Mar. 27, 2015) (explaining the dangers of rollover risk).

28. Recall this refers to debt that is beginning to become unsustainable. *Supra* notes 7–8 and accompanying text.

29. *Supra* notes 7–8 and accompanying text.

30. See, e.g., Wojciech Maliszewski, et al., *Resolving China’s Corporate Debt Problem* (IMF Working Paper 16/203, 2016), <https://www.imf.org/external/pubs/ft/wp/2016/wp16203.pdf> [<https://perma.cc/HAQ6-AFDL>] (providing proactive debt resolution strategies for non-performing loans, such as debt-equity conversions and ways to design sustainable debt products, including the removal of guarantees from the government to prevent moral hazard).

31. In *Beyond Bankruptcy*, *supra* note 7, at 727 n.121, I suggested an intuitive way to distinguish these proactive strategies by considering the colloquial reference to a firm going into bankruptcy as the “sh-t” hitting the fan. Cf. URBAN DICTIONARY, <http://www.urbandictionary.com/define.php?term=shit%20hits%20the%20fan> [<https://perma.cc/RM6C-PT5C>] (defining that as “the point at which an already unstable situation devolves into utter chaos”). Reactive resolution-based regulation would try to clean up the mess once the sh-t hits the fan (analogous to reorganization). Proactive resolution-based regulation either would try to prevent the sh-t, once thrown, from actually hitting the fan, or would try to prevent the sh-t from ever being thrown at the fan (although that latter approach could also be deemed counteractive).

*A. Converting Borderline Unsustainable Debt into Sustainable Financing*

Proactive resolution using convertible financing would differ in two ways from traditional debt restructuring. Whereas traditional debt restructuring is intended to convert unsustainable debt into sustainable financing, convertible financing is intended to convert *borderline* unsustainable debt into sustainable financing. Furthermore, convertible financing is intended to do that through pre-planning, based on provisions included in the contract governing the debt.<sup>32</sup>

Convertible financing also should be distinguished from so-called State-Contingent Debt Instruments (SCDIs), a less precise category of proactive resolution recently discussed in an IMF policy paper.<sup>33</sup> The SCDI category lumps together certain types of convertible financing, such as government bonds that have conversion triggers for natural disasters, and also certain types of what this Article later calls variable financing,<sup>34</sup> such as government bonds with principal, interest, and/or maturities linked to pre-defined variables, such as commodity prices.<sup>35</sup> In contrast, this Article's categories of proactive resolution are more consistent with the modes of proactive resolution for corporate debt<sup>36</sup> as well as more precise and more comprehensive—for example, including non-recourse financing<sup>37</sup>—about the ways that proactive resolution can work.<sup>38</sup>

In response to the global financial crisis of 2008, convertible financing is beginning to be used in the corporate sector to help systemically important financial firms resolve unsustainable debt. To that end, regulators have started requiring such firms to issue some portion of their debt as convertible

32. *Cf. infra* note 175 (discussing legislative alternatives to contractually implementing proactive resolution).

33. IMF, *State-Contingent Debt Instruments for Sovereigns 1* (IMF Policy Paper, May 2017), <https://www.imf.org/~media/Files/Publications/PP/pp032317state-contingent-debt-instruments-for-sovereigns.ashx> [<https://perma.cc/NKH4-AVT3>].

34. *See infra* text accompanying notes 45–46 (describing variable financing).

35. IMF, *supra* note 33.

36. *Beyond Bankruptcy*, *supra* note 7, at 721–26 (discussing how proactive resolution seeks to help systemically important firms avoid default).

37. The SCDI category does not include non-recourse financing, discussed *infra* Part I.B.2.

38. IMF, *supra* note 33, at 5, 7–8. As a rough correlation, though, convertible financing has certain parallels to what the SCDI category includes as “discrete adjustment” funding, and variable financing has certain parallels to what the SCDI category includes as “continuous adjustment” funding.

financing in the form of contingent convertible bonds (“CoCos”).<sup>39</sup> CoCos are designed to convert from debt to equity securities upon the occurrence of pre-specified triggers, which often are accounting-based, indicating the issuer of the debt is becoming financially troubled.<sup>40</sup> Conversion would reduce the firm’s indebtedness with the intention of making the firm financially viable again.<sup>41</sup> For example, \$100 million of CoCos might be designed to convert from debt claims into common stock, an equity interest, if a firm’s net worth drops below \$10 million. “The possibility that their debt claims could be converted into equity should also motivate [investors in CoCos] to take on more of a ‘monitoring’ role by imposing stricter covenants, which could reduce the firm’s risk-taking.”<sup>42</sup>

Common sense and the limited experience with CoCos reveal two issues that are integral to designing convertible financing: what should trigger conversion, and into what should the debt convert? As will be shown, these issues should be addressed differently not only for governmental and corporate debtors—governments cannot feasibly issue “equity” securities representing ownership interests therein—but also for sovereign and subnational debtors.<sup>43</sup> Convertible financing also raises marketability issues due to their inherent conversion risk, which can make corporate CoCos unattractive for some institutional investors.<sup>44</sup> The economic viability of convertible government financing will turn on the risk premium needed to attract investors.<sup>45</sup>

39. Ceyla Pazarbasioglu et al., *Contingent Capital: Economic Rationale and Design Features* 4 (IMF Staff Discussion Note No. 11/01, 2011), <https://www.imf.org/external/pubs/ft/sdn/2011/sdn1101.pdf> [<https://perma.cc/6QC9-AFMC>]. See also *Beyond Bankruptcy*, *supra* note 7, at 722 (discussing the conversion of debt to equity approach for systemically important firms).

40. *Id.*

41. *Id.* at 4–5. Some have suggested, however, that the conversion of corporate CoCos to equity might jeopardize the financial integrity of institutional investors in the CoCos, thereby indirectly increasing systemic risk. See, e.g., Emilius Avgouleas & Charles Goodhart, *Bank Resolution a Decade After the Global Financial Crisis: A Systematic Reappraisal*, in SYSTEMIC RISK IN THE FINANCIAL SECTOR: TEN YEARS AFTER THE GREAT CRASH (Douglas W. Arner, Emilius Avgouleas, Danny Busch & Steven L. Schwarcz eds., 2019).

42. *Beyond Bankruptcy*, *supra* note 7, at 722.

43. See *infra* notes 73–83 and accompanying text (discussing issues related to convertible financing).

44. Martin Brooke, Rhys Mendes, Alex Pienkowski & Eric Santor, *Sovereign Default and State-Contingent Debt* 10 (Bank of Canada Discussion Paper No. 2013-3, 2013), <http://www.bankofcanada.ca/wp-content/uploads/2013/11/dp2013-03.pdf> [<https://perma.cc/6XQY-ABY8>].

45. See *infra* notes 103–104 and accompanying text (discussing how the risk premium might make such bonds unmarketable). Certain secondary factors might also be relevant in

### *B. Preventing Debt Burdens from Approaching Unsustainability*

There are at least two ways to try to prevent debt financing from approaching unsustainability. The first, examined below in Subpart 1, is to tie the amounts and/or maturities of payments on the debt to factors liable to change, or variables, that correspond to the debtor's ability to pay ("variable financing"). The second, examined below in Subpart 2, is to limit recourse on the debt to only specified assets or revenue sources of the debtor ("non-recourse financing").

#### 1. Variable Financing

As mentioned, variable financing would tie the amounts and/or maturities of payments on the debt to variables corresponding to the government's ability to pay.<sup>46</sup> The variables could be the government's GDP<sup>47</sup> or other factors linked to the government's creditworthiness such as its commodity-export prices.<sup>48</sup> Economist Robert Shiller first proposed a form of variable government financing, which would index interest payments to a nation's GDP.<sup>49</sup> References to GDP-linked bonds more commonly today mean bonds that adjust not only interest but also,

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considering the economics of convertible as well as variable government financing. For example, if investors suspect that a government issues such financing because it is concerned over its economic future, they may demand even higher compensation. *Cf.* IMF, *supra* note 33, at 13 (discussing adverse selection, but observing that countries "in which fiscal transparency is already high should be less subject to these concerns"). Furthermore, the "possibility of paying high debt service in good times and receiving automatic debt relief in bad times can reduce [a government's] incentives to keep vulnerabilities at bay." IMF, *supra* note 33, at 13 (discussing moral hazard, but observing several "possible mitigating factors").

46. *Cf.* GREGORY MAKOFF, GDP-INDEXED BONDS: A WAY FORWARD (2017), <https://www.cigionline.org/sites/default/files/documents/Policy%20Brief%20No.97web.pdf> [<https://perma.cc/FC9H-C3UK>] (discussing variable financing tying interest rate (which he calls coupon-indexed bonds), principal amounts (which he calls principal-indexed bonds), or both—depending on the government's financial stability goals—to a variable such as GDP).

47. Eduardo Borensztein & Paolo Mauro, *The Case for GDP-Indexed Bonds*, 19 *ECON. POL'Y* 165, 169–70 (2004).

48. *Id.* at 170.

49. ROBERT SHILLER, *MACRO MARKETS: CREATING INSTITUTIONS FOR MANAGING SOCIETY'S LARGEST ECONOMIC RISKS* 52–53 (1993). Government bonds that link their interest payments to GDP have been called "trills." Mark Kamstra & Robert J. Shiller, *The Case for Trills: Giving the People and Their Pension Funds a Stake in the Wealth of the Nation* 3 (Cowles Foundation, Discussion Paper No. 1717, 2009), <http://cowles.econ.yale.edu/sites/default/files/files/pub/d17/d1717.pdf> [<https://perma.cc/7D2H-585S>].

potentially, principal amounts and maturities according to changes in GDP.<sup>50</sup>

Shiller,<sup>51</sup> and later other scholars<sup>52</sup> as well as Bank of England economists,<sup>53</sup> have argued that GDP-linked bonds would reduce the likelihood of sovereign debt crises. The G20 has called for further analysis of such bonds.<sup>54</sup> In practice, however, no nation has yet issued GDP-linked bonds (although I later discuss a limited example set by the issuance of GDP-linked warrants<sup>55</sup>).

Nor does the corporate sector offer a clear precedent for variable financing. The closest functional equivalent would appear to be preferred-stock equity financing, under which shareholders normally receive payment of fixed dividends, but management may decide to decrease or suspend those payments if the issuer is in financial distress.<sup>56</sup> The fact that there is strong investor interest in preferred-stock equity financing—as of June 30, 2015, for example, the “market size of publicly traded preferred shares in the U.S.

50. See, e.g., Borensztein & Mauro, *supra* note 47, at 169–70 (discussing how GDP-linked bonds can lead to lower debt payments when GDP growth stalls); Yannis Manuelides, *GDP-linked Bonds: A Commentary on a Term Sheet*, 12 CAPITAL MARKETS L.J. 125, 129–30 (2017) (discussing the impact of GDP-linked bonds on maturity dates of bonds).

51. SHILLER, *supra* note 49, at 52–54.

52. See, e.g., Bruno Cabrillac, Ludovic Gauvin & Jean Baptiste Gosse, *Benefits of GDP-indexed Bonds for Issuing Countries, Investors and International Financial Stability*, CTR. FOR ECON. POL'Y RES. (Mar. 7, 2017), <https://voxeu.org/article/benefits-gdp-indexed-bonds> (summarizing a wide array of benefits from issuing GDP-linked bonds such as the ability of developing countries to issue bonds in their own currency); Olivier Blanchard, Paola Mauro & Julien Acalin, *The Case for Growth-indexed Bonds in Advanced Economies Today*, CTR. FOR ECON. POL'Y RES. (Feb. 16, 2016), <https://voxeu.org/article/case-growth-indexed-bonds> [<https://perma.cc/TV9Q-QCCB>] (observing that GDP-indexed bonds would not only be countercyclical but also allow investors to share in GDP gains).

53. See JAMES BENFORD ET AL., SOVEREIGN GDP-LINKED BONDS 5 (2016), [http://www.bankofengland.co.uk/financialstability/Documents/fpc/fspapers/fs\\_paper39.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/fspapers/fs_paper39.pdf) [<https://perma.cc/L2PF-SA3X>] (arguing that GDP-linked bonds would reduce the likelihood of a sovereign debt crisis).

54. See, e.g., *GDP-linked Bonds: One of the Greatest Innovations in Sovereign Debt in Modern Times?*, ALLEN & OVERY (Mar. 16, 2018), <http://www.allenoverly.com/publications/en-gb/Pages/GDP-linked-bonds-one-of-the-greatest-innovations-in-sovereign-debt-in-modern-times.aspx> [<https://perma.cc/RA5M-SFVT>] (describing how the GDP-linked sovereign bond project has the support and endorsement of the G20 and other organizations).

55. See *infra* notes 96–102 and accompanying text (discussing the issuance of GDP-linked warrants by various sovereigns).

56. Michael L. Hartzmark & H. Nejat Seyhun, *Understanding the Efficiency of the Market for Preferred Stock*, 8 VA. L. & BUS. REV. 149, 162 (2014). Common stock is not analogous to variable corporate financing because it gives investors voting control over choosing the issuer's management and also because issuers are not normally required to pay dividends to investors. See, e.g., Michael A. Woronoff & Jonathan A. Rosen, *Understanding Anti-Dilution Provisions in Convertible Securities*, 74 FORDHAM L. REV. 129, 129 (2005) (explaining how preferred stock is different from common stock).

[alone] was estimated to be USD 241 billion”<sup>57</sup>—hints that investors might also be interested in variable government financing.

In the abstract, though, it is hard to predict how strong that interest will be. Although both corporate managers and government officials might have an incentive to underreport issuer income to reduce payments on variable financing,<sup>58</sup> holders of preferred stock normally have the right to replace one or more directors if payments are missed.<sup>59</sup> Ideally, variable government financing similarly should be designed with protection for underreporting. It also may be harder to ascertain underreporting in a government than a corporate context. Unlike corporations, governments are not subject to generally accepted accounting principles. Furthermore, GDP, the standard measure of sovereign government income, has been criticized for being an imprecise measure of a nation’s income.<sup>60</sup> Government financial transparency is thus much lower than that of corporations.<sup>61</sup>

The future market viability of variable government financing also will turn on its cost. Investors would be expected to demand compensation for the additional repayment risk.<sup>62</sup> For traditional debt, an issuer’s default risk would increase when its revenues decrease. For variable financing, however, investors not only would face that increased default risk but also might

57. PHILLIP BRZENK & AYE M. SOE, S&P DOW JONES INDICES, DIGGING DEEPER INTO THE U.S. PREFERRED MARKET 2 (Oct. 2015), <https://us.spindices.com/documents/research/research-digging-deeper-into-the-us-preferred-market.pdf> [<https://perma.cc/9AMD-U2Y5>].

58. Although such underreporting would likely violate their contractual obligation to holders of that debt, corporate managers do not owe bondholders a fiduciary duty. George S. Corey, *Are Bondholders Owed a Fiduciary Duty?*, 18 FLA. ST. U. L. REV. 971, 975 (1991). Nonetheless, underreporting earnings may well violate management’s duty to shareholders, if it lowers stock price.

59. See Hartzmark & Seyhun, *supra* note 56, at 162 (discussing the characteristics of preferred stock).

60. See, e.g., Robert Costanza et al., *Beyond GDP: The Need for New Measures of Progress*, THE PARDEE PAPERS, Jan. 2009, at 8–9 (observing that “GDP measures only monetary transactions related to production of goods and services” and “ignores changes in natural, social and human components”). Cf. *infra* notes 105–107 and accompanying text (discussing the unreliability of GDP as a measure of government income).

61. Cf. Rob Arnott, *Does Unreal GDP Drive Our Policy Choices*, FUNDAMENTAL INDEX NEWSL., Apr. 2011, at 3 (“Our debt/GDP ratio may be poised to cross 100% of GDP this fall, but our GAAP accounting debt burden is already well past 400% of GDP and well past 500% of Structural GDP.”).

62. ING-CHEA ANG, UNDERSTANDING THE VOLATILITY RISK PREMIUM, AQR CAPITAL MANAGEMENT (2018), <https://www.aqr.com/Insights/Research/White-Papers/Understanding-the-Volatility-Risk-Premium> [<https://perma.cc/M4WC-MX5D>] (calling the repayment risk “volatility” risk). Preferred stock would not be as subject to this repayment risk because the right of its holders to replace one or more directors discourages management from reducing or suspending dividend payments. See *supra* note 58 and accompanying text (detailing the advantages of preferred stock).

receive reduced payments on the debt when revenues decrease.<sup>63</sup>

## 2. Non-Recourse Financing

Financing under which creditors have recourse solely to specified assets or revenue sources of a debtor is said to be “non-recourse” to the debtor’s assets and revenues generally.<sup>64</sup> The fundamental distinction between non-recourse financing and variable financing is that the former encompasses debt whose payments derive from specific limited sources, whereas the latter encompasses debt with full recourse to the debtor but whose amounts and maturities can change depending on the variables chosen.

Non-recourse financing—especially when done through special purpose entities (“SPE”s) specifically created to engage in the financing—is very common in corporate finance and is widely accepted by investors.<sup>65</sup> It is used, for example, in securitization, project finance, and other forms of monetizing financial assets.<sup>66</sup> Non-recourse financing can increase economic efficiency by more precisely allocating risks and rewards between debtors and creditors, thereby reducing information asymmetry.<sup>67</sup> When misused, however, non-recourse financing can increase information asymmetry, such as by facilitating opaque off-balance-sheet financing.<sup>68</sup>

Non-recourse government financing has significant precedent in some

63. See *supra* note 46 and accompanying text (tying the amounts and/or maturities of payments on variable financing to factors corresponding to the issuer’s ability to pay).

64. Although a more intuitive term might be limited-recourse financing, this Article’s use of non-recourse financing follows the generally accepted market term.

65. See, e.g., Lydia C. Stefanowicz, *Non-recourse Loans – A Dangerous Misnomer*, 342 N.J. ST. B. ASS’N BUS. L. SEC. 4, 4–6 (Feb. 2016) (discussing the commonality of non-recourse loans and SPE usage in lending).

66. Steven L. Schwarcz, *The Use and Abuse of Special-Purpose Entities in Public Finance*, 97 MINN. L. REV. 369 (2012) (discussing those risks) [hereinafter “*Special-Purpose Entities in Public Finance*”]; cf. Cheryl D. Block, *Congress and the Accounting Scandals: Is the Pot Calling the Kettle Black?*, 82 NEB. L. REV. 365, 435–42 (2003) (identifying the problem of national SPEs); Jonathan Rosenbloom, *Can a Private Corporate Analysis of Public Authority Administration Lead to Democracy*, 50 N.Y.L. SCH. L. REV. 851 (2005–2006) (raising normative questions about state SPEs).

67. See, e.g., Katherine J. Baudistel, *Bankruptcy-Remote Special Purpose Entities: An Opportunity for Investors to Maximize the Value of Their Returns While Undergoing More Careful and Realistic Risk Analysis*, 86 S. CAL. L. REV. 1309, 1314 (2013) (describing how special purpose entities allocate risk). This Article does not purport to address all ways to allocate risks, which include default insurance, CDS, senior-subordinated structures, and government guarantees.

68. *Special-Purpose Entities in Public Finance*, *supra* note 66 (discussing that misuse). Cf. Block, *supra* note 66, at 439–42 (comparing Fannie Mae and Freddie Mac to Enron’s use of SPEs to hide certain investments “off-balance sheet”).

jurisdictions, such as the United States.<sup>69</sup> The key is that investors have recourse to a “sufficiently reliable and adequate source of repayment” such as “high-quality financial assets—i.e., assets that are expected to convert to cash.”<sup>70</sup> In both a sovereign and a subnational government context, this might include payments expected to be generated from an income-producing project or rights to the future payment of specified tax revenues.<sup>71</sup>

## II. PROACTIVE RESOLUTION OF SOVEREIGN DEBT

Having designed a generalized framework for proactively resolving government debt, this Part II applies the framework to sovereign debt, first addressing convertible financing, next addressing variable financing, and finally addressing non-recourse financing. Thereafter, Part III applies the framework to subnational debt, addressing convertible, variable, and then non-recourse financing in that same order.

### A. Convertible Financing

As mentioned, two issues are integral to designing convertible financing for sovereign debt. The first, discussed in Subpart 1 below, is what should trigger conversion. The second issue, discussed in Subpart 2 below, is into what should the debt then convert. As will be shown, these issues are very different for sovereigns than for corporations.<sup>72</sup> Subparts 3 and 4 discuss additional issues: whether the convertible financing will be economically viable, and whether the conversion itself could have harmful consequences.

#### 1. What Should Trigger Conversion?

Convertible financing would have to work differently for sovereigns than for corporations because sovereigns lack obvious financial accounting triggers, such as insolvency, that signal unsustainability. Although some have suggested that a debt-to-GDP ratio might work as a conversion

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69. See *Special-Purpose Entities in Public Finance*, *supra* note 66, at 374–75 (listing prominent examples of non-recourse government financing in the United States).

70. Steven L. Schwarcz, *Bypassing Congress on Federal Debt: Executive Branch Options to Avoid Default*, 31 YALE J. ON REG. 269, 286–87 (2014).

71. *Id.* at 287 (cautioning that any such specified tax revenues should be a finite set whose value would not so greatly exceed the amount of the financing that someone could call into question whether the transaction is truly nonrecourse).

72. See *infra* notes 73–81 and accompanying text (explaining why sovereign debt has unique characteristics from that of corporate debt).

trigger,<sup>73</sup> GDP is difficult to measure and, if calculated by the sovereign itself, can be unreliable.<sup>74</sup> A more sensible alternative trigger might be based on multilateral action, such as a sovereign debtor receiving emergency financial assistance from the IMF or the European Stability Mechanism (“ESM”).<sup>75</sup>

## 2. Into What Should the Debt Convert?

Again, convertible financing would have to work differently for sovereigns than for corporations—in this instance, because sovereigns cannot feasibly convert their debt into equity ownership in the nation. Instead, sovereign convertible financing could convert into debt whose principal and/or interest rate are reduced, or whose maturities are extended, to try to make the debt sustainable.

In the context of SCDIs,<sup>76</sup> the IMF and the ESM have focused on using so-called automatic maturity extensions (AMEs) to extend maturities of sovereign debt.<sup>77</sup> Extending maturities would address liquidity<sup>78</sup>—the government’s ability to pay its debts as they come due.<sup>79</sup> Convertible financing agreements could include AME-type provisions, either automatically extending maturities upon the occurrence of a trigger event<sup>80</sup>

73. Ashoka Mody, *Sovereign Debt and Its Restructuring Framework in the Eurozone*, 30 OXFORD REV. ECON. POL’Y 715, 737 (2013); cf. Brooke et al., *supra* note 44, at 8 (suggesting trigger events including a decrease in the GDP-to-debt ratio).

74. See *infra* notes 105–111 and accompanying text (explaining the pitfalls to GDP-linked sovereign debt).

75. BENFORD ET AL., *supra* note 53, at 5.

76. Cf. *supra* notes 32–36 and accompanying text (comparing convertible financing and SCDIs).

77. IMF, *supra* note 23, at 39. See also Jochen Andritzky et al., *A Mechanism to Regulate Sovereign Debt Restructuring in the Euro Area* (German Council of Economic Experts, Working Paper 04/2016, 2016) (providing a debt restructuring framework that includes an automatic maturity extension).

78. Principal reductions, in contrast, would address solvency, which the IMF describes as meaning that the present discounted value (PDV) of the government’s current and future primary expenditure is greater than the PDV of its current and future income, net of any initial indebtedness. IMF, *supra* note 23, at 39; cf. 11 U.S.C. § 101(32)(A) (2012) (defining an entity as being insolvent when the sum of its debts is greater than all of its property, at a fair valuation, exclusive of the transferred, concealed, removed or exempted property).

79. See, e.g., Atif R. Mian & João A.C. Santos, *Liquidity Risk, and Maturity Management over the Business Cycle*, 127 J. FIN. ECON. 2 (2018) (discussing the use of maturity extensions to reduce liquidity risk).

80. Brooke et al., *supra* note 44, at 8. The ESM’s proposal defines the trigger event for an AME as the government’s receipt of ESM funds.

or giving the issuer the option to extend maturities upon that occurrence.<sup>81</sup> They also could include, of course, similar provisions either automatically reducing principal and/or interest rate, or giving the issuer the option to make those reductions, upon the occurrence of a trigger event.

Ultimately, answering what convertible financing should convert into will turn on at least two considerations: what type of conversion would best make the particular government's debt sustainable, and how would the conversion options affect the financing cost. The first consideration is government-specific and thus beyond this Article's scope, other than to observe that—cost being equal—a government that is concerned about its liquidity might favor extending maturities whereas a government that is concerned about its solvency might favor reducing principal. Both might also consider reducing the interest rate, which would help liquidity by reducing monthly interest payments and also help solvency by reducing the total payments on the debt. The other consideration—how the conversion options will affect the financing cost—is next discussed in Subpart 3.

### 3. Will the Convertible Financing Be Economically Viable?

The future market viability of convertible government financing will turn primarily on its cost: Will governments be willing to pay the interest premium demanded by investors to extend that financing?<sup>82</sup> That is an empirical question that cannot be answered in the abstract. Convertible financing that only extends maturities might, other things being equal, be less expensive to issue than convertible financing that reduces principal. The rationale is that, so long as the issuer pays a market rate of interest, extending maturities would not necessarily reduce the present value of a creditor's recovery.<sup>83</sup> Reducing principal, however, necessarily would introduce

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81. IMF, *supra* note 33, at 35.

82. See *supra* notes 44–45 and accompanying text (discussing the factors that influence risk premiums).

83. Brooke et al., *supra* note 44, at 9. Gregory Makoff has suggested to the author that long-term financing that is periodically callable may be a practical alternative to convertible financing that extends maturities. The impact on sustainability could be designed to be roughly comparable, allowing the government to choose from time to time whether to redeem (i.e., prepay) the debt or let it continue. Although periodically callable long-term financing would be simpler than convertible financing—avoiding the need to define a conversion trigger, such as GDP—it would give the government control over the maturity; and callable financing also is generally more expensive than non-callable financing. Nonetheless, the fact that callable financing is a well-established market product indicates it still may be less expensive than custom-designed convertible financing. Telephone Interview with Gregory Makoff, Senior Fellow, Glob. Econ. Program, Ctr. for Int'l Governance Innovation (July 10, 2019).

additional repayment risk for which investors would be expected to demand additional compensation.<sup>84</sup>

#### 4. Could the Conversion Itself Have Harmful Consequences?

A final issue is whether the debt conversion itself could have harmful consequences. For example, the investors could be systemically important, such as large banks or pension funds, which could incur significant losses upon conversion.<sup>85</sup> Debt conversion then might trigger systemic financial contagion.<sup>86</sup> Although there may be no perfect solution to this concern, possible second-best solutions might include limiting the amount of convertible government financing in which a systemically important firm would be allowed to invest.<sup>87</sup>

#### *B. Variable Financing*

Next consider using variable financing to proactively resolve sovereign debt to avoid its becoming unsustainable. In contrast to convertible financing, the payment terms of variable financing would not convert; instead, they would be linked to variables corresponding to the government's ability to pay, such as its GDP or commodity-export prices.<sup>88</sup> GDP-linked bonds are the most commonly discussed example of variable sovereign

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84. See *supra* notes 62–63 and accompanying text (discussing strategies for mitigating repayment risk, which is tied to the issuer's ability to pay).

85. Cf. Neel Kashkari, *New Bailouts Prove "Too Big to Fail" Is Alive and Well*, WALL ST. J. (July 9, 2017), <https://www.wsj.com/articles/new-bailouts-prove-too-big-to-fail-is-alive-and-well-1499638636> [<https://perma.cc/A9KH-F2WR>] (observing that the Italian government decided to bail out a non-systemically important bank rather than trigger the conversion because the bondholders were retail investors).

86. *Id.*

87. Cf. IMF, *supra* note 33, at 14–15 (observing that the risk of financial contagion from debt conversion “would be less of a concern where the volume of [convertible financing] issued is small in relation to” the investors’ balance sheets, and also noting that “this issue highlights the importance of . . . design considerations (such as caps and floors) that limit the size of potential losses for investors”). These limitations should take into account both the amount of a particular government’s convertible financing and also, to protect against possible unforeseen correlations in government debt problems, the aggregate amount of all government convertible financing. Bank lending limits, which restrict the amount of bank exposure to any given customer’s risk, could provide a regulatory precedent for imposing these types of limitations. See, e.g., Henry Ordower, *Demystifying Hedge Funds: A Design Primer*, 7 U.C. DAVIS BUS. L.J. 323, 370 (2007) (discussing how hedge funds are subject to few limitations regarding their potential risk exposure).

88. *Supra* notes 46–48 and accompanying text.

financing.<sup>89</sup>

No country has yet issued bonds linked to these types of variables.<sup>90</sup> Certain nations, however, have issued warrants linked to GDP or commodity-export prices. In this context, warrants refer to securities that entitle the holder to certain rights as a “sweetener” to enhance the attractiveness of a sovereign bond exchange.

The first example occurred in 1989. After many Latin American countries defaulted on their bank loans, U.S. Treasury Secretary Nicholas Brady arranged for the banks to exchange their loans for bonds (nicknamed “Brady Bonds”) issued by those countries, effectively with U.S. government backing.<sup>91</sup> The Brady Bonds had reduced interest rates and extended payment maturities (typically 25-30 years), which were intended to enable the countries to pay their restructured debt.<sup>92</sup> So far, that represents a traditional debt restructuring.<sup>93</sup>

Certain of the Brady bonds, however, were issued with separately tradable Value Recovery Rights (“VRR”s), which provided for payments indexed to the price of the sovereign’s export commodities,<sup>94</sup> such as oil.<sup>95</sup> The VRRs narrowly represented a form of variable financing insofar as their payments were linked to the price of export commodities. In reality, though, the VRRs did not actually represent a proactive *resolution* strategy; they did

89. *Supra* notes 46–54 and accompanying text.

90. See IMF, *supra* note 33, at 16 (observing that, “[t]o date, sovereigns have not used [contingent or variable financing] as a regular instrument of budget financing”).

91. See, e.g., Lee C. Buchheit, *The Background to Brady’s Initiative*, 9 INT’L FIN. L. REV. 29, 30 (1990) (explaining the history and main features of Brady Bonds); Ross P. Buckley, *The Transformative Potential of a Secondary Market: Emerging Markets Debt Trading from 1983 to 1989*, 21 FORDHAM INT’L L.J. 1152, 1152 (1998) (tracing the development of the Latin American debt market); Philip J. Power, Note, *Sovereign Debt: The Rise of the Secondary Market and its Implications for Future Restructurings*, 64 FORDHAM L. REV. 2701, 2720–21 (1996) (detailing the mechanics of Brady Bonds). The Brady Bond trade allowed those banks not to have to write off their loans as non-performing. J.F. HORNBECK, CONG. RES. SERV., RL30348, ECUADOR’S BRADY BOND DEFAULT: BACKGROUND AND IMPLICATIONS (2000).

92. FED. RESERVE, SEC. 4255.1, TRADING CAPITAL MARKETS AND ACTIVITIES MANUAL (1998).

93. See *supra* note 32 and accompanying text (distinguishing traditional and proactive resolution).

94. LEE C. BUCHHEIT & ELENA L. DALY, SOVEREIGN DEBT MANAGEMENT 10–11 (2014).

95. IMF, *supra* note 33, at 20. Venezuela, Nigeria, and Mexico issued VRRs linked to oil prices, which provided investors contingent payments if the price of oil reached a pre-set price—thereby enabling those investors to share in the upside of the issuer’s economic recovery. IMF, *supra* note 33, at 20. Payments on commodity-linked securities also could be linked to commodity-production revenues. Robert J. Myers, *Incomplete Markets and Commodity-Linked Finance in Developing Countries*, 7 WORLD BANK RES. OBSERVER 79, 84 (1992). That would enable a nation to hedge against the risk, for example, that a commodity price becomes high due to production failure which reduces the nation’s revenues. *Id.*

not affect future payments due on the Brady Bonds themselves but were merely a sweetener to encourage banks to enter into the loan-for-bond exchange. Accordingly, the VRRs do not provide clear precedent for the issuance of variable government financing as a proactive resolution strategy.

The other examples of variable sovereign financing were similarly based on the issuance of warrants as sweeteners for bond exchanges. In Argentina's 2001-02 debt restructuring, for example, creditors exchanged their existing bonds for a fractional amount of replacement bonds<sup>96</sup> plus, as an incentive to facilitate the exchange, GDP-linked warrants that promised additional payments if and when GDP targets were exceeded.<sup>97</sup> More recently, Greece and Ukraine issued GDP-linked warrants as sweeteners to help facilitate bond exchanges.<sup>98</sup> Because none of these warrants affected future payments on the exchanged bonds, they (again) do not provide clear precedent for the issuance of variable government financing as a proactive resolution strategy.

These examples nonetheless might inform issues associated with variable sovereign financing linked to GDP or commodity-export prices. As a practical matter, for example, it appears that sovereigns take their variable financing obligations seriously. By 2013, Argentina had paid approximately U.S. \$10 billion to holders of its GDP-linked warrants.<sup>99</sup> And sovereign issuers repurchased most of their VRRs under call options in order to forestall having to make even more expensive future payments.<sup>100</sup>

Despite this limited success, "opinion remains strongly divided whether [variable sovereign] bonds are viable and if investors would want to own

96. Federico Sturzenegger & Jeromin Zettelmeyer, *Haircuts: Estimating Investor Losses in Sovereign Debt Restructurings, 1998-2005* 63 (International Monetary Fund, IMF Working Paper WP/05/137, July 2005) (reporting that bondholders took a 75 percent haircut).

97. The Republic of Arg. Prospectus (Form 424B5) (Jan. 10, 2005), <http://www.sec.gov/Archives/edgar/data/914021/000095012305000302/y04567e424b5.htm> [<https://perma.cc/2U7M-M3UW>].

98. See, e.g., Stephen Park & Tim Samples, *Ukraine's Quietly Revolutionary Debt Restructuring*, FIN. TIMES (Sept. 17, 2015, 11:49 AM), <http://ft.com/content/d7656d33-874f-30bf-b78e-3aa7b9d229e8> [<https://perma.cc/SX44-XEL2>] (analyzing the use of GDP-linked value recovery instruments in Ukraine's 2015 debt restructuring); Jeromin Zettelmeyer, Christoph Trebesch & Mitu Gulati, *The Greek Debt Restructuring: An Autopsy* 3, 10, 19 (Peterson Inst. for Int'l Econ., Working Paper No. 13-8, 2013), <http://www.iie.com/publications/wp/wp13-8.pdf> [<https://perma.cc/J9DU-C2CD>] (attributing part of the 97 percent participation rate of Greece's debt exchange to the inclusion of GDP-linked warrants).

99. Stephany Griffith-Jones & Dagmar Hertova, *Growth-Linked Bonds*, 11 CESIFO DICE REPORT 33, 36 (2013), [http://policydialogue.org/files/publications/CESifo\\_DICE-Report\\_3-2013\\_Griffith-JonesHertova\\_Final\\_draft.pdf](http://policydialogue.org/files/publications/CESifo_DICE-Report_3-2013_Griffith-JonesHertova_Final_draft.pdf) [<https://perma.cc/899A-KVEY>] (calculating payments on Argentine GDP-linked warrants).

100. FRANK J. FABOZZI & EFSTATHIA PILARINU, INVESTING IN EMERGING FIXED INCOME MARKETS 13-14 (2008).

them.”<sup>101</sup> There also is “significant uncertainty about how these instruments would be priced and, therefore, the borrowing costs that would be faced by governments.”<sup>102</sup> The risk premium alone might make such bonds unmarketable, some argue, because governments “do not want to pay higher returns when times are good”<sup>103</sup> and investors may not want to hold bonds that would pay lower returns during a period of declining GDP.<sup>104</sup>

Another obstacle to GDP-linked bonds is “that GDP is not an easy economic indicator to measure.”<sup>105</sup> A nation’s GDP “tends to be constantly revised, which would create additional uncertainty for an instrument that has its coupon payments tied to this measure. In addition, investors need to be confident that the statistics . . . are reliable.”<sup>106</sup> The Argentine GDP-linked warrants, for example, “carried an extra premium because of the unreliability of the [GDP] data.”<sup>107</sup>

Some observers believe, however, that these types of measurement and reliability concerns “could be mitigated if a respected independent body monitored and enforced data integrity.”<sup>108</sup> The Greek and Ukrainian GDP-linked warrants<sup>109</sup> provided, for example, for an independent source of GDP data.<sup>110</sup> To further assure investors, Ukraine’s warrants mandated arbitration for payment calculation disputes.<sup>111</sup> The future success of variable financing linked to GDP may well depend, at least in part, on

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101. Charlotte Moore, *GDP-linked Sovereign Bonds: Would Investors Buy Them?*, INV. & PENSIONS EUR. (Apr. 2015), <https://www.ipe.com/reports/gdp-linked-sovereign-bonds-would-investors-buy-them/10007310.article> [<https://perma.cc/P366-BJPV>]. Cf. Alex Pienkowski, *Debt Limits and the Structure of Public Debt* (IMF, Working Paper No. 17/117, 2017) (expressing uncertainty whether sovereigns would issue GDP-linked warrants as a primary financing tool and whether investors would want to purchase them).

102. Joel Bowman & Phillip Naylor, *GDP-Linked Bonds*, RES. BANK AUSTL. BULLETIN 61, 61 (2016), <https://www.rba.gov.au/publications/bulletin/2016/sep/pdf/rba-bulletin-2016-09-gdp-linked-bonds.pdf> [<https://perma.cc/3XFE-B4J3>].

103. Moore, *supra* note 101 (quoting Alex McKnight, investment manager at GAM Holding AG, a Swiss global asset management firm).

104. *Id.* Cf. BENFORD ET AL., *supra* note 53, at 10–12, 18 (discussing the risk premium that investors would demand, and observing that GDP-linked bonds will be unmarketable if there is no intersection between that premium and what issuers are willing to pay).

105. Moore, *supra* note 101.

106. *Id.*

107. See *id.* (quoting Axel Botte, fixed income strategist at Natixis Asset Management). Cf. IMF, *supra* note 33, at 13–14 (discussing the potential for “data manipulation”).

108. Brooke et al., *supra* note 44, at 15.

109. See *supra* note 98 and accompanying text (explaining Greece’s and Ukraine’s use of GDP-linked bonds).

110. See UKR., EXCHANGE OFFER MEMORANDUM 61–62 (2015), <http://sites.dfkingltd.com/ukraine/Home> [<https://perma.cc/T7CJ-S8FZ>] (providing that “real GDP growth rate” is based on the growth in Ukraine’s GDP as published in World Economic Outlook).

111. *Id.* at 68.

producing reliable data.

### *C. Non-Recourse Financing*

As discussed, most non-recourse financing is done through SPEs.<sup>112</sup> The U.S. federal government has a long history of using SPEs to achieve government objectives.<sup>113</sup> Former vice president Al Gore even headed an initiative entitled “Reinventing Government” that advocated for the increased use of federal SPEs,<sup>114</sup> in order to “harness the efficiency of the private sector for the service of the public . . . [thereby] combin[ing] the flexibility of a business with the public purpose and public duties of government.”<sup>115</sup>

Some federal government SPEs are created as government corporations, some as government-sponsored entities. Government corporations are owned in whole or in part by the federal government.<sup>116</sup> Although their precise structures vary, they enjoy a number of common characteristics: they can sue and be sued, enter into contracts, hold property, and borrow.<sup>117</sup> Some government corporations borrow on an off-balance-sheet basis, meaning their debt is not an obligation of the federal

112. See *supra* note 68 and accompanying text (describing the widespread use of non-recourse financing through SPEs in corporate finance).

113. See *Lebron v. Nat’l R.R. Passenger Corp.*, 513 U.S. 374, 386–91 (1994) (providing an overview of the history of federal government corporations); see also A. Michael Froomkin, *Reinventing the Government Corporation*, 1995 U. ILL. L. REV. 543, 546 (1995) (“Congress has created a new government corporation every year or so since World War II.”).

114. Froomkin, *supra* note 113, at 546.

115. *Id.* at 548. The U.S. government also used SPEs to respond to the global financial crisis of 2007-08. In order to stabilize and bring liquidity back to the commercial paper markets, the U.S. Federal Reserve created, among other SPEs, the Commercial Paper Funding Facility (“CPFF”) to operate as a lender of last resort for those markets by purchasing commercial paper for which corporate issuers were unable to find buyers. Tobias Adrian, Karin Kimbrough & Dina Marchioni, *The Federal Reserve’s Commercial Paper Funding Facility*, 17 FRBNY ECON. POL’Y REV. 25, 38 (2011). Similarly, the Fed created the Money Market Investor Funding Facility (MMIFF) SPE to provide liquidity to U.S. money market investors. *Money Market Investor Funding Facility*, BOARD GOVERNORS FED. RES. SYS., <http://www.federalreserve.gov/monetarypolicy/mmiff.htm> [<https://perma.cc/DR35-9HP7>] (last visited Apr. 24, 2012). The federal government also used an SPE, labeled the Resolution Trust Corporation, to respond to the Savings & Loan crisis of the 1980s. DONALD AXELROD, *SHADOW GOVERNMENT: THE HIDDEN WORLD OF PUBLIC AUTHORITIES 2* (1992).

116. See 5 U.S.C. § 103 (1966) (defining government corporation as “a corporation owned or controlled by the Government of the United States”).

117. Froomkin, *supra* note 113, at 553.

government.<sup>118</sup>

Government-sponsored entities (“GSE”s) share many of the characteristics of wholly-owned and mixed-ownership government corporations, but they are not government-owned.<sup>119</sup> Instead, they are privately-owned and operated entities, created through federal charters.<sup>120</sup> Because the purpose of GSEs is to perform “activities to certain economic sectors deemed worthy of public support,” they are given “certain advantages to help accomplish their public purposes.”<sup>121</sup> The federal government is not usually obligated for GSE debt.<sup>122</sup>

SPE debt for which a government is not obligated should not directly contribute to unsustainability. Sometimes, however, a government may have little choice but to stand behind SPE debt—dramatically illustrated during the global financial crisis by the federal government’s backstopping of the debt of SPEs Fannie Mae and Freddie Mac.<sup>123</sup> Originally formed as a government agency to purchase mortgage loans, Fannie Mae was privatized as a GSE in 1968 because the Johnson administration wanted to get its debt off the federal government’s books, in order to reduce the size of the national debt.<sup>124</sup> Congress created Freddie Mac as a GSE in 1970 for the purpose of securitizing loans made by the savings and loan (“S&L”) banking industry.<sup>125</sup>

As GSEs, Fannie and Freddie benefited from the market’s assumption that the federal government implicitly guaranteed their debt, including the mortgage guarantees they provided.<sup>126</sup> Among other things, they could

118. See, e.g., VIRAL V. ACHARYA ET AL., *GUARANTEED TO FAIL: FANNIE MAE, FREDDIE MAC, AND THE DEBACLE OF MORTGAGE FINANCE* 102 (2010) (observing that some GSEs operate as off-balance-sheet special purpose entities of the U.S. government).

119. This is true at least as an initial matter. As will be discussed *infra*, the mortgage finance GSEs, Fannie Mae and Freddie Mac, had to be taken over and are now owned by the government. See ACHARYA ET AL. at 59 (noting that the GSEs were placed into conservatorship in 2008 due to their financial instability).

120. Block, *supra* note 66, at 435.

121. *GSEs: Recent Trends and Policy: Joint Hearing Before the Subcomm. on Capital Markets, Securities and Government Sponsored Enterprises*, 105th Cong. 7 (1997) (statement of James L. Bothwell, Chief Economist, U.S. Gen. Accounting Office). GSE advantages include tax exemptions, exemption from SEC registration requirements, and access to U.S. Treasury Department lines of credit. Block, *supra* note 66, at 436.

122. Block, *supra* note 66, at 438 (observing that such debt is therefore not included in presidential or congressional budgeting).

123. *Cf. infra* notes 164–171 and accompanying text (discussing why subnational governments sometimes might have little choice politically but to assume SPE liability).

124. ACHARYA ET AL., *supra* note 118, at 16–17.

125. See *supra* note 118, at 18 (describing Fannie Mae’s practice of securitizing loans in the 1970s and early 1980s).

126. See *supra* note 118, at 21, 27 (describing Fannie Mae’s “special status” that made the financial markets believe that Fannie Mae was implicitly guaranteed by the government).

borrow at lower rates than competing firms,<sup>127</sup> notwithstanding explicit disclosure that their debt did not constitute full-faith-and-credit obligations of the federal government.<sup>128</sup> That motivated them to take on significant debt, causing their debt-to-equity leverage ratios for the 1992-2007 period to range from twenty to forty.<sup>129</sup> By the end of 2007, Fannie and Freddie were indebted for \$3.50 trillion in mortgage guarantees, a \$1.43 trillion mortgage portfolio, and a \$2.26 trillion derivatives position.<sup>130</sup> Fifty percent of this debt was held by financial institutions, making a default systemically risky.<sup>131</sup> In September 2008, the federal government had little choice but to bail out these GSEs to prevent their default and to promote stability and liquidity in the housing markets.<sup>132</sup>

SPE debt might also contribute to unsustainability, at least indirectly, by allocating specific government revenue to payment of that debt, thereby making that revenue unavailable for payment of general obligation debt and providing public services. This is discussed further in the context of subnational non-recourse financing.

127. See *supra* note 118, at 21–22, 27–28 (explaining the implications of Fannie Mae and Freddie Mac’s special lending status). They also benefited from extraordinarily low capital requirements: for investing in mortgage-backed securities (“MBS”), they were required to hold only 2.50% capital compared to federally insured banks that were required to hold 4.0% capital. *Supra* note 118, at 24.

128. *Supra* note 118, at 27. Cf. Block, *supra* note 66, at 437 (referencing investor perception of an implicit U.S. government backing of Fannie Mae’s debt and observing that “investor perception of an implicit . . . government guarantee is hard to break”). In 2005, then-Chairman of the Federal Reserve Board Alan Greenspan explained the inconsistency between the disclosure and the market’s assumption:

Although prospectuses for GSE debt are required by law to stipulate that such investments are not backed by the full faith and credit of the U.S. government, investors worldwide have concluded that our government will not allow GSEs to default. . . . Virtually none of [Fannie and Freddie’s] excess return reflects higher yields on assets; it is almost wholly attributable to subsidized borrowing costs.

*Supra* note 68, at 29–30.

129. *Supra* note 66, at 25. In comparison, the leverage ratio of an average commercial bank during this period ranged from 10 to 15. *Supra* note 66, at 25.

130. ACHARYA ET AL., *supra* note 118, at 59.

131. See *id.* at 26, 54 (stating that “pulling the plug on the GSEs would have created a 50% sucking sound from the mortgage finance market”).

132. Lorraine Woellert & John Gittelson, *Fannie – Freddie Fix at \$160 Billion with \$1 Trillion Worst Case*, BLOOMBERG NEWS (June 13, 2010, 7:00 PM), <http://www.bloomberg.com/news/2010-06-13/fannie-freddie-fix-expands-to-160-billion-with-worst-case-at-1-trillion.html> [<https://perma.cc/C77Z-K4DH>].

### III. PROACTIVE RESOLUTION OF SUBNATIONAL DEBT

The same general strategies used for proactively resolving sovereign debt also should apply to resolving subnational debt. Certain features of those strategies will differ, however, because of differences between sovereign and subnational debtors.<sup>133</sup>

Until relatively recently, one such difference made proactive resolution less important for subnationals than for sovereigns: subnationals used to rely heavily on traditional bank lending, whereas sovereigns rely heavily on the issuance of bonds. Because bank lenders usually are easily identifiable and relatively few in number,<sup>134</sup> troubled subnational debtors found it easier to negotiate a debt restructuring.<sup>135</sup> The current trend, however, is for subnationals (like sovereigns) to issue bonds to obtain financing.<sup>136</sup> If that trend continues, proactive resolution will become as important for subnationals as it is for sovereigns.

Another difference is that a sovereign debtor that is concerned that the debt of its subnational units might become unsustainable<sup>137</sup> could require

133. Certain other differences between sovereign and subnational debtors relate to proactive resolution but are only indirectly relevant to this Article's analysis. For example, a national government usually can require its subnational governments proactively to resolve their debt. *Cf.* Douglas Sutherland, Robert Price & Isabelle Joumard, *Fiscal Rules for Sub-Central Governments: Design and Impact* 14–16 (OECD Network on Fiscal Relations Across Levels of Government, Working Paper No. 1, 2006) (discussing precedents for nations to impose borrowing constraints and balanced budget rules on their subnational units); UNTIL DEBT DO US PART: SUBNATIONAL DEBT, INSOLVENCY, AND MARKETS 26 (Otaviano Canuto & Lili Liu eds., 2013) (“Ex ante constraints on subnational borrowers include procedural rules for incurring debt, limits on debt and deficit ceilings, rules for borrowing in international markets, and regulation of subnationals’ borrowing based on fiscal capacity criteria.”).

134. Banks tend to be relatively few and concentrated in most developing or developed countries. *See, e.g., Banking System Concentration – Country Rankings*, GLOBAL ECONOMY.COM, [https://www.theglobaleconomy.com/rankings/banking\\_system\\_concentration/](https://www.theglobaleconomy.com/rankings/banking_system_concentration/) [<https://perma.cc/Z6UD-NLXH>] (last visited Apr. 11, 2019) (displaying bank concentration percentages by country). Even though U.S. banks tend to be more numerous, the concentration has risen considerably in the past few decades. *5-Bank Asset Concentration for U.S.*, FED. RES. ECON. DATA, <https://fred.stlouisfed.org/series/DDOI06USA156NWDB> [<https://perma.cc/KNK3-MB2E>] (last visited Apr. 11, 2019).

135. *Cf. supra* note 11 and accompanying text (discussing the collection action impediment to a debt restructuring).

136. *See, e.g.,* Otaviano Canuto & Lili Liu, *Subnational Debt Finance: Make It Sustainable*, in *THE DAY AFTER TOMORROW – A HANDBOOK ON THE FUTURE OF ECONOMIC POLICY IN THE DEVELOPING WORLD* 219, 220 (Otaviano Canuto & Marcelo Giugale eds., 2010) (observing that “[s]ubnational bonds increasingly compete with traditional bank loans” in certain countries).

137. As discussed, a sovereign might become concerned because it might feel compelled

those units to maintain certain minimum portions of their debt in proactively resolvable form. That effectively would parallel the post-crisis efforts of regulators to require systemically important firms to issue some portion of their debt in proactively resolvable form.<sup>138</sup>

### A. Convertible Financing

As with convertible sovereign financing, two issues are integral to designing convertible subnational financing: What should trigger conversion, and into what should the debt then convert? Convertible subnational financing also raises the same additional issues: whether the convertible financing will be economically viable and whether the conversion itself could have harmful consequences.

#### 1. What Should Trigger Conversion?

Subnational governments, like sovereigns, lack obvious financial accounting triggers, such as insolvency, that signal unsustainability. However, just as for a sovereign,<sup>139</sup> a debt-to-GDP ratio might be used as a trigger event for subnational debt if the subnational government's GDP can be defined. I later examine that in the context of discussing variable subnational financing linked to GDP.<sup>140</sup>

Another possible trigger takes inspiration from the U.S. Bankruptcy Code. In a municipal bankruptcy context, Chapter 9 of that Code provides a functional test for unsustainability in its cram-down requirement<sup>141</sup> that,

to stand behind the debt of its subnational units (*see supra* notes 123–132 and accompanying text) or because unsustainable subnational debt can otherwise contribute to a sovereign debt burden (*see supra* note 22 and accompanying text).

138. *See supra* notes 39–40 and accompanying text (explaining the economic rationale of contingent capital and its potential role in crisis prevention).

139. *See supra* note 73 and accompanying text (giving examples of sovereign debt restructuring).

140. *See infra* notes 156–157 and accompanying text (describing different ways to define a state's GDP).

141. Cram down enables a municipal debtor to force acceptance of a debt-restructuring plan over the objection of one or more dissenting classes of creditors if the plan is “in the best interests of the creditors.” 11 U.S.C. § 943(b)(7). In making that determination, Chapter 9 incorporates the cram-down concept of Chapter 11 of the U.S. Bankruptcy Code, which requires the court to confirm a proposed reorganization plan that is, *inter alia*, “fair and equitable, with respect to each class of claims,” despite the objection of creditors. 11 U.S.C. § 901(a) (2019); 11 U.S.C. § 1129(b)(1) (2019). *See also* 6 COLLIER ON BANKRUPTCY P 943.03 [1][f][i][B] (16th ed. 2019) (describing how the fair and equitable rule is applied in chapter 9 cases).

under the reorganization plan, the creditors are receiving “all that they ‘can reasonably expect [to receive] in the circumstances.’”<sup>142</sup> This focuses on whether the municipality has imposed reasonable austerity measures and has made reasonable use of taxation to try to pay its creditors.<sup>143</sup> Although a subnational might try to use a similar test as a trigger for convertible financing, any such determination would be complex, fact-intensive, and highly politically sensitive.<sup>144</sup> A municipality or other subnational government cannot easily raise taxes to pay its debt, for example, because its residents may simply move away.<sup>145</sup> In the Chapter 9 context, federal bankruptcy courts make these determinations, yet the decisions are far from consistent.<sup>146</sup> In jurisdictions lacking generally accepted norms about the range of what constitutes reasonable taxation, these determinations would be even more difficult. A more objective trigger would almost certainly be needed.

By analogy to proposed conversion triggers for convertible sovereign financing, a more objective trigger for subnational debt conversion might consist of a third party providing emergency financial assistance to the subnational government.<sup>147</sup> That trigger, however, would still be less objective for subnationals than for sovereigns because the only third party likely to provide that financial assistance to a subnational would be the national government itself.<sup>148</sup> Conversion also may be more likely to be triggered prematurely because of political pressure on national governments

142. *Lorber v. Vista Irrigation Dist.*, 127 F.2d 628, 639 (9th Cir. 1942); *see also In re City of Stockton*, 478 B.R. 8, 26 (Bankr. E.D. Cal. 2012) (stating that “[f]or a plan of adjustment to be confirmed . . . it must be ‘fair and equitable’ and ‘not discriminate unfairly’”).

143. *See, e.g., Zack Clement & R. Andrew Black, How City Finances Can Be Restructured: Learning from Both Bankruptcy and Contract Impairment Cases*, 88 AM. BANKR. L.J. 41, 41–55, 72–84 (2014) (stating ways in which state and federal laws may help cities escape insolvency).

144. *Szwarcz, supra* note 11, at 364.

145. *Subnational Debt Problem, supra* note 20, at 1184. That can even exacerbate the government’s problem if the subnational region’s economic output declines. *Id.*

146. *Sovereign Debt Restructuring, supra* note 11, at 364.

147. *Cf. supra* note 75 and accompanying text (discussing this same type of conversion trigger for convertible sovereign financing).

148. *See, e.g., Jürgen von Hagen, Subnational Government Bailouts in OECD Countries: Four Case Studies* (Inter-American Development Bank Working Paper No. 126, Nov. 2000) (discussing bailouts of subnational governments in Australia, Germany, Italy, and Sweden), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1814672](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1814672) [<https://perma.cc/4AMW-79MF>]; *Eva Jenkner & Zhonglin Lu, Sub-National Credit Risk and Sovereign Bailouts—Who Pays the Premium?* (IMF Working Paper 14/20, Jan. 2014), <https://www.imf.org/external/pubs/ft/wp/2014/wp1420.pdf> [<https://perma.cc/3BZE-LJ3H>] (discussing Spain’s bailout of certain subnational governments).

to bail out their financially troubled subnational units.<sup>149</sup> Investors may demand a high premium to offset the risk that the repayment terms of their convertible subnational debt would be so subject to the national government's whim.<sup>150</sup>

## 2. Into What Should the Debt Convert?

In theory, subnational debt and sovereign debt could convert the same ways: reduce principal of the debt, reduce the interest rate on the debt, and/or extend the maturity of the debt. As with convertible sovereign-debt financing, extending maturity of subnational debt would help to address liquidity whereas reducing principal would help to address insolvency.<sup>151</sup> Reducing the interest rate would contribute to addressing both of those concerns.<sup>152</sup>

## 3. Will the Convertible Financing Be Economically Viable?

This question can only be answered empirically, and its answer may well change depending on the particular subnational government that issues the debt.<sup>153</sup> As previously observed, convertible financing that only extends maturities might be less expensive to issue than convertible financing that reduces principal.<sup>154</sup>

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149. Cf. Canuto & Liu, *supra* note 136, at 224–25 (discussing the creditor perception that the national government implicitly guarantees its subnational debt). This tendency could itself foster moral hazard, encouraging subnational fiscal irresponsibility and imprudent lending to subnational governmental units. Cf. Otaviano Canuto & Lili Liu, *Subnational Debt, Insolvency, and Market Development 2–3* (The World Bank, Economic Premise Number 112, Apr. 2013), <http://siteresources.worldbank.org/EXTPREMNET/Resources/EP112.pdf> [<https://perma.cc/7YP7-ZUG5>] (discussing subnational debt crises and the concomitant moral hazards); Mary Williams Marsh, *Puerto Rico May Get Help from Unlikely Source: Its Lenders*, N.Y. TIMES (Sep. 27, 2017), <https://www.nytimes.com/2017/09/27/business/puerto-rico-hurricane-bondholders.html> (suggesting in part that recent imprudent hedge-fund lending to Puerto Rico was induced by moral hazard).

150. See *supra* notes 105–107 and accompanying text (discussing the unreliability of conventional triggers, such as GDP).

151. See *supra* notes 78–82 and accompanying text (addressing issues of solvency and liquidity in the context of sovereign convertible financing).

152. *Supra* notes 78–82 and accompanying text.

153. See *supra* notes 82–84 and accompanying text (discussing the necessarily empirical aspects of the question, such as a subnational government's willingness to pay an investor the demanded interest premium).

154. See *supra* notes 82–84 and accompanying text (discussing the rationale and risks of convertible financing that extends only to maturities and convertible financing that reduces principal).

#### 4. Could the Conversion Itself Have Harmful Consequences?

In principle, this question's analysis should be similar whether the issuer of the convertible debt is a subnational or a sovereign. In both cases, it turns in the first instance on whether the investors in the debt are systemically important financial institutions that could incur significant losses upon conversion, triggering systemic financial contagion.<sup>155</sup> In practice, however, the amount of a sovereign issuer's convertible debt may far exceed that of a subnational issuer. Other things being equal, the smaller the amount of debt converted, the smaller the losses to the investors; and thus the smaller the risk that the conversion will trigger systemic financial contagion.

##### *B. Variable Financing*

Like a sovereign borrower, subnational government borrowers could try to link their variable financing to GDP if that could be defined. The U.S. Bureau of Economic Analysis, for example, defines a state's GDP as "the sum of value added from all industries in the state."<sup>156</sup> Some subnationals might also attempt to calculate practical alternatives to GDP, such as adding together tax collections, funds received from the central government, and revenues from the subnational's sales of goods and services.<sup>157</sup> However, government accounting may well be even less reliable and transparent for subnationals than for nations.<sup>158</sup> Therefore, GDP-linked bonds may be even harder to implement for subnationals than for sovereigns.

Some variables, however, may tie closely to subnational government revenues. For example, subnationals whose income is substantially based on the sale of commodities<sup>159</sup> could link variable financing to commodity

155. *Supra* notes 85–86 and accompanying text.

156. *Glossary*, BUREAU ECON. ANALYSIS, <https://www.bea.gov/help/glossary/gross-domestic-product-gdp-state> [<https://perma.cc/ZB4M-H2PW>] (last visited Oct. 17, 2019).

157. *Cf. Taxes and State Revenue*, NAT'L CONF. ST. LEGS., <http://www.ncsl.org/documents/fiscal/TaxesandStateRevenue.pdf> [<https://perma.cc/UMG6-C88V>] (proposing this method of calculating U.S. state revenue).

158. *See* Violeta Vulovic, *Sub-National Borrowing, Is It Really a Danger?* 51 (Dec. 14, 2011) (unpublished Ph.D. dissertation, Georgia State University) (on file with Georgia State University) (stating that "obtaining reliable financial information, especially from the sub-national governments, often requires significant effort. Moreover, not all the sub-national governments follow a standardized accounting plan, hold uniform registers of their assets and liabilities, or publish information on debt and capacity to pay.").

159. For example, the state of Alaska obtains a large portion of its revenues from oil & gas production. *Annual Report 2017*, ALASKA DEPT. REVENUE, <http://www.tax.alaska.gov/p/rograms/programs/reports/AnnualReport.aspx?Year=2017> [<https://perma.cc/7M4U-4TTM>].

prices or sales-based revenue.<sup>160</sup> Subnationals located in regions subject to natural disasters, such as earthquakes, tornadoes, or hurricanes, could link variable financing to those conditions.<sup>161</sup>

### C. Non-Recourse Financing

At least in the United States, subnational governments widely use non-recourse financing to minimize their debt-payment obligations and more precisely allocate risks and rewards between debtors and creditors, reducing information asymmetry.<sup>162</sup> Many U.S. states raise financing through SPEs, with some states such as New York, New Jersey, and Virginia raising most of their financing that way.<sup>163</sup> To the extent a subnational government is not obligated on SPE debt, that debt should not contribute directly to the government's financial unsustainability.

As discussed, non-recourse government financing through SPEs can also create risks if the government has little choice but to stand behind the SPE debt.<sup>164</sup> Subnational governments often have strong economic and reputational motivations to backstop the debt of their SPEs, notwithstanding the absence of a legal obligation to do so. A default on that debt could signal uncertainty as to whether the subnational will pay its debts generally, thereby jeopardizing the subnational government's credit rating.<sup>165</sup> For example, the State of Ohio has stood behind the debt of one of its SPEs to reduce rating-

160. See *supra* note 95 and accompanying text (discussing certain value recovery rights linked to commodities such as oil).

161. See, e.g., Shakira Mustapha & Annalisa Prizzon, *Africa's Rising Debt: How to Avoid a New Crisis* 11–12, ODI (Oct. 2018), <https://www.odi.org/sites/odi.org.uk/files/resource-documents/12491.pdf> [<https://perma.cc/J3TQ-XW6L>] (citing natural disasters as one possible link for debt payments by sovereigns).

162. See, e.g., *Special-Purpose Entities in Public Finance*, *supra* note 66, at 376–79 (describing how states utilize special purpose entities to avoid constitutional debt limits and allocate risk); ROBERT S. AMDURSKY, CLAYTON P. GILLETTE & ALLEN BASS, *MUNICIPAL DEBT FINANCE LAW: THEORY AND PRACTICE* 29–32 (1992) (discussing the popularity of municipal revenue bonds, a type of non-recourse debt financing).

163. *Special-Purpose Entities in Public Finance*, *supra* note 66, at 370.

164. Because subnational government finance is often subject to less public scrutiny than national government finance, the “off-balance-sheet” nature of non-recourse subnational debt can also create a potential for abuse and possibly even prevent the subnational government's own bonds from being priced correctly based on fiscal risk. *Special-Purpose Entities in Public Finance*, *supra* note 66, at 372.

165. See *Special-Purpose Entities in Public Finance*, *supra* note 66, at 381 (quoting, among other sources, Standard & Poor's, *Moral Obligation Bonds* 3 (June 27, 2006) (observing that if “a properly structured moral obligation defaulted, despite clear original legislative support, the state's willingness to pay on its other debt would need to be examined”).

agency scrutiny.<sup>166</sup> Similarly, the City of Chicago paid eighty percent of the back interest on bonds issued by the Calumet Skyway Authority due to a “feeling that a bond default by the Authority might damage the city’s overall bond rating.”<sup>167</sup> Markets and investors likewise believe that the economic compulsion to avoid increased borrowing costs resulting from a default on SPE debt provides “enough incentive for the state to pay” that debt to avoid a default.<sup>168</sup>

Subnational governments may have other reasons, too, to support payment of their SPE debt (even though they are not legally obligated to do so). If an SPE operates as an integral part of the subnational government, such as providing the water supply, the government may have no practical choice but to support the SPE in order to ensure uninterrupted government services—essentially a “too important to fail” variant of the corporate notion of too-big-to-fail.<sup>169</sup> A subnational government also may support payment of an SPE’s debt in order to honor a moral obligation,<sup>170</sup> or even to protect the government’s reputation more generally.<sup>171</sup>

For all of these reasons, a subnational government may feel more compelled than a sovereign to backstop the debt of its SPEs, notwithstanding the absence of a legal obligation to do so. To that extent, the SPE debt may add to the unsustainability of the subnational’s debt. It therefore will be important, when designing non-recourse subnational financing, to try to reduce the likelihood that the subnational will feel compelled to stand behind the SPE debt.

Furthermore, SPE debt might indirectly contribute to a government’s financial unsustainability by allocating specific government revenue to

166. *Special-Purpose Entities in Public Finance*, *supra* note 66, at 381.

167. JERRY MITCHELL, *THE AMERICAN EXPERIMENT WITH GOVERNMENT CORPORATIONS* 97 (1999) (citations omitted).

168. *Special-Purpose Entities in Public Finance*, *supra* note 66, at 381.

169. *See Special-Purpose Entities in Public Finance*, *supra* note 66, at 381–82 (discussing governments’ rationale for backstopping their essential SPEs).

170. *See Special-Purpose Entities in Public Finance*, *supra* note 66, at 382 (analyzing the potential moral obligation to pay arising out of an issuance of moral-obligation debt or appropriation contingent debt).

171. *See Special-Purpose Entities in Public Finance*, *supra* note 68, at 382 (addressing the potential for reputational loss with investors). In a corporate context, for example, at the outset of the global financial crisis many banks backstopped their affiliated structured investment vehicles (“SIV”s) solely to protect the banks’ reputations. In the case of Citigroup, this occurred notwithstanding that it reduced the capital ratio that regulators monitor to gauge that bank’s ability to withstand losses on bad loans and caused Moody’s to lower the bank’s long-term credit rating. The reputational harm of not supporting payment of an SPE’s debt may be even greater in a subnational government than a corporate context. *Special-Purpose Entities in Public Finance*, *supra* note 66, at 382–83.

payment of that debt, thereby making that revenue unavailable for payment of general obligation debt and providing public services.<sup>172</sup> Some argue, for example, that the allocation of certain Puerto Rican sales taxes to payment of billions of dollars of bonds issued by Puerto Rico's Sales Tax Financing Corporation, known as COFINA, may have unfairly deprived that island's general obligation bondholders and made it more difficult to provide public services.<sup>173</sup> To ensure fairness, the process of designing non-recourse subnational (and even sovereign) financing should be public and transparent.<sup>174</sup>

### CONCLUSIONS

Sovereign and subnational governments urgently need help in resolving unsustainable debt burdens. Informed by proactive strategies that could help systemically important financial firms resolve unsustainable debt, this Article examines and assesses the legal and economic viability of designing proactive strategies for resolving unsustainable governmental debt. Whether addressing firms or governments, the strategies should follow the same principles: convert borderline unsustainable debt into sustainable financing, through pre-planning, or try to prevent the debt from approaching unsustainability.

The Article then analyzes how a government could implement these strategies. For example, it could implement the first by issuing at least part of its debt with provisions that, in the future, reduce its principal or interest or extend its maturities if needed to make the debt sustainable. It could implement the second in at least two ways: by tying the amounts and/or maturities of payments on the debt to variables that correspond to the debtor's ability to pay, or by limiting recourse on the debt to specified assets or revenue sources of the debtor. The Article also compares the costs and

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172. See *supra* note 132 and accompanying text (examining issues and risks of subnationals' non-recourse financing).

173. See, e.g., Abner Dennis & Kevin Connor, *Hedge Funds Win, Puerto Ricans Lose in First Debt Restructuring Deal*, AM. PROSPECT (Feb. 8, 2019), <https://prospect.org/article/hedge-funds-win-puerto-ricans-lose-first-debt-restructuring-deal> [<https://perma.cc/ZNL9-JKH N>] (arguing, among other things, that "[t]he restructuring plan for . . . COFINA debt carries grave consequences for the vast majority of Puerto Ricans: Money that could be funding health care, education, and a just recovery from 2017's hurricanes and a 13-year economic depression will instead pad the pockets of hedge-fund billionaires and their wealthy investors").

174. Cf. *id.* (basing most of their ire on the fact that the "public was excluded from participating in this decision at every stage, underscoring the deeply undemocratic character of the whole process").

benefits of pursuing these strategies.<sup>175</sup>

#### APPENDIX

### *Recommendations for Designing Proactive Resolution*

Following the Article's detailed discussion, this Appendix briefly summarizes the recommendations for proactively resolving sovereign and subnational government debt to make it sustainable. The Article identifies three approaches.

The first approach is (1) "convertible financing," which focuses on the strategy of converting borderline unsustainable government debt into sustainable financing, through pre-planning. The second and third approaches focus on the strategy of trying to prevent the debt from approaching unsustainability; these approaches are divided, respectively, into (2) "variable financing," which ties the amounts and/or maturities of payments on the debt to variables that correspond to the government's ability to pay, and (3) "non-recourse financing," which limits recourse on the debt to only specified assets or revenue sources of the government.

This Appendix outlines the application of each of these approaches to sovereign and subnational debt. Although those applications are generally similar, they sometimes will vary because of differences between sovereign and subnational debtors. A sovereign debtor that is concerned that the debt of its subnational units might become unsustainable also could require those units to maintain certain minimum portions of their debt in proactively resolvable form.

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175. A government ideally should implement these strategies by negotiating provisions into new or existing debt contracts. *Cf. supra* note 32 and accompanying text (discussing inclusion of proactive conversion provisions in the original debt contract). Although a government could try retroactively to legislate these strategies into existing debt contracts, especially if those contracts are governed by the government's law, retroactive legislation would likely anger creditors and impair the government's ability to attract future financing. It also might violate international law, which only permits retroactivity that is neither discriminatory nor arbitrary nor amounts to expropriation. 1 OPPENHEIM'S INTERNATIONAL LAW 918–21 (Sir Robert Jennings & Sir Arthur Watts eds., 9th ed. 1992). Retroactivity that unilaterally reduces a debt claim's principal amount or interest rate, for example, might be seen as expropriation. *Cf. IAN BROWNIE, PRINCIPLES OF PUBLIC INTERNATIONAL LAW* 550 (5th ed. 1998) (observing that, in the context of breaching a contract, "the situation in which the state exercises its executive or legislative authority to destroy the contractual rights as an asset comes within the ambit of expropriation"). The expropriating government could then be liable under international law to compensate the injured parties. OPPENHEIM'S INTERNATIONAL LAW, *supra*, at 175.

(1) Convertible Financing.

Designing convertible financing confronts four issues: what should trigger conversion; into what should the debt then convert; will the convertible financing be economically viable; and could the conversion itself have harmful consequences.

Determining what should trigger conversion must recognize that the financial condition of governments, unlike that of corporations, cannot be measured easily or reliably. Because most nations periodically calculate their GDP, a debt-to-GDP ratio could serve as a sovereign debt conversion trigger. However, government calculations of GDP can be unreliable and uncertain, and government financial transparency is generally low. A more reliable conversion trigger might be the sovereign receiving emergency financial assistance from a multilateral organization such as the IMF or the European Stability Mechanism. Designing a subnational debt conversion trigger is even more difficult. A debt-to-GDP ratio may not work because GDP is usually a national calculation, although subnational governments sometimes define their GDP. Basing the conversion trigger on the subnational government receiving emergency financial assistance might not be objective because the party likely to provide that assistance would be the national government itself.

Determining into what the debt should convert would, again, work differently for governments than corporations. In the corporate context, convertible financing normally converts into equity (i.e., an ownership interest rather than a debt claim). Because there are not ownership interests in governments, government financing—whether of a sovereign or subnational government—could convert into debt with reduced principal and/or interest rate or extended maturities, as needed to make the converted debt sustainable.

Determining whether the convertible government financing will be economically viable depends on whether governments will be willing to pay the interest premium demanded by investors to extend that financing. That is an empirical question that cannot be answered in the abstract. Other things being equal, however, convertible financing that only allows maturity extensions might be less costly than convertible financing that allows principal reductions, so long as the government is required to pay a market rate of interest during the extensions. These observations appear to be equally applicable to both sovereign and subnational convertible financing.

Determining whether the conversion itself could have harmful consequences turns on whether investors in the convertible financing are systemically important (such as large banks or pension funds), and whether

they would incur significant losses upon conversion. If systemically important investors incur significant losses, the conversion might trigger systemic financial contagion. Although there may be no perfect solution to this concern, possible second-best solutions might include limiting the amount of convertible government financing in which a systemically important firm would be allowed to invest. Also, other things being equal, sovereign convertible financing would be systemically riskier than subnational convertible financing if, as often would be the case, the amount of the former exceeds that of the latter.

(2) Variable Financing.

The relevant variables could be the government's GDP or other factors linked to the government's creditworthiness such as its commodity-export prices. Although no country has yet issued bonds linked to these types of variables, there is strong regulatory interest in GDP-linked bonds in order to reduce the likelihood of future sovereign debt crises.

There is limited experience with warrants linked to GDP or commodity-export prices, which were issued to enhance the attractiveness of sovereign bond exchanges. Because these warrants did not affect future payments on the exchanged bonds, they do not provide clear precedent for using variable government financing as a proactive resolution strategy. Nonetheless, the history of payments on these warrants suggests that sovereigns take their variable financing obligations seriously.

Opinion remains divided, however, as to whether variable government financing will be economically viable. As mentioned, government calculations of GDP can be unreliable and uncertain. Variable government financing therefore should be designed with protection for underreporting GDP or other relevant variables. Such protection might include designating a respected independent body to monitor and enforce data integrity, including providing an independent source of GDP data.

It may be even more difficult to link variable subnational financing to GDP, unless (as mentioned above) the subnational government defines its GDP. Subnational government accounting, however, is even less reliable and transparent than national government accounting. Alternatively, subnationals might attempt to calculate practical alternatives to GDP, such as adding together tax collections, funds received from the central government, and revenues from the subnational's sales of goods and services. Subnationals whose income is substantially based on the sale of commodities also could try to link their variable financing to commodity prices or sales-based revenue.

The future market viability of variable government financing also will turn on its cost. Investors would be expected to demand compensation for the additional repayment risk posed by variable financing: if the government's revenues decrease, investors not only would face an increased default risk but also might receive reduced payments on the debt.

(3) Non-Recourse Financing.

In non-recourse financing, a government would set up one or more special-purpose entities ("SPE"s), which obtain financing from investors. The investors seek repayment from the SPE, which the government capitalizes with high-quality financial assets, such as payments expected to be generated from an income-producing project or rights to the future payment of specified tax revenues.

Non-recourse national government financing has significant precedent in some jurisdictions, such as the United States. U.S. subnational governments, including states, also widely use non-recourse financing. Because the investors only have recourse to the SPE, not to the government itself, SPE debt should not contribute directly to the government's debt burden.

Notwithstanding the non-recourse nature of the SPE debt, a government sometimes may have little choice but to stand behind that debt. In a sovereign context, this occurred during the global financial crisis when the U.S. government backstopped the debt of its mortgage-loan-originating SPEs (Fannie Mae and Freddie Mac) to prevent their default and to promote stability and liquidity in the housing markets. Subnational governments also have backstopped an SPE's debt, in some cases to protect their credit rating and in other cases to ensure uninterrupted government services of an SPE that operates as an integral part of the subnational government (such as providing the water supply). Non-recourse debt should be designed to try to reduce the likelihood that the government will feel compelled to stand behind that debt.

SPE debt might indirectly contribute to a government's financial unsustainability by allocating specific government revenue to payment of that debt, thereby making that revenue unavailable for payment of general obligation debt and providing public services. To ensure fairness, the process of designing non-recourse government financing should be public and transparent.