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MARKET POWER IN THE PROVISION OF SAFE ASSETS AND GLOBAL FINANCIAL DYNAMICS

Exorbitant Privilege and the Sustainability of US Public Debt†

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The active use of fiscal policy in the United States for macroeconomic stabilization and transfer policies during the last two decades has resulted in a significant increase in public debt levels. The stock of public debt now exceeds 100 percent of GDP, which, along with rising interest rates, has generated concerns about the sustainability of US public debt and the ability and willingness of the US government to meet its debt obligations (e.g., Rogoff 2020).

One argument that is often made to assuage these concerns is that the United States' present role as a global safe asset and reserve currency supplier—and the potential loss of this "exorbitant privilege" status in the event of a default—imposes substantial default costs that incentivize the US government to continue servicing and repaying its debt. This argument was formalized in the Farhi and Maggiori (2018) model of the international monetary system. They argue that the threat of losing the monopoly rents associated with being the dominant supplier of safe assets in the event of a default makes US debt safe.

The goal of this paper is to quantify the impact of this reputational channel on the sustainability of US public debt. Specifically, we study the extent to which the perceived cost of losing the special status the United States holds in global safe asset markets sustains safe public debt. To address this question, we develop a quantitative model of defaultable debt following the tradition of Eaton and Gersovitz (1981), enriched with two features characterizing the special status of the United States in safe asset markets. First, US public debt provides a nonpecuniary value to its holders, resulting in a convenience yield. Second, the US government obtains seigniorage revenues from its foreign holdings of US currency.

Our findings indicate that the loss of this special status in the event of a default significantly augments the debt capacity of the United States. Debt levels would be up to 30 percent lower if the United States did not have this special status. Most of this extra debt capacity arises from the loss of the convenience yield on US Treasuries, which makes debt more expensive following its loss and provides strong incentives to repay debt. Our analysis holds relevance as the United States' dominance in safe asset markets faces challenges from efforts by other key players, such as Europe and China, to establish competitors in the supply of safe assets and reserve currencies.

I. Model

Time is discrete and indexed by $t = 0, 1, 2, \ldots$. Let s_t denote the exogenous state of the world. The economy is populated by a large number of lenders and the US government. The government receives tax and seigniorage revenues each period and chooses the level of government spending, the debt issuance, and whether to repay or default on its debt obligations. The preferences of the government are given by

$$E_0 \sum_{t=0}^{\infty} \beta^t U(G_t),$$

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where G_t is the level of government expenditures in period t.[1] We assume that the government can only issue short-term debt and that the timing follows Eaton and Gersovitz (1981).[2] The key feature of our model is that we assume that the US government has *special status*. This confers two benefits on the United States. First, its debt generates nonpecuniary benefits for its holders. This can arise due to the liquidity and collateral properties of US debt (see, for example, Lagos, Rocheteau, and Wright 2017). Second, the United States receives seigniorage revenues from holdings of its currency. We assume that the United States remains in special status so long as it has not defaulted on its debt. After default, it loses its special status but can regain it stochastically.

The budget constraint for the United States when it has special status is

$$G_t + B_t \leq \tau Y_t + \bar{s}\, Y_t + q^*(B_{t+1}, s_t) B_{t+1},$$

where B_{t+1} is the debt issued in period t, τ the tax rate, Y_t the output, $\bar{s}\, Y_t$ the seigniorage revenues, and $q^*(B_{t+1}, s_t)$ the price of debt when it has special status. In contrast, if the United States does not have special status, its budget constraint is

$$G_t + B_t \leq \tau Y_t + q(B_{t+1}, s_t) B_{t+1}.$$

In particular, the United States does not receive seigniorage revenues and faces a different debt price schedule.

We now consider a recursive representation of the government's problem. The state variables in any period are (s,B). Let $V^*(s,B)$ denote the value of repayment when the US government has special status, $V(s,B)$ the value if it does not have special status, and $\underline{V}(s)$ the value of default. Then, the special status repayment value is

$$V^*(s,B) = \max_{B'} U(G) + \beta E \max\left\{V^*(s',B'), \underline{V}(s')\right\}$$

subject to

$$G = \tau Y(s) + \bar{s} Y(s) - B + q^*(s,B')B'.$$

The nonspecial status repayment value is

$$V(s,B) = \max_{B'} U(G) + \beta E\Big[\theta \max\left\{V^*(s',B'), \underline{V}(s')\right\} + (1-\theta)\max\left\{V(s',B'), \underline{V}(s')\right\}\Big]$$

subject to

$$G = \tau Y(s) - B + q(s,B')B',$$

where θ is the probability that the US regains special status. Finally, the default value is given by

$$\underline{V}(s) = U(\tau Y(s)) - \nu_d + \beta E V(s',0),$$

where ν_d is a utility cost of default.[3] Note that default results in autarky for one period.

Next, we characterize the debt pricing functions. Lenders value payments using a stochastic discount factor $\Lambda_{t,t+1} = \Lambda(s_t, s_{t+1})$. The pricing of debt arises from the zero-profit condition of competitive lenders. If the United States has special status, the payoffs to lenders in recursive form is

$$-q^* b' + E\Big[\Lambda(s,s')\left(1 - \delta^*(s',B')\right)b'\Big] + f(b'),$$

where b' is the debt holdings of an individual lender, f is an increasing and concave function that represents the nonpecuniary value of holding US debt, and $\delta^*(s',B')$ is the default policy function of the US government when it has special status. The optimality condition of the lender's problem generates a debt pricing function

$$q^*(s,B') = E\Big[\Lambda(s,s')\left(1 - \delta^*(s',B')\right)\Big] + f'(B').$$

[1] We model a government problem with preferences over spending, as in Bocola, Bornstein, and Dovis (2019).

[2] Specifically, the government first chooses to repay or default and then chooses debt issuance facing a price schedule that depends on the state and choice of debt issuance.

[3] This can capture other sources of default costs, including those arising from trade or domestic financial disruptions.

Table 1—Calibration

Param.	Description	Value
β	Domestic discount rate	0.95
γ	Risk aversion	2
r	Foreign lending rate	0.03
ρ	Output process persistence	0.951
σ	Output process volatility	0.008
ν_d	Utility cost of default	16.9
τ	Government tax rate	0.3
ζ	Scale of discrete choice shock	1.37
κ	Foreign risk aversion	2,525
η_f	Convenience benefit parameter	−5.083
ν_f	Convenience benefit elasticity	0.545
θ	Prob. of regaining special status	0.0
$\bar{s}$	Seigniorage parameter	0.0012

Table 2—Moments

Moments	Data	Model
Mean(Debt/GDP)	100%	100%
Mean(Convenience yield)	0.62%	0.61%
Mean(CDS spreads)	0.20%	0.20%
Mean(Pure default spreads)	0.08%	0.12%

Notes: Mean(Debt/GDP) is the average ratio of US total public debt to GDP over the last 15 years. Mean(Convenience yield) is taken from Choi et al. (2022). Mean(CDS spreads) is the spread on the one-year US credit default swap (CDS) averaged over the last 15 years. The decomposition of CDS spread into pure default spreads and risk premium is from Hegarty et. al. (2023).

In the absence of special status, the pricing function is standard and given by

$$q(s,B') = E\left[\Lambda(s,s')\left(1-\delta(s',B')\right)\right],$$

where $\delta(s',B')$ is the default policy function when it does not have special status.

The default decision of the government must satisfy

$$\delta^*(s',B') = \begin{cases} 0, & \text{if } V^*(s',B') \geq \underline{V}(s'); \\ 1, & \text{otherwise} \end{cases}$$

and similarly for $\delta(s',B')$. A recursive equilibrium can be defined in the standard fashion.

II. Calibration

The model is calibrated at an annual frequency. Table 1 reports the parameter values. We set a subset of parameters to predetermined values and calibrate the remaining to match a set of moments related to the public debt and external balance sheet of the United States. We assume a CRRA utility function $u(g) = g^{1-\gamma}/(1-\gamma)$ and set $\gamma = 2$. The output process is assumed to be log-normal with $\ln y_{t+1} = \rho \ln y_t + \sigma\varepsilon_{t+1}$ with standard values for ρ and σ, and the lender's sdf is $\Lambda_{t,t+1} = \exp\left(-\kappa\sigma\varepsilon_{t+1} - 0.5\kappa^2\sigma^2\right)/r$, where $\kappa > 0$ parameterizes the risk aversion of lenders (see, for example, Hegarty et al. 2022). We also introduce additive preference shocks to the values of repayment and default, as in Dvorkin et al. (2021). These shocks help better match the data—and with convergence of the quantitative model. We also assume that these preference shocks, are drawn iid from a Gumbel distribution with mean 0 and scale parameter ζ.

We assume that the benefit function $f(b) = \nu_f b^{1-\eta_f}/(1-\eta_f)$. To parameterize this function, we build on Krishnamurthy and Vissing-Jorgensen (2012) and Choi, Kirpalani, and Perez (2022) and estimate

$$\mathcal{S}_t = \alpha + \beta \ln b_t + \delta \mathbf{X}_t + \varepsilon_t, \tag{1}$$

where $\mathcal{S}_t$ is a measure of the convenience yield, $\ln b_t$ is the log of the ratio of public debt to GDP, and $\mathbf{X}_t$ is a vector of controls. In this specification, the demand semi-elasticity of prices to quantities is given by β. To obtain an estimate of the actual elasticity, we take the ratio of the semielasticity to the sample average of $\mathcal{S}_t$. This equation is then estimated using both OLS and IV methods. We use a baseline value of $\eta_f = 0.54$ as in Choi, Kirpalani, and Perez (2022). We calibrate the value of ν_f to match a mean convenience yield of 62 basis points.

To estimate the size of the seigniorage revenues, we use the foreign holdings of US dollars (approximately 1 trillion) and a 3 percent interest rate to compute $\bar{s} = 0.12\%$ of average GDP.[4] We analyze how the results change with different interest rates.

Finally, we calibrate the parameter associated with the lender's stochastic discount factor, the default cost, and the scale of the discrete choice

[4] The US government obtains seigniorage from domestic and foreign holdings of US dollars. We only focus on the latter because it is less likely that the US dollar is substituted domestically for another currency in the event of a sovereign default.

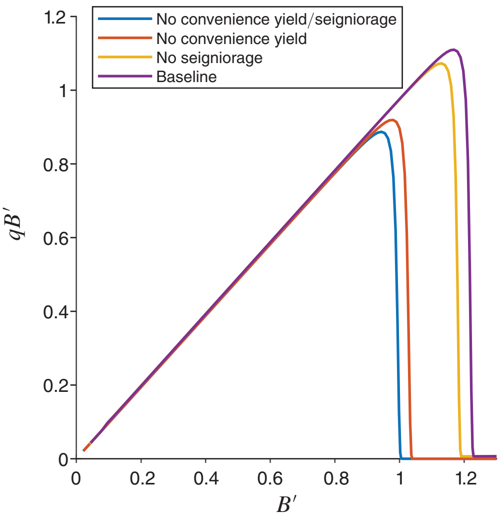

Figure 1. Laffer Curve of US Public Debt

Notes: This figure shows the debt Laffer curves for different economies with and without the convenience yield on US debt and seigniorage from foreign dollar holdings. Debt Laffer curves are evaluated at the median level of output.

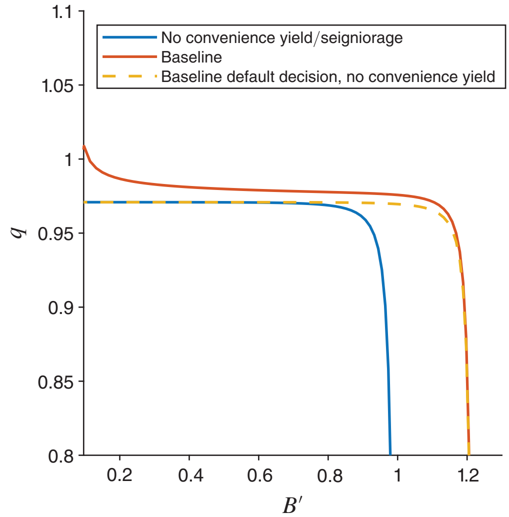

Figure 2. Decomposing the Price of US Debt

Notes: This figure shows the price of debt for economies with and without the convenience yield on US debt (red and blue lines) and a counterfactual economy in which the default decision is from the baseline economy, but the price does not contain convenience yield (yellow dashed line). The prices of debt are evaluated at the median level of output.

shock distribution to match the following four moments listed in Table 2.

III. Results

We use the calibrated model to quantify the additional debt capacity that the United States enjoys as a result of its special status. Figure 1 displays the debt Laffer curves for both the benchmark economy and other counterfactual economies sharing the same parameterization but lacking any special status and, hence, having no risk of losing it in default. The special status of the United States increases the maximal debt that can be sustained in equilibrium by approximately 22 percent of GDP. The majority of this increased debt capacity arises from the convenience channel: an economy where US debt doesn't offer a nonpecuniary benefit to holders features a maximum debt level 18 percent lower, whereas an economy without foreign seigniorage features a maximum debt that is only 3 percent lower.

The absence of a convenience yield affects the price of debt through two mechanisms. First, it directly increases the cost of debt due to the lack of nonpecuniary benefits, and second, it reduces the incentives for the United States to repay debt, as the cost of default is lower. Figure 2 illustrates that the second mechanism is quantitatively more relevant for large and empirically realistic levels of debt, whereas the first mechanism is relevant for very low levels of debt.

We then evaluate the impact on equilibrium levels of debt, that is, the optimal debt choices by the sovereign facing different debt Laffer curves. Table 3 presents the average debt choices from model simulations for various economies with and without special status and under different parameterizations. There are three main takeaways from the analysis. First, the loss of special status upon default significantly affects debt sustainability, with equilibrium debt levels up to 30 percent lower without the special status. Second, in line with the earlier analysis, the effects are primarily driven by the convenience channel, as indicated in the fourth column. Finally, the effects are sensitive to the probability of regaining the special status after a default

TABLE 3—EXORBITANT PRIVILEGE AND US DEBT SUSTAINABILITY

	Prob. of regaining special status		
	0	0.05	0.1
$r = 0.02$			
Baseline	100	100	100
No foreign seigniorage	96	98	99
No convenience yield	75	87	90
Neither	72	86	89
$r = 0.03$			
Baseline	100	100	100
No foreign seigniorage	97	98	98
No convenience yield	82	88	90
Neither	80	87	89
$r = 0.04$			
Baseline	100	100	100
No foreign seigniorage	97	98	98
No convenience yield	86	88	89
Neither	83	86	87

Note: This table reports the average US public debt for different economies with and without special status under different parameters.

and less so to the international interest rate (see the different rows of Table 3). The decrease in debt due to the loss of special status exceeds 20 percent when the loss of special status is permanent and is less than 10 percent when the special status is regained an average of 10 years after a default. On the other hand, although different interest rates directly influence the loss of foreign seigniorage, their impact on debt is minimal.

IV. Conclusion

We showed that the United States' current role as a global safe asset and reserve currency supplier—and its loss in the event of a default—generates significant additional debt capacity for the US government. While this is not the only reason for the United States' ability to sustain large levels of debt, it is important because its dominant status is unlikely to be permanent. History has shown alternance in safe asset dominance: the role that the United Kingdom once had is now played by the United States, and it could be shared with other key players in the future (Chen et al. 2022; Choi et al. 2023). Our analysis suggests that losing this role can pose challenges for the sustainability of US public debt.

REFERENCES

Bocola, Luigi, Gideon Bornstein, and Alessandro Dovis. 2019. "Quantitative Sovereign Default Models and the European Debt Crisis." *Journal of International Economics* 118: 20–30.

Chen, Zefeng, Zhengyang Jiang, Hanno Lustig, Stijn Van Nieuwerburgh, and Mindy Z. Xiaolan. 2022. "Exorbitant Privilege Gained and Lost: Fiscal Implications." NBER Working Paper 30059.

Choi, Jason, Rishabh Kirpalani, and Diego J. Perez. 2022. "The Macroeconomic Implications of US Market Power in Safe Assets." NBER Working Paper 30720.

Choi, Jason, Duong Dang, Rishabh Kirpalani, and Diego J. Perez. 2023. "The Secular Decrease in UK Safe Asset Market Power." *AEA Papers and Proceedings* 113: 120–24.

Dvorkin, Maximiliano, Juan M. Sánchez, Horacio Sapriza, and Emircan Yurdagul. 2021. "Sovereign Debt Restructurings." *American Economic Journal: Macroeconomics* 13 (2): 26–77.

Eaton, Jonathan, and Mark Gersovitz. 1981. "Debt with Potential Repudiation: Theoretical and Empirical Analysis." *Review of Economic Studies* 48 (2): 289–309.

Farhi, Emmanuel, and Matteo Maggiori. 2018. "A Model of the International Monetary System." *Quarterly Journal of Economics* 133 (1): 295–355.

Hegarty, Caitlin, Matias Moretti, Pablo Ottonello, and Diego J. Perez. 2022. "Global Borrowing Costs and Firms' Risk in Open Economies." Unpublished.

Krishnamurthy, Arvind, and Annette Vissing-Jorgensen. 2012. "The Aggregate Demand for Treasury Debt." *Journal of Political Economy* 120 (2): 233–67.

Lagos, Ricardo, Guillaume Rocheteau, and Randall Wright. 2017. "Liquidity: A New Monetarist Perspective." *Journal of Economic Literature* 55 (2): 371–440.

Rogoff, Kenneth. 2020. "Falling Real Interest Rates, Rising Debt: A Free Lunch?" *Journal of Policy Modeling* 42 (4): 778–90.