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9 June 2023

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Abstract

This paper builds a theoretical model where corrupt government officials select the optimal amount of government spending directed toward building wealth for themselves and political allies. We refer to this type of government expenditures as rent extraction spending. Our results show that more government corruption leads to higher rent extraction spending, increased inflation, additional taxation, and lower non-rent extraction spending. The increases in inflation and rent extraction spending, however, are more muted when the corrupt country is a member of a currency union.

Keywords: Corruption; Rent Extraction; Optimal Fiscal Policy; Optimal Monetary Policy.

JEL Classifications: E52, E61, E62, O23.

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1 Introduction

Corrupt politicians in some countries use fiscal and monetary policy to maintain their political power and maximize their personal wealth. That is, those non-benevolent government officials implement fiscal and monetary policies to maximize their own utility rather than the consumers' utility. Belonging to a monetary union, however, somewhat limits the ability of corrupt government officials to fund their unethical spending. Those political leaders prefer favorable economic conditions like high output, low taxes, and moderate inflation to help them retain political power while simultaneously directing government spending toward activities that increase wealth for themselves and their political allies.

Rent extraction by the public sector and rent-seeking by the private sector have many negative effects on the economy. Shleifer and Vishny (1993) argues that corrupt politicians spend more government resources on goods with few producers, like high-technology products, because the limited number of firms make it easier for government officials to extract rents. Furthermore, Mauro (1998) finds that markets with many suppliers, like education and health care goods, often are underfunded by corrupt governments because a large number of suppliers makes rent extraction much more difficult. Huang and Wei (2001) shows that more corruption, which is modeled as an inefficient tax collection system, leads to a higher optimal inflation rate target. Murphy, Shleifer, and Vishny (1993) also shows that economic growth is hampered by rent-seeking activities.

This paper examines the theoretical impact of rent extraction on a country's monetary and fiscal policy decisions both with monetary independence and in a monetary union. We assume that corrupt governments cannot commit to any particular policy and instead maximize the politicians' current-period utility function. Rent extraction is modeled as inefficient government spending designed to benefit corrupt politicians and not a country's citizens. Debrun, Masson, and Pattillo (2005) also accounts for inefficient government spending via rent extraction, except their model assumes that component of government spending is determined exogenously. In contrast, our model assumes that the optimal level of government spending associated with rent extraction is determined endogenously. The results from our model reveal that higher levels of government corruption cause rent extraction spending, taxes, and inflation to increase and non-rent extraction spending to decrease. Additionally, our model finds that rent extraction government spending and inflation are not as elevated when the corrupt country belongs to a monetary union.

The paper proceeds as follows. Section 2 presents the model and the key findings when a country has monetary independence. Section 3 outlines the model and key results when a country belongs to a monetary union. Section 4 compares the key findings from the two models. Section 5 concludes.

2 A Country Has Monetary Independence

This section examines optimal fiscal and monetary policy with rent extraction when a country independently sets its monetary policy. We assume that corrupt governments cannot commit to any particular fiscal or monetary policy, and instead, follow a one-period discretionary policy. Specifically, country i's government in period t maximizes logged output, $y_{i,t}$, and rent extraction spending's share of output, $g^R_{i,t}$, while minimizing: 1) the deviation of non-rent extraction spending's share of output, $g^N_{i,t}$, from its socially optimal level, $\overline{g}_i$, 2) taxes' share of output, $\tau_{i,t}$, and 3) the difference between the inflation rate, $\pi_{i,t}$, and the inflation rate target, $\pi^*_{i,t}$. Country i's utility, $U_{i,t}$, takes the form of an augmented Barro and Gordon (1983) utility function, but it is simple enough to obtain a closed-form solution:

$$U_{i,t} = \left(-\frac{1}{2}\right)\left[\phi_\tau \tau^2_{i,t} + \phi_g\left(g^N_{i,t} - \overline{g}_i\right)^2 + \phi_\pi\left(\pi_{i,t} - \pi^*_{i,t}\right)^2\right] + \phi^i_R g^R_{i,t} + y_{i,t}, \qquad (1)$$

where the utility parameters $\phi_\tau > 0$, $\phi_g > 0$, and $\phi_\pi > 0$ are assumed to be identical across countries. The other utility $\phi^i_R > 0$ is unique to each country i, so the impact of the level of corruption (a higher ϕ^i_R indicates more corruption) can be examined.[1] Country i sets its inflation rate target in period t as a function of a constant, long-run inflation rate target, π^*_i, and a negative response to a short-run aggregate supply shock, $\varepsilon_{i,t}$,

$$\pi^*_{i,t} = \pi^*_i - \delta\varepsilon_{i,t}, \qquad (2)$$

where $\delta > 0$ measures the impact of the aggregate supply shock on the inflation rate target. That negative response of the inflation target to the aggregate supply shock generates a short-run trade-off between movements in inflation and movements in output.[2]

The government budget constraint for country i only allows government spending, $g^R_{i,t} + g^N_{i,t}$, to be financed with tax and seigniorage revenue:

$$g^R_{i,t} + g^N_{i,t} = \tau_{i,t} + \mu\pi_{i,t}, \qquad (3)$$

where $\mu > 0$ measures the impact of inflation on country i's seigniorage revenue. That is, we assume the government cannot save or issue debt in order to obtain a closed-form solution to the model. The amount of output produced in country i is characterized by a modified Lucas (1973) aggregate supply curve:

$$y_{i,t} = c\left(\pi_{i,t} - E_{i,t-1}(\pi_{i,t}) - \tau_{i,t}\right) + \varepsilon_{i,t}. \qquad (4)$$

The supply function assumes that economic activity rises when there is either an unanticipated increase in inflation, $\pi_{k,t} - E_{t-1}(\pi_{k,t})$, or a decrease in taxes' share of

[1] Our assumptions on the utility parameters enable us to isolate the effects of more corruption.

[2] *See* Muscatelli (1998).

output, where $c > 0$ determines the impact of taxes and unexpected inflation on country i's output. Furthermore, economic activity in country i is also impacted by an individually and identically distributed aggregate supply shock, $\varepsilon_{i,t}$, with a variance of σ_i^2.

The government of country i obtains its optimal period t levels of $\pi_{i,t}$, $\tau_{i,t}$, $g_{i,t}^N$, and $g_{i,t}^R$, by maximizing (1) subject to (2), (3), and (4):

$$\pi_{i,t} = \frac{c}{\phi_\pi} + \frac{\mu\phi_R^i}{\phi_\pi} + \pi_i^* - \delta\varepsilon_{i,t}, \tag{5}$$

$$\tau_{i,t} = \frac{\phi_R^i}{\phi_\tau} - \frac{c}{\phi_\tau}, \tag{6}$$

$$g_{i,t}^N = \overline{g}_i - \frac{\phi_R^i}{\phi_g}, \tag{7}$$

$$g_{i,t}^R = \frac{\left(\mu^2\phi_\tau\phi_g + \phi_\pi\left(\phi_g + \phi_\tau\right)\right)\phi_R^i}{\phi_\pi\phi_\tau\phi_g} + \frac{\left(\mu\phi_\tau - \phi_\pi\right)c}{\phi_\tau\phi_\pi} + \mu\pi_i^* - \mu\delta\varepsilon_{i,t} - \overline{g}_i. \tag{8}$$

A greater degree of corruption, ϕ_R^i, causes country i's government to allocate more resources toward rent extraction spending, $g_{i,t}^R$, and less resources toward non-rent extraction spending, $g_{i,t}^N$. A highly corrupt government funds its desire for more $g_{i,t}^R$ by tolerating higher inflation, $\pi_{i,t}$, and increased taxes, $\tau_{i,t}$. When output's response to unexpected inflation and taxes, c, is large, government funding shifts toward seigniorage revenue (i.e., $\pi_{i,t}$ is higher) and away from $\tau_{i,t}$, while the impact of c on $g_{i,t}^R$ is indeterminate. The desire for more socially optimal government spending, $\overline{g}_i$, forces the government to allocate more resources to $g_{i,t}^N$, which reduces the funds available for $g_{i,t}^R$. An elevated inflation rate target, $\pi_i^* - \delta\varepsilon_{i,t}$, leads to more $\pi_{i,t}$, which provides the government with additional seigniorage revenue that it can allocate to raise $g_{i,t}^R$. Lastly, a few restrictions are needed on ϕ_R^i in order for the model to generate a plausible solution: 1) Taxes cannot be negative, $\tau_{i,t} \geq 0$; 2) Non-rent extraction spending cannot be negative, $g_{i,t}^N \geq 0$; 3) Rent extraction spending cannot be greater than one minus non-rent extraction spending, $1 - g_{i,t}^N \geq g_{i,t}^R$; and, most importantly to our analysis, 4) Rent extraction spending cannot be negative, $g_{i,t}^R \geq 0$, so[3]

$$\phi_R^i \geq \frac{\phi_g\left(\phi_\pi - \mu\phi_\tau\right)c + \phi_\pi\phi_\tau\phi_g\left(\overline{g}_i - \mu(\pi_i^* - \delta\varepsilon_{i,t})\right)}{\mu^2\phi_\tau\phi_g + \phi_\pi\left(\phi_\tau + \phi_g\right)}. \tag{9}$$

[3]The corresponding restrictions on ϕ_R^i for 1 through 3 are 1) $\phi_R^i \geq c$; 2) $\phi_R^i \leq \phi_g\overline{g}_i$; and 3) $\phi_R^i \leq \frac{\phi_\pi\phi_\tau(1-\mu(\pi_i^*-\delta\varepsilon_{i,t}))}{\mu^2\phi_\tau+\phi_\pi} - \frac{(\mu\phi_\tau+\phi_\pi)c}{\mu^2\phi_\tau+\phi_\pi}$.

3 A Country Belongs to a Monetary Union

This section examines optimal fiscal and monetary policy with rent extraction when a country is a member of a currency union.[4] A corrupt government that belongs to a monetary union does not set its inflation rate; instead, that task is delegated to a common central bank for the monetary union. In our theoretical model, the monetary union's central bank does not value rent-extraction government spending. Thus, the currency union's utility function, $U_{MU,t}$, and government budget constraint do not include $g^R_{i,t}$. We assume the common central bank conducts a discretionary monetary policy that maximizes an output-weighted average of the current-period utility functions for its n member countries:

$$U_{MU,t} = \sum_{i=1}^{n} \omega_i \left[\left(-\frac{1}{2} \right) \left(\phi_\tau \tau_{i,t}^2 + \phi_g \left(g_{i,t}^N - \overline{g}_i \right)^2 + \phi_\pi \left(\pi_{MU,t} - \pi_{MU,t}^* \right)^2 \right) + y_{i,t} \right], \tag{10}$$

where ω_i is country i's share of output in the monetary union, $\pi_{MU,t}$ is the inflation rate set by the common central bank, $\pi^*_{MU,t}$ is the monetary union's inflation rate target, and $\sum_{i=1}^{n} \omega_i = 1$.[5]

Country i's utility maximization problem is more complicated when it is a member of a currency union. Specifically, the inflation rate is selected by the monetary union's central bank, but rent extraction government spending, non-rent extraction government spending, taxes, and output are set by country i. The common central bank obtains its optimal period t level of $\pi_{MU,t}$ by maximizing (10) subject to the following inflation rate target, government budget constraint, and supply function equations:

$$\pi^*_{MU,t} = \pi^*_{MU} - \delta \varepsilon_{A,t}, \tag{11}$$

$$\sum_{i=1}^{n} \omega_i g_{i,t}^N = \sum_{i=1}^{n} \omega_i \tau_{i,t} + \mu \pi_{MU,t}, \tag{12}$$

$$\sum_{i=1}^{n} \omega_i y_{i,t} = c \left(\pi_{MU,t} - E_{t-1}(\pi_{MU,t}) - \sum_{i=1}^{n} \omega_i \tau_{i,t} \right) + \varepsilon_{A,t}, \tag{13}$$

where $\varepsilon_{A,t} = \sum_{i=1}^{n} \omega_i \varepsilon_{i,t}$ is the weighted-average of aggregate supply shocks in the currency union. Given $\pi_{MU,t}$, each country i then selects its optimal levels of $g^R_{MUi,t}$, $g^N_{MUi,t}$, and $\tau_{MUi,t}$ by maximizing (1) subject to (2), (3), and (4).

In a currency union, the optimal levels for $\pi_{MU,t}$, $\tau_{MUi,t}$, $g^N_{MUi,t}$, and $g^R_{MUi,t}$ selected by the common central bank and country i are as follows:

$$\pi_{MU,t} = \frac{\mu \phi_g \phi_\tau \overline{g}_A + ((\phi_\tau + \phi_g) + \mu \phi_g) c + \phi_\pi (\phi_\tau + \phi_g)(\pi^*_{MU} - \delta \varepsilon_{A,t})}{\mu^2 \phi_g \phi_\tau + \phi_\pi (\phi_\tau + \phi_g)}, \tag{14}$$

[4] Guinea-Bissau, Mali, and Niger are examples of highly corrupt countries that are also members of a monetary union.

[5] The assumption that the monetary union conducts a one-period discretionary policy is necessary to produce a closed-form solution to the model.

$$\tau_{MUi,t} = \frac{\phi_R^i}{\phi_\tau} - \frac{c}{\phi_\tau}, \tag{15}$$

$$g_{MUi,t}^N = \overline{g}_i - \frac{\phi_R^i}{\phi_g}, \tag{16}$$

$$\begin{aligned} g_{MUi,t}^R &= \frac{(\phi_\tau + \phi_g)\phi_R^i}{\phi_\tau \phi_g} + \frac{(\phi_\tau \mu - \phi_\pi)(\phi_\tau + \phi_g)c}{\phi_\tau\left(\mu^2 \phi_g \phi_\tau + \phi_\pi(\phi_\tau + \phi_g)\right)} \\ &\quad + \frac{\mu^2 \phi_g \phi_\tau \overline{g}_A + \mu\phi_\pi(\phi_\tau + \phi_g)(\pi_{MU}^* - \delta\varepsilon_{A,t})}{\mu^2 \phi_g \phi_\tau + \phi_\pi(\phi_\tau + \phi_g)} - \overline{g}_i, \end{aligned} \tag{17}$$

where $\overline{g}_A = \sum_{i=1}^n \omega_i \overline{g}_i$ is the weighted-average of the socially optimal, non-rent extraction government spending's share of output in the currency union. The common central bank does not value rent-extraction government spending, so government preferences for rent-extraction spending, ϕ_R^i, do not impact $\pi_{MU,t}$. Factors that affect $\pi_{MU,t}$ include $\overline{g}_A$, output's response to taxes and unexpected inflation, c, and the common central bank's inflation rate target, π_{MU}^*. As with monetary independence, a corrupt government's desire for additional rent-extraction spending (i.e., ϕ_R^i is higher) leads to more $g_{MUi,t}^R$ and $\tau_{MUi,t}$ and less $g_{MUi,t}^N$. The level of $g_{MUi,t}^R$ is impacted by the government's seigniorage revenue, so the factors that influence $\pi_{MU,t}$ also affect $g_{MUi,t}^R$.

4 Comparing the Results

The optimal fiscal and monetary policies set by a corrupt government are impacted by whether its country belongs to a monetary union or has monetary independence. Specifically, this section examines the differences in optimal rent extraction government spending, non-rent extraction spending, taxes, and the inflation rate when a country joins a monetary union instead of maintaining monetary independence. *We begin this analysis by recalling the restriction in (9) that* $g_{i,t}^R \geq 0$. If we assume that $\theta_R^i \geq 0$, then (9) can be written as follows:

$$\phi_R^i = \theta_R^i + \frac{\phi_g\left(\phi_\pi - \mu\phi_\tau\right)c + \phi_\pi\phi_\tau\phi_g\left(\overline{g}_i - \mu(\pi_i^* - \delta\varepsilon_{i,t})\right)}{\mu^2\phi_\tau\phi_g + \phi_\pi\left(\phi_\tau + \phi_g\right)}. \tag{18}$$

The key result from (18) is that $\theta_R^i > 0$ only when the government values rent extraction spending (i.e., $\phi_R^i > 0$).

Our comparison of the optimal fiscal and monetary policy variables reveals some of those variables are different when a country is a member of a monetary union while others are the same. When we use (18) to substitute out for ϕ_R^i in the specification for $\pi_{i,t}$, (5), and then subtract off the value of $\pi_{MU,t}$, (14), the difference between

the optimal inflation rate under monetary independence and its optimal rate in a monetary union is

$$\pi_{i,t} - \pi_{MU,t} = \frac{\mu}{\phi_\pi}\theta_R^i + \frac{\phi_g\phi_\tau\mu\left(\overline{g}_i - \overline{g}_A\right) + \phi_\pi(\phi_\tau + \phi_g)((\pi_i^* - \pi_{MU}^*) - \delta\left(\varepsilon_{i,t} - \varepsilon_{A,t}\right))}{\mu^2\phi_\tau\phi_g + \phi_\pi(\phi_\tau + \phi_g)}. \tag{19}$$

The positive effect of θ_R^i on $\pi_{i,t} - \pi_{MU,t}$ reveals that a corrupt government has a higher optimal inflation rate under monetary independence than the common central bank would have for that same country in a monetary union. As for non-rent extraction government spending and taxes, the corrupt government would pursue the same level for both variables regardless of whether the country is a member of a monetary union. Those findings occur in our model because rent extraction spending enters the government utility function, (1), linearly to ensure the model produces a closed form solution. Given the behavior of non-rent extraction spending, taxes, the inflation rate, and the government budget constraint, (3), we can conclude that rent extraction spending is higher when a corrupt country has monetary independence as opposed to being a member of a currency union (i.e., $g_{i,t}^R > g_{MUi,t}^R$). Thus, our model indicates that when a corrupt country is a member of a currency union it will have a lower inflation rate and less seigniorage revenue, so rent extraction government spending will be smaller.

5 Conclusion

This paper builds a model with a closed form solution to examine the impact of key fiscal and monetary policy variables when a corrupt government prefers to spend government resources on rent extraction activities. We analyze this problem both when the corrupt country has monetary independence and when it belongs to a monetary union. Our theoretical results indicate that government corruption leads to higher rent extraction government spending, taxes, and inflation but lower non-rent extraction government spending. The country's inflation and rent extraction spending, however, are lower when the corrupt country is a member of a monetary union.

The next research step is to determine if the data supports our theoretical findings. Data on government spending, taxes, inflation, and corruption are widely available for many countries but obtaining plausible estimates of rent extraction spending and non-rent extraction spending is more challenging. We leave that task for future research.

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