

Saito, Yuta

Article

A note on time inconsistency and endogenous exits from a currency union

Games

Provided in Cooperation with:

MDPI – Multidisciplinary Digital Publishing Institute, Basel

Suggested Citation: Saito, Yuta (2022) : A note on time inconsistency and endogenous exits from a currency union, Games, ISSN 2073-4336, MDPI, Basel, Vol. 13, Iss. 2, pp. 1-8, <https://doi.org/10.3390/g13020021>

This Version is available at:

<https://hdl.handle.net/10419/257597>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.


If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Article

A Note on Time Inconsistency and Endogenous Exits from a Currency Union

Yuta Saito 

Faculty of Economics, Kobe International University, 9-1-6 Koyochonaka, Higashinada-ku, Kobe 658-0032, Japan; yutasaito@eagle.sophia.ac.jp

Abstract: This paper investigates the effects of members' exits from a currency union on the credibility of the common currency. In our currency union model, the inflation rate of the common currency is determined by majority voting among N member countries that are heterogeneous with respect to their output shocks. Once an inflation rate of the common currency has been selected, each member decides whether to remain in the currency union or not. If a member decides to exit, it has to pay a fixed social cost and individually chooses the inflation rate of its currency. Unlike previous research on this topic, we focus on the possibility of achieving an optimal outcome, which generates no inflation bias, when more than one member is expected to leave the currency union. We show that the optimal outcome can only be achieved if no members leave the currency union.

Keywords: inflation bias; monetary union; committee; weighted majority voting



Citation: Saito, Y. A Note on Time Inconsistency and Endogenous Exits from a Currency Union. *Games* **2022**, *13*, 21. <https://doi.org/10.3390/g13020021>

Academic Editors: Maria Montero and Ulrich Berger

Received: 14 January 2022

Accepted: 14 February 2022

Published: 23 February 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

This paper examines the effects of members' endogenous exit decisions from a currency union on the possibility of implementing an optimal monetary policy. Our departure point is the canonical model of discretionary monetary policymaking (Barro and Gordon, [1]), which is extended to a monetary union scenario with an exit option. In the initial stage, N homogeneous member countries in the monetary union will each experience heterogeneous within-country output shocks. After observing the individual shock, each member chooses to remain in the currency union or leave. If one leaves the union, it has to pay a fixed exit cost but obtains a domestic currency; on the other hand, members that choose to remain collectively select a common monetary policy by majority vote.

A higher-output shock decreases the member's optimal inflation rate within this setting. Hence, having a median voter that experiences high-output shock leads to a low inflation bias. Such an outcome can be achieved by setting a weighted voting rule that ensures putting higher voting weights on the members with higher output shocks.

Our main finding shows that inflation bias is generated in an environment where more than one member leaves the currency union. Hence, the optimal outcome is achieved only if all members can be kept in the union by setting a high exit cost or by having a union composed of members with similar economic conditions.

This paper is most closely related to studies on currency union models with regime changes, where countries belong to the union to enhance monetary policy credibility. Von Hagen and Soppel [2] studied collective monetary policymaking under different institutional frameworks without exit options. Chari et al. [3] focused on improving the credibility of belonging to a currency union but did not consider exit decisions. Kriwoluzky et al. [4] and Saito [5] studied a currency union model with exits but supposed that the probabilities of countries' exits are exogenously given. (Similarly, Farvaque and Matsueda [6] investigated the sustainability of a monetary union with an external shock; Aaron-Cureau and Kempf [7] and Saito [8] studied a monetary union where the monetary policy was determined by Nash bargaining). Eijffinger et al. [9], Na et al. [10], and Schmitt-Grohe and

Uribe [11] studied exit decisions from a currency union with a focus on sovereign debt defaults. Compared with these studies, our work endogenizes the exit decisions of member countries that lack credibility and shows that the optimal outcome cannot be achieved in an environment where some members leave the currency union.

This paper is also related to the literature on time inconsistency problems and collective policymaking in monetary unions. The seminal work of Kydland and Prescott [12] provides major insights into the time inconsistency problem: when the government has the flexibility to alternate the policy, rational individuals anticipate such behavior, and the outcome worsens for both the government and the people. Barro and Gordon [1] showed that the time inconsistency problem induces inflation bias in monetary policymaking and highlighted the benefit of commitment rules rather than discretionary policymaking. Since those studies, a considerable amount of research has investigated ways to relax the inflation bias ([13–18]).

The remainder of the article is organized as follows. Section 2 sets up the model. Section 3 describes the implications of the currency union without an exit option. Section 4 studies the model with an exit option and discusses the main result. Section 5 concludes the article.

2. Setting

We extend Barro and Gordon [1] to a currency union setting. The economy of a country is characterized by a social loss function and a Lucas supply function. In the beginning, the currency union consists of N identical member countries. An arbitrary country i has the following identical loss function:

$$L_i = \frac{b}{2}(y_i - k)^2 + \frac{1}{2}\pi_i^2,$$

where y_i is the output growth rate, π_i is the inflation rate, and $k > 0$ is the target rate of output growth. The output growth rate y_i follows the Lucas supply function:

$$y_i = a(\pi_i - \pi^e) + \epsilon_i, \quad (1)$$

where π^e is the expected inflation rate, and ϵ_i is an i.i.d. country-specific supply shock with mean zero and variance σ^2 . For simplicity, we suppose that the shocks are not correlated, offset each other in the aggregate, that is, $\sum_i \epsilon_i = 0$, and all states are equally likely, that is, $Prob(\epsilon_i) = \frac{1}{N}$ for all i . We also assume that the private sector rationally forms its expectation: $\pi^e = E[\pi]$.

Before studying the collective policymaking case, let us quickly review the cases of (1) a single country setting and (2) a currency union with a social planner. If a country has its own currency and the discretion to choose its monetary policy, as per Barro and Gordon [1], it holds that

$$\pi_i = ab \left(k - \frac{\epsilon_i}{1 + a^2b} \right), \quad y_i = \frac{\epsilon_i}{1 + a^2b}.$$

Instead, suppose that there is a utilitarian social planner with social loss $\mathcal{L} = \frac{1}{N} \sum_{i=1}^N L_i$. By plugging $\pi_i = \pi_{union} \forall i$ and Equation (1) into \mathcal{L} , we obtain that:

$$\mathcal{L} = \frac{b}{2} \left[(a(\pi_{union} - \pi^e) - k)^2 \right] + \frac{\pi_{union}^2}{2}. \quad (2)$$

Then the discretionary solution is given by:

$$\pi_{union} = abk, \quad Y_{union} = 0,$$

where Y_{union} is the aggregate output in the monetary union, that is, $Y_{union} = \sum_{i=1}^N y_i$. The commitment solution leads to:

$$\pi_{union}^* = 0, Y_{union}^* = 0.$$

Hence, the commitment keeps the inflation rate lower while realizing the same output growth rate. Note that this commitment strategy is time-inconsistent: the policymaker has an incentive to deviate from the rule when the public sector believes it.

3. Currency Union without Exit Option

We now move on to collective policymaking in the currency union. As a benchmark, this section considers the case where the members cannot exit the currency union. The timing of events is specified as follows:

Stage 0. The private sector forms its expectations.

Stage 1. Each member realizes its country-specific output shock.

Stage 2. The inflation rate in the currency union π_{union} is collectively chosen by majority voting among all members.

We solve the problem by backward induction.

At stage 2, an arbitrary member i has the following loss function:

$$L_i = \frac{b}{2}(a(\pi_{union} - \pi^e) + \epsilon_i - k)^2 + \frac{1}{2}\pi_{union}^2. \quad (3)$$

Since L_i is single-peaked in π_{union} , we could apply the median voter theorem. Thus, the median voter's optimal inflation rate is implemented in the currency union:

$$\pi_{union} = \frac{ab(a\pi^e + k - \epsilon_m)}{1 + a^2b}, \quad (4)$$

where ϵ_m is the median of the output shocks.

By imposing the rational expectation to Equation (4), we obtain:

$$\pi_{union} = ab(k - \epsilon_m). \quad (5)$$

Note that $\text{sgn}(\pi_{union}) = \text{sgn}(k - \epsilon_m)$. Next, we investigate the committee structure that achieves zero inflation bias. Equation (5) immediately leads to the following result:

Result 1. The optimal outcome can be achieved if, and only if $\epsilon_m = k$.

Since the target rate of output growth is positive, that is, $k > 0$, the optimal value of ϵ_m that ensures the optimal policy outcome is positive as well. The intuition of this result is similar to that in the work of Rogoff [15], which suggests that the delegation of a conservative central banker leads to smaller inflation bias. In our model, countries experiencing positive shock prefer lower inflation rates. Thus, the result suggests that having a median voter who prefers lower inflation rates leads to a smaller inflation bias.

Such a committee can be achieved by designing a weighted voting rule before the beginning of the game. Then, the voting weight of a country should depend on its output rate. By setting a rule that ensures that countries with higher (lower) output rates have more (fewer) voting weights, the median voter will be a country that prefers a low inflation rate. On the other hand, a rule that gives equal voting power to every country—that is, a “one person, one vote” rule—leads to an inflation bias, since it results in $\epsilon_m = 0 < k$ in equilibrium. (Note that the optimal design of voting weights depends on the expected output shock $E[\epsilon_i]$, which is supposed to be zero in our analysis. If an economic boom is expected ($E[\epsilon] > k$), then the countries with lower (higher) output rates must be given higher (lower) voting weights to implement the optimal inflation. In the special situation

where it accidentally holds that $E[\epsilon] = k$, the “one person, one vote” rule yields the optimal outcome).

In reality, perfectly observing k and ϵ_i is unrealistic; thus, setting a voting rule that perfectly ensures $\epsilon_m = k$ is unrealistic as well. Nonetheless, the result shows that the committee should be designed so that a country experiencing positive output shock, that is, a booming country, should be the median voter. (Note that it is possible for no country to experience shock equal to k . Note also that $\epsilon_m = k$ holds only by chance, except for the case where $N \rightarrow \infty$ where the ex-post realization of ϵ_m coincides with its expected value, i.e., $\epsilon_m = E[\epsilon_m]$. However, even if N is finite, it is possible to set $E[\epsilon_m]$ to coincide with k).

4. Exits and Inflation Bias

In this section, we suppose that each member has an option to exit the currency union. Then, the timing of events is as follows. (Throughout the paper, we assume that the model is one shot and members do not consider the long-term consequences of any decision-making, including the decision to leave the currency union. One way to interpret this setting is that the governments of the member countries are pressured to obtain short-term welfare gains so they can win near-term elections).

Stage 0. *The private sector forms its expectations.*

Stage 1. *Each member realized its country-specific output shock.*

Stage 2. *Each member chooses whether to remain in or leave the currency union. If a member leaves, it has to pay a fixed social cost $\delta > 0$.*

Stage 3. *The inflation rate in the currency union, π^{union} , is decided by majority voting among the remaining members. Each exiting country chooses its own domestic inflation rate, if any.*

Again, we solve the model by backward induction.

We first consider the policy choice at stage 3. Consider an arbitrary member i that has left the union. Its social loss, L_i^{out} , is given by:

$$L_i^{out} = \frac{b}{2} (a(\pi_i^{out} - \pi^e) + \epsilon_i - k)^2 + \frac{1}{2} (\pi_i^{out})^2 + \delta \tag{6}$$

The first-order condition can be arranged as:

$$\pi_i^{out} = \frac{ab(a\pi^e + k - \epsilon_i)}{1 + a^2b} \tag{7}$$

In contrast, the inflation rate in the currency union is given by:

$$\pi_{union} = \frac{ab(a\pi^e + k - \epsilon_m)}{1 + a^2b} \tag{8}$$

Note that ϵ_m could be different from that in the previous section if some members exited the union at stage 2.

At stage 2, each country remains in the union if, and only if it decreases the social loss: $L_i^{out} \geq L_i^{union}$. The next proposition characterizes the thresholds of the shocks that the members determine whether to remain in the union or not.

Proposition 1. *An arbitrary member i remains in the monetary union if, and only if: $\epsilon_i \in [\underline{\epsilon}, \bar{\epsilon}]$ where $\underline{\epsilon} = \epsilon_m - \frac{\sqrt{2(1+a^2b)\delta}}{ab}$, $\bar{\epsilon} = \epsilon_m + \frac{\sqrt{2(1+a^2b)\delta}}{ab}$.*

Proof. Appendix A. \square

The result implies that a member would exit if its output growth rate is extremely high (or low) compared to the median of it. An increase in ϵ_m shifts the range $[\underline{\epsilon}, \bar{\epsilon}]$ to the right; hence, the remaining members prefer a lower inflation rate on average. Additionally,

an increase in the cost of exit δ upper-shifts the function $L_i^{out} - L_i^{union}$, thus, it causes more members to choose to remain in the union.

Whether a remaining member benefits from another member’s exit or not depends on its shock. Suppose, for instance, that $\epsilon_m > 0$ is expected before the exit decisions, and the range $[\underline{\epsilon}, \bar{\epsilon}]$ is narrow enough so that some countries leave after realizing their shock. Then, more countries that have realized lower economic shock leave the union than those with higher economic shock. In this case, the remaining countries that realize a relatively high (low) shock may improve (worsen) their welfare based on other countries’ exits.

Note that members choose to leave or remain given some expected value of ϵ_m . Thus, a member may remain or leave the currency union depending on the expectations of ϵ_m . In a rational expectations equilibrium, the expected value of ϵ_m coincides with the actual value of ϵ_m , which depends on the distribution of ϵ_i . (This paper does not provide a full characterization of an equilibrium outcome because we can obtain the main result—the impossibility of achieving the optimal policy outcome when more than one country exits from the currency union—without specifying the distribution of ϵ_i and parameter values. By assuming the distribution, we can numerically solve for an equilibrium outcome. To do that, given ϵ'_m , we first solve for the exit (remain) decisions for all ϵ_i , and calculate the median of the remaining members ϵ''_m . If $|\epsilon'_m - \epsilon''_m|$ is sufficiently small, we find an equilibrium; otherwise, we iterate it with different ϵ'_m until $|\epsilon'_m - \epsilon''_m|$ becomes sufficiently small).

Now, we impose the private sector’s rational expectations on the inflation rate.

Proposition 2. *Under the rational expectation, it holds that*

$$E[\pi_i] = ab[k - (p\epsilon_m + (1 - p)E[\epsilon_i|\epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]])], \tag{9}$$

$$\pi^{union} = ab \left[k - \frac{(1 + a^2bp)\epsilon_m + a^2b((1 - p)E[\epsilon_i|\epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]])}{1 + a^2b} \right], \tag{10}$$

where p is the probability that a member will choose to remain in the currency union.

Proof. Appendix A. □

Proposition 3 leads to our main result as follows:

Corollary 1. *The optimal outcome is realized if, and only if*

- (i) $\epsilon_m^* = k$, and
- (i) $p = 1$.

Proof. Appendix A. □

The first condition is the same as Result 1 while the second one ensures that none of the members exit the union. The finding can be rephrased as follows:

Result 2. *In an environment where more than one member leaves the currency union, an inflation bias always arises.*

The result implies that a no-voting rule can ensure no inflation bias will arise if at least one member leaves the currency union. (Note that in the special situation where the shock is symmetric around k , the optimal outcome can be realized by setting $\epsilon_m = k$. In this case, the distribution of the remaining countries is symmetric around the median. Thus, we have $k = E[\epsilon_i|\epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]]$. Hence, Equation (A6) holds for any exit probability p . Thus, to achieve zero inflation bias, the currency union must be designed to prevent members from exiting it. (Note that if $N \rightarrow \infty$, it is possible to ensure $\epsilon_m = k$ even if a country leaves the union. In this case, the distribution of output shocks is perfectly observable before realizing the shocks. Thus, although we do not know which countries will leave beforehand, the distribution of leaving countries is perfectly observable at the beginning. However, Result

2 shows that even if we have ϵ_m equal to k , an inflation bias arises when a country leaves the union).

One way to prevent members' exits is to have a high exit cost δ . Although we took δ as an exogenous parameter, it can be endogenously chosen by the countries in the institutional design phase before the game. If the countries value rules rather than discretion before starting the game, they have an incentive to set an institutional rule to ensure that each member faces a high δ to prevent any country's exit. (In addition, after realizing the economic states of all members, members that would be worse off by other members' exits have incentives to increase δ to prevent their exits. Such a policy change might be subject to collective agreement among the members, but it is possible that a majority of members would agree to change δ after realizing that many of them face extremely high (or low) ϵ_i . To prevent such time inconsistency, the members must agree on a rule to prevent such delegation before starting the game). The value of δ can be increased by ensuring a higher gain from remaining in the union, such as by lowering transaction costs among member countries or enhancing free trade among member countries.

Another way to prevent members' exits is to have a small variance for the output shock σ^2 . A small σ^2 yields similar member ex-post output rates; thus, the members have incentives to leave the currency union. Although we have supposed that σ^2 is the same for all countries, the above discussion implies that in practice, members' exits can be prevented by having economically stable members and reducing their ex-post heterogeneity among members. In other words, at the institutional design stage, not allowing unstable countries to join the currency union can prevent the future exits of members from the union.

5. Conclusions

Threats of a member leaving the European Monetary Union have been widely discussed over the course of the euro crisis and Brexit. By leaving a currency union, a country gains its own currency and monetary independence from other countries. Hence, the possibility of exit leads the public to expect discretionary policymaking in the future, which influences the expectations about the inflation rate, as well as the optimal institutional design of the currency union.

Given the above discussion as motivation, this paper examines the effects of members' exits from a currency union on the possibility of achieving zero inflation bias in equilibrium. In our currency union, member countries, which are heterogeneous in output shocks, collectively choose a common inflation rate. After realizing the shocks, the members can exit from the currency union by paying a fixed social cost. We show that the optimal outcome of not generating inflation bias can be achieved only in an environment where no members leave the currency union.

A promising future direction for this line of research is considering ex-ante heterogeneity and an explicit formation phase for the currency union. Although we have assumed that the countries are ex-ante identical, the expected output rates are ex-ante heterogeneous among countries in practice. The result then suggests that giving more (less) voting weights to countries with higher (lower) expected output rates would reduce the inflation rate. In other words, developing countries, which are likely to experience higher growth rates and prefer lower inflation rates, should be given more voting power.

Funding: I acknowledge financial support from the Grant-in-Aid for Research Activity Start-Up (No. 19K23239) from the Ministry of Education, Culture, Sports, and Technology, Japan.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: I would like to thank Antoine Camous, Yosuke Takeda, and seminar participants at Kobe University and Sophia University for their valuable feedback. This article is a revised version of Chapter 4 of my dissertation at Sophia University.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A

Proof of Proposition 1. By substituting (7) into (6), we obtain that:

$$L_i^{out} = \frac{b(a\pi^e + k - \epsilon_i)^2}{2(1 + a^2b)} + \delta. \tag{A1}$$

By plugging (4) into (3), we obtain that:

$$L_i^{union} = \frac{b}{2} \left[\epsilon_i^2 - 2 \left(\frac{a\pi^e + k + a^2b\epsilon_m}{1 + a^2b} \right) \epsilon_i + \frac{(a\pi^e + k)^2 + a^2b\epsilon_m^2}{1 + a^2b} \right]. \tag{A2}$$

From (A1) and (A2), we obtain that $L_i^{out} - L_i^{union} = \frac{a^2b^2[-\epsilon_i^2 + 2\epsilon_m\epsilon_i - \epsilon_m^2]}{2(1+a^2b)} + \delta$. The result follows by solving $L_i^{out} - L_i^{union} \geq 0$ for ϵ_i . \square

Proof of Proposition 2. By taking the expectation of π_i , we obtain that:

$$E[\pi_i] = p\pi^{union} + (1 - p)E[\pi_i^{out} | \epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]]. \tag{A3}$$

By substituting (4) and (7) in (A3), we have that:

$$E[\pi_i] = \frac{ab[a\pi^e + k - (p\epsilon_m + (1 - p)E[\epsilon_i | \epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]])]}{1 + a^2b}. \tag{A4}$$

By imposing $\pi^e = E[\pi_i]$ to (A4), we obtain the desired result. \square

Proof of Corollary 1. We need to show $\pi^{union} \wedge E[\pi_i] = 0 \forall i \iff p = 1 \wedge \epsilon_m = k$.

Step 1. $\pi^{union} = 0 \ \& \ E[\pi_i] = 0 \forall i \implies p = 1 \ \& \ \epsilon_m = k$.

Given Equation (A4), by supposing $\pi^{union} = 0 \ \& \ E[\pi_i] = 0$ and obtain that:

$$\begin{cases} k - \frac{(1+a^2bp)\epsilon_m + a^2b((1-p)E[\epsilon_i | \epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]])}{1+a^2b} = 0, \\ k - (p\epsilon_m + (1 - p)E[\epsilon_i | \epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]]) = 0. \end{cases} \tag{A5}$$

By solving the simultaneous Equation (A5), we obtain $\epsilon_m = k$. Substitute $\epsilon_m = k$ into the second equation in Equation (A5) and obtain that:

$$(1 - p) \underbrace{\left\{ \underbrace{k}_{>0} - \underbrace{E[\epsilon_i | \epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]]}_{<0} \right\}}_{>0} = 0. \tag{A6}$$

Note that $\epsilon_m = k > 0$ implies $E[\epsilon_i | \epsilon_i \notin [\underline{\epsilon}, \bar{\epsilon}]] < 0$, by Proposition 1. Hence Equation (A6) hold if, and only if $p = 1$.

Step 2. $\pi^{union} = 0 \ \& \ E[\pi_i] = 0 \forall i \iff p = 1 \ \& \ \epsilon_m = k$.

The result immediately follows from substituting ($p = 1 \ \& \ \epsilon_m = k$) into Equations (A3) and (A4).

\square

References

1. Barro, R.J.; Gordon, D.B. A positive theory of monetary policy in a natural rate model. *J. Political Econ.* **1983**, *91*, 589–610. [[CrossRef](#)]
2. Von Hagen, J.; Süppel, R. Central bank constitutions for federal monetary unions. *Eur. Econ. Rev.* **1994**, *38*, 774–782. [[CrossRef](#)]
3. Chari, V.V.; DAVIS, A.; Kehoe, P.J. Rethinking optimal currency areas. *J. Monet. Econ.* **2020**, *111*, 80–94. [[CrossRef](#)]
4. Kriwoluzky, A.; Müller, G.J.; Wolf, M. Exit Expectations and Debt Crises in Currency Unions. *J. Int. Econ.* **2019**, *121*, 103253. [[CrossRef](#)]
5. Saito, Y. Exit expectations, time inconsistency, and the optimal design of a currency union. 2022, Unpublished work.
6. Farvaque, E.; Matsueda, N. Monetary Unions and External Shocks. *Econ. Bull.* **2009**, *29*, 1483–1491.
7. Aaron-Cureau, C.; Kempf, H. Bargaining over monetary policy in a monetary union and the case for appointing an independent central banker. *Oxf. Econ. Pap.* **2006**, *58*, 1–27. [[CrossRef](#)]
8. Saito, Y. Bargaining over Monetary Policy and Optimal Committee Composition in a Currency Union. *Econ. Bull.* **2018**, *38*, 1986–1996.
9. Eijffinger, S.C.; Kobielarz, M.L.; Uras, B.R. Sovereign default, exit and contagion in a monetary union. *J. Int. Econ.* **2018**, *113*, 1–19. [[CrossRef](#)]
10. Na, S.; Schmitt-Grohé, S.; Uribe, M.; Yue, V. The twin ds: Optimal default and devaluation. *Am. Econ. Rev.* **2018**, *108*, 1773–1819. [[CrossRef](#)]
11. Schmitt-Grohé, S.; Uribe, M. Downward nominal wage rigidity, currency pegs, and involuntary unemployment. *J. Political Econ.* **2016**, *124*, 1466–1514. [[CrossRef](#)]
12. Kydland, F.E.; Prescott, E.C. Rules rather than discretion: The inconsistency of optimal plans. *J. Political Econ.* **1977**, *85*, 473–491. [[CrossRef](#)]
13. Stokey, N.L. Reputation and time consistency. *Am. Econ. Rev.* **1989**, *79*, 134–139.
14. Chari, V.V.; Kehoe, P.J. Sustainable plans. *J. Political Econ.* **1990**, *98*, 783–802. [[CrossRef](#)]
15. Rogoff, K. The optimal degree of commitment to an intermediate monetary target. *Q. J. Econ.* **1985**, *100*, 1169–1189. [[CrossRef](#)]
16. Walsh, C.E. Optimal contracts for central bankers. *Am. Econ. Rev.* **1995**, *85*, 150–167.
17. Dal Bo, E. Committees with supermajority voting yield commitment with flexibility. *J. Public Econ.* **2006**, *90*, 573–599. [[CrossRef](#)]
18. Riboni, A. Committees as substitutes for commitment. *Int. Econ. Rev.* **2010**, *51*, 213–236. [[CrossRef](#)]