European Journal of Political Economy 78 (2023) 102401

Contents lists available at ScienceDirect

European Journal of Political Economy

journal homepage: www.elsevier.com/locate/ejpe

Political polarization and international cooperation

Carsten Hefeker [a,b], Michael Neugart [c,*]

[a] University of Siegen, 57068 Siegen, Germany
[b] CESifo, Germany
[c] Technische Universität Darmstadt, 64289 Darmstadt, Germany

ARTICLE INFO

JEL classification:
D74
D78
F42
F55

Keywords:
Political polarization
International cooperation
Delegation
Electoral uncertainty

ABSTRACT

We analyze the consequences of political polarization between domestic policymakers for international policy coordination or delegation to a common agency. Coordination is preferred under political polarization if it allows to constrain the policy of policymakers with different policy targets, while delegation allows to determine policies in the future by selecting the appropriate agent. Policymakers have different preferences concerning international coordination and which form it should take. These differences are increasing in political polarization. They agree on delegation if election outcomes are close to being random.

1. Introduction

Concerns have been raised that growing political polarization may undermine international policy coordination or even challenge the international order more generally (Dustmann et al., 2017; Frieden, 2021). However, while it is obviously more difficult to cooperate with people who are not committed to the established political consensus to seek common solutions to international problems, it makes it at the same time more attractive as international cooperation can serve to avoid more extreme policies being implemented. International agreements like NATO, the GATT and WTO, the Bretton Woods systems or the European Union have also been created with the intention to tie countries into a binding international commitment that would constrain domestic policy space (Eichengreen, 2019; Gardner, 1980; Ikenberry, 1992). Furthermore, by entering international agreements current domestic office-holders can, at least to some degree, constrain future domestic policymakers' more radical policies by forcing them to cooperate with other, hopefully more moderate, foreign policymakers. Arrangements that mandate international agreement can, therefore, serve to avoid domestic policy from becoming too radical from a domestic as well as from an international perspective. Thus, growing political polarization at home, while potentially making international cooperation more difficult, should also make it more desirable.

To consider such trade-offs in more detail, we develop a model that asks how the incentive to agree on coordinated policies with foreign policymakers depends on political polarization at the national level. The policymakers in each country distinguish themselves through their policy targets where the ambitious type has a higher policy target and generally prefers to do "more" rather than "less". While the incentive to coordinate, given by policy spillovers, applies to both these policymakers, we show that there are systematic differences concerning the incentive to coordinate. Policymakers who have more ambitious policy targets are more likely to coordinate whereas more conservative types are less interested in coordination. The incentive to coordinate, moreover, depends on who the respective foreign partner is.

* Corresponding author.
E-mail addresses: carsten.hefeker@uni-siegen.de (C. Hefeker), michael.neugart@tu-darmstadt.de (M. Neugart).

https://doi.org/10.1016/j.ejpoleco.2023.102401
Received 27 December 2022; Received in revised form 18 April 2023; Accepted 21 April 2023
Available online 3 May 2023

International cooperation is often based on case-by-case decision but it can also take a more institutionalized form in international agreements or organizations. This not only allows to ensure the continuous internalization of spillovers but can become a mechanism to indirectly ensure that future domestic policymakers run less extreme policy than they otherwise may do because they are forced to cooperate with foreign partners. Motives for entering such continuous agreements also depend on the type of policymaker, and the policymakers' expectation which type of policymaker will be in charge at home and abroad in the future. Lastly, we also consider the case where cooperation takes the form of current officeholders delegating policy implementation to an independent agent, such as an international organization or bureaucracy. Incumbents, by determining the characteristics of "their" agent, can lock in certain policies even if they leave office. We therefore distinguish two forms of cooperation: coordination of policies by governments and delegation to an independent agent and discuss which type of cooperation will be preferred by incumbent policymakers.

One example for the possible applications of our model is the international coordination of monetary or fiscal policies, where national policymakers may have different policy targets with respect to output or employment, and left-leaning governments pursue more expansive policies than conservative ones. As the policy target is not only affected by national monetary or fiscal policy but also, positively or negatively, by policy measures abroad, countries have an obvious incentive to cooperate. Cooperation and coordination can be on a case-by-case basis, such as among the G20 countries in response to the Global Financial Crisis or take a more institutionalized form as in the European Union, for which the Growth and Stability Pact or the NextGenerationEU fund would be examples. By entering the European Union, policymakers can ensure that certain policy areas will continuously be coordinated and that also potential successors in office will be bound by the principle of coordination with other foreign policymakers. They can even go one step further and delegate policy to an independent agent such as the European Central Bank.

Environmental policy serves as a second example. Countries and individual policymakers systematically differ with their concern for the environment as evidenced, for example, in the different positions of Nordic countries and developing nations or between Green parties and more conservative ones. There are obvious positive or negative spillover effects of national polices to other countries which give rise to attempts of cooperation. This cooperation may be relatively loose as in the Kyoto-protocol but countries may also be able to agree on binding national carbon dioxide reductions as in the European Union or at one point delegate policies to a common agency.

Our analysis helps to explain the different forms and intensities of cooperation in different areas by relating them back to political polarization between and within countries as well as to electoral uncertainty. Not only does the degree of polarization matter but probable election outcomes influence the choice for a particular regime of cooperation or non-cooperation as well. Whether countries want to coordinate policies is not only driven by the strength of externalities but also by benefits or costs from having to cooperate with a policymaker who has different policy goals. Political polarization between policymakers and electoral uncertainty about future incumbents will, therefore, be decisive for the choice that governments make. Delegation is preferred by all policymakers if electoral outcomes are close to random, and incentives to delegate increase with polarization. Thus, increasing political polarization increases the importance of regime choice for policymakers and they are more likely to disagree on whether there should be cooperation and what form it should take the more predictable election outcomes become. Policymakers with better election chances are less likely to prefer delegation. Moreover, the type of policymaker influences the regime choice. Policymakers with more ambitious policy targets have a higher incentive to cooperate because they place a higher value on internalizing positive spillovers; more conservative types instead fear that cooperation leads to an overly expansive policy, in particular when having to coordinate with an ambitious foreign policymaker. Coordination with a foreign policymaker of one's own type is preferred by both types of policymakers but they disagree on the desirability of cooperation depending on the combination of domestic and foreign policymakers.

We combine several aspects of the existing literature in our analysis. First, we build on the large literature on international cooperation in general (Congleton, 2020; Dai et al., 2017; Hefeker and Neugart, 2018) and particular in areas such as environmental policy (Barrett, 2007), fiscal and monetary policy (Frankel, 2015; Keen and Konrad, 2013; Ostry and Ghosh, 2016), or trade policy (Grossman, 2016; Maggi, 2014). Our contribution most closely relates to a literature that builds on domestic conflicts and their impact on cooperation (De Vries et al., 2021; Frieden, 2021; Schneider and Urpelainen, 2014). First, the reason for the break-down of international cooperation can be that policymakers with different objectives alternate in office and thus undermine or revoke commitments made by earlier incumbents (Blum and Potrafke, 2020; Conconi and Sahuguet, 2009; Dobson, 1991; Putnam and Bayne, 1984). Another reason for collapse of cooperation can be that public sentiments change and that therefore earlier agreements can no longer be maintained (Autor et al., 2020; Harms and Schwab, 2020; Rodrik, 2021). We go beyond this existing literature by connecting election probabilities with the incentive to cooperate not only case-by-case but with entering a binding commitment to cooperate also in the future. In particular, in our setting polarized national policymakers strategically trade off the merits of internalizing spillovers with the payoffs of binding future governments at home and abroad by cooperation. Moreover, we compare different forms of institutionalized cooperation including delegation, which has not been done before in this context. Hence, we also tie in with the literature on delegation where governments have to consider the relative benefits of either deciding themselves or delegating to an independent agent, such as courts or central banks (Alesina and Tabellini, 2007; Eggertsson and Le Borgne, 2010; Maskin and Tirole, 2004; Schultz, 1999). In our contribution, the possibility to constrain the policy space of successors plays a crucial role in the decision of countries to cooperate, and in the decision of countries to delegate rather than to coordinate policies. While the "tying the hands" of one's successor argument is a standard political economy argument (Drazen, 2000; Persson and Svensson, 1989), delegation to international bodies is usually not connected to domestic political polarization as we do here.

The rest of the paper is organized as follows: Section 2 introduces the model, and Section 3 analyzes the policy choices for the case of no cooperation and coordination. Section 4 explores the incentives to coordinate, and Section 5 analyzes the choices between committing to coordinate policies and non-cooperation, and delegation and coordination of policies. Section 6 concludes.

2. The model

We consider a model of two countries with two policymakers each. National policymakers have different policy targets and targets may also differ across countries, such as the output level, the employment level, the preferred rate of inflation, or carbon dioxide emissions, which can be influenced by the policymaker using a costly policy instrument. In the case of an expansionary fiscal policy, this policy might have to be financed by a distortionary tax. In the example of curbing carbon dioxide emissions policymakers may face political costs when enforcing policies such as more strict emission standards for industry or households. Both examples of policymaking come with externalities. Due to the openness of the economies part of the policy impact on aggregate demand or carbon dioxide emissions becomes effective in the foreign country as well. The implemented policies will be determined by the incumbent policymaker and thus depend on who is in office.

The timing is as follows: At stage 1 incumbents (chosen by nature) decide on the policy regime. They can decide to coordinate their policies or not with the foreign incumbent in particular policy areas on a case-by-case base. This form of cooperation is not binding and can be revoked by future office holders. Alternatively, incumbents can decide to enter a binding agreement on future coordination with their foreign counterpart. By assumption, this agreement is binding and forces all future domestic and foreign governments to coordinate their policies. The incumbent's type in the future period is uncertain and depends on exogenous election probabilities. Finally, we also analyze the case where current incumbents delegate policy setting to an agency whose characteristics they can choose. Delegation is binding as well and subjects future policymakers to the policies of the agency. At stage 2, elections in both countries take place and policymakers are chosen. At stage 3, policies are determined depending on the chosen regime (which, by assumption, cannot be renegotiated), and at stage 4 policy outcomes are realized. The model is solved by backward induction. Mathematical details of our results can be found in the Online-Appendix.

Domestic policymakers are indexed $k = R, L$ (and $k^* = R^*, L^*$ for foreign policymakers, respectively). Their preferences are defined over the gap between policy target $\bar{y}_k$ and realized policy y_k, as well as the use of the policy instrument x_k. Without loss of generality, we assume $\bar{y}_L > \bar{y}_R$, which also applies to the foreign country. Domestic policy measures have impact ax_k on the policy output, and the costs of using the policy instrument are quadratic in x_k with weight $\alpha > 0$. Policy measures abroad $x^*_{k^*}$ impact domestic policy output with factor b (for an extensive discussion, see Aidt et al., 2021). To simplify the discussion, we consider only the case where foreign policies have a positive impact on the domestic policy output and where the impact of domestic policy is stronger than that of foreign policy: $a > b \geq 0$.[1] The costs of setting policy are identical for all policymakers as are parameters a and b.

Losses for the domestic incumbent, therefore, are

$$V_k = (y_k - \bar{y}_k)^2 + \alpha x_k^2 \tag{1}$$

with policy output

$$y_k = ax_k + bx^*_{k^*}. \tag{2}$$

For the foreign policymaker, we have losses

$$V^*_{k^*} = (y^*_{k^*} - \bar{y}^*_{k^*})^2 + \alpha {x^*_{k^*}}^2 \tag{3}$$

with

$$y^*_{k^*} = ax^*_{k^*} + bx_k. \tag{4}$$

We refer to the difference $\bar{y}_L - \bar{y}_R$ as domestic political polarization, and to the difference $\bar{y}^*_{L^*} - \bar{y}^*_{R^*}$ as foreign political polarization. Differences between domestic and foreign policymakers of the same type $\bar{y}_k - \bar{y}^*_{k^*}$ are referred to as international polarization.

Given this structure, the next sections consider different situations of non-cooperative and cooperative policy setting in the presence of a positive policy externality. Section 4 analyzes the one-off decision to coordinate or not and can thus also be interpreted as the decision to renege on simple forms of cooperation that have been agreed to by earlier incumbents. In Section 5, however, we assume that the cooperation decision is binding as well for future government and takes an institutionalized form.

3. Policy choices

We first derive the non-cooperative policies and then consider policies under cooperation. For both regimes, there are four possible combinations of equilibrium policies for domestic and foreign policymakers: $(x_L, x^*_{L^*})$, $(x_L, x^*_{R^*})$, $(x_R, x^*_{L^*})$, and $(x_R, x^*_{R^*})$.

[1] Most of our qualitative results are unaffected by this assumption; we mention below where this is not the case. Details can be found in the mathematical Online-Appendix.

3.1. Non-cooperative policies

Minimizing losses of the domestic policymaker (1) subject to (2) yields the reaction function of policymaker k facing foreign policymaker k^* as

$$x_k = \frac{a\bar{y}_k - abx^*_{k^*}}{a^2 + \alpha}, \tag{5}$$

where domestic and foreign policies are strategic substitutes. The non-cooperative policies (indexed N) follow from the respective reaction functions. The equilibrium non-cooperative policy $x^N_{kk^*}$ for the case that domestic policymaker of type $k = R, L$ interacts with foreign policymaker $k^* = R^*, L^*$ is

$$x^N_{kk^*} = \frac{a\bar{y}_k(a^2 + \alpha) - a^2b\bar{y}^*_{k^*}}{(a^2 + \alpha)^2 - (ab)^2}. \tag{6}$$

Due to the positive policy spillover, equilibrium policies are increasing in the policymakers' own policy target and declining in that of its respective foreign opponent. Given our assumption about the policy targets of particular policymakers, it is clear that policymaker L will run a more expansive policy than policymaker R.

3.2. Coordination

If policymakers coordinate, we assume they jointly determine policy. Coordination (indexed C) takes the form of minimizing a joint loss function, in which each country has the same weight

$$\Omega = \frac{1}{2}V_k + \frac{1}{2}V^*_{k^*}, \tag{7}$$

where the choice is about setting a common policy $x^C_{kk^*}$.[2]

Minimizing (7) with respect to common policy $x^C_{kk^*}$ yields a coordinated policy of

$$x^C_{kk^*} = \frac{(a + b)(\bar{y}_k + \bar{y}^*_{k^*})}{2((a + b)^2 + \alpha)}, \tag{8}$$

for all possible combinations of $k = R, L$ and $k^* = R^*, L^*$.

The purpose of cooperation is to internalize the spillovers of policies and since spillovers are positive, one may expect a more ambitious policy. However, as policymakers at home and abroad have different policy targets, it may be that in some cases coordinated policies are less ambitious than national policies. A comparison between uncoordinated (6) and coordinated policies (8) yields

$$x^C_{kk^*} - x^N_{kk^*} = \frac{\alpha b(\bar{y}_k + \bar{y}^*_{k^*})}{2(a^2 + \alpha + ab)((a + b)^2 + \alpha)} - \frac{a(\bar{y}_k - \bar{y}^*_{k^*})}{2(a^2 + \alpha - ab)}, \tag{9}$$

where the first part captures the influence of the spillover and the second part the change in policy due to having to coordinate with a policymaker with a different policy target. While the first term is always positive because of the internalization of positive spillovers, the second term depends on the relative policy targets of the two policymakers. Coordination will always lead to an increase in policy if policymakers of the same type (L, L^* or R, R^*) coordinate. This may not be the case if different types of policymakers coordinate. Given that the denominator of the first part is larger than that of the second, the second part is likely to dominate the first as the difference in policy targets increases (for a mean preserving spread). Coordinated policy at home is unambiguously larger if the foreign policymaker has a more ambitious output target but likely to decline if she has a lower target. Thus, coordination is likely to imply a more active policy for policymaker R but a less active one for L.

4. Polarization and the incentive to coordinate

One form of coordination can be thought of as a case-by-case decision whether to coordinate policies. Since such a form of cooperation is not binding, it may also be that future policymakers do not feel bound to honor the agreement. An example would be the decision of one US government to sign the Paris Climate Agreement, which a later government left, only to be reentered by yet a new government. While this is usually attributed to a change in the preferences of the incumbent government at home, we argue that it may also be driven by a change in the type of foreign policymakers. Whether ad-hoc coordination will be preferred by the policymakers over non-cooperative policy can be established by comparing the losses for the two regimes. We, first, consider non-cooperation and turn to the evaluation of the regime with coordination afterwards. Comparison of the losses under the two regimes will show how the incentives to coordinate policies change with polarization and under what circumstance policymakers will continue to coordinate in a cooperation that has been entered by their domestic opponents.

[2] We concentrate on the case where both countries have identical weight. This is the most interesting case because it heightens the trade-off between the benefits of internalizing spillovers and the costs of having to compromise on policy targets. Obviously, the costs of cooperation disappear for policymakers with weight one and increase for those with weight zero.

4.1. Losses under non-cooperation and coordination

Losses arising from non-cooperation and coordination will depend on which types of policymakers are setting policies in the two countries. Furthermore, we distinguish evaluating losses from the perspective of a policymaker who is currently in power and the perspective of a policymaker who is not in power.

We begin with the case where the incumbent policymaker evaluates losses when interacting with the foreign policymaker non-cooperatively. Losses follow from using (6) in (2) and (1) as

$$V_k^N(k,k^*) = \alpha(a^2+\alpha)(\frac{x_{kk^*}^N}{a})^2, \tag{10}$$

where the incumbent policymaker can either be of type L or R and interact with a foreign policymaker of type L^* or R^*. Note that policymaker L will always have higher losses than policymaker R for given policymaker k^* abroad, because the more ambitious policy target can never be fully reached, given positive costs of policy setting ($\alpha > 0$). There are no losses if policy is costless.

For the situation that the policymaker evaluating losses is not in power, losses of policymaker L are

$$V_L^N(R,k^*) = (\alpha\frac{x_{Rk^*}^N}{a} + (\bar{y}_L - \bar{y}_R))^2 + \alpha(x_{Rk^*}^N)^2, \tag{11}$$

whereas for policymaker R, because $\bar{y}_L > \bar{y}_R$, they are

$$V_R^N(L,k^*) = (\alpha\frac{x_{Lk^*}^N}{a} - (\bar{y}_L - \bar{y}_R))^2 + \alpha(x_{Lk^*}^N)^2. \tag{12}$$

Note that the difference in losses between (11) and (12) will be positive as long as the effect of a country's own policy on outcome is sufficiently larger than the positive spillover (see Online-Appendix for the exact expression), implying that L suffers more from being ruled by its opponent than R. This is because losses are quadratic in the difference between policy outcome and target, and thus more ambitious targets imply larger losses.

Similar to the case of non-cooperation, we can derive losses for policymaker k in the case of coordination. Inserting the respective coordinated policies given by (8) into the loss function (1) of policymaker k and using (2) yields

$$V_k^C(k,k^*) = (\alpha\frac{x_{kk^*}^C}{a+b} + \frac{1}{2}(\bar{y}_k - \bar{y}_{k^*}^*))^2 + \alpha(x_{kk^*}^C)^2, \tag{13}$$

for $k = R, L$ and $k^* = R^*, L^*$. Note the additional cost term whenever $\bar{y}_k \neq \bar{y}_{k^*}^*$. Coordination yields additional losses that arise from the fact that policy is coordinated with someone who has a potentially different policy target.

When L evaluates losses under a domestic policymaker of type R we get

$$V_L^C(R,k^*) = (\frac{\alpha}{a+b}x_{Rk^*}^C + \frac{1}{2}(\bar{y}_L - \bar{y}_R) + \frac{1}{2}(\bar{y}_L - \bar{y}_{k^*}^*))^2 + \alpha(x_{Rk^*}^C)^2, \tag{14}$$

whereas for policymaker R losses under a domestic policymaker of type L are

$$V_R^C(L,k^*) = (\frac{\alpha}{a+b}x_{Lk^*}^C - \frac{1}{2}(\bar{y}_L - \bar{y}_R) - \frac{1}{2}(\bar{y}_{k^*}^* - \bar{y}_R))^2 + \alpha(x_{Lk^*}^C)^2. \tag{15}$$

Clearly, the losses from coordination are now twofold since losses arise in the differences that policymaker k has with respect to the foreign policymaker k^* and the domestic policymaker who sets policy. Losses, hence, depend on domestic polarization (between L and R) as well as on international polarization (between k and k^*).

4.2. Polarization and coordination

Having established the losses under the two regimes of non-cooperation and coordination of policies, we now consider the incentives of domestic policymakers to coordinate given diverging policy targets. We simplify by assuming that policymakers of the same type in both countries have identical policy targets, so that $\bar{y}_k = \bar{y}_{k^*}^*$ but $\bar{y}_L \neq \bar{y}_R$. Given the symmetry of the economic structures this implies that domestic and foreign policymakers of the same type will always make the same decision.

The most simple case is the possibility that policymaker k has to decide whether to coordinate with policymaker k^* of his own type abroad. Comparing (10) and (13) yields

$$V_k^N(k,k^*) - V_k^C(k,k^*) > 0, \tag{16}$$

which holds for both policymakers $k = R, L$ as long as $\alpha, b > 0$. The incentive to coordinate is grounded in the aim to internalize spillovers and thus gains from coordination are increasing in the strength of the spillover b. Moreover, there is no incentive to coordinate in case $\alpha = 0$, because domestic policy can always be adjusted to foreign policy at no cost. Given our assumption that policymakers agree on the policy target, there is no loss from coordination but only the gain from internalizing the spillover.

The next possibility is that policymaker k at home considers coordination with policymaker $-k^*$ abroad, where $-k^*$ denotes that abroad the opposite type of policymaker is in power. Coordination will be preferred by policymaker L whereas it may turn negative for policymaker R if polarization is large. This is because coordination is per se less attractive from the point of view of policymaker R since her policy target is lower and she would have to coordinate with someone more ambitious than herself. The difference turns unambiguously negative for both policymakers when setting $b = 0$, so that the benefits from internalization disappear.

Next, we consider the cases of policymakers who are not in power and are confronted with a coordinated policy for which their domestic opponent has to coordinate with a policymaker of their "own" type abroad. For a low parameter α on the costs of policies, R actually wants L to coordinate with R^* ($V_R^N(L,R^*) - V_R^C(L,R^*) > 0$), whereas L fears that coordination of R with L^* leads L^* to lower its policy. Hence, this constellation may imply additional losses for L and therefore it might actually be that L prefers non-cooperation between R and L^* over coordination ($V_L^N(R,L^*) - V_L^C(R,L^*) < 0$).

Lastly, coordination will reduce losses for policymaker L with respect to non-cooperation if policymakers of type R coordinate, whereas for policymaker R the sign is negative unless α dominates other parameters. Policymaker R may thus prefer non-cooperation in case that policymakers L, L^* coordinate policies because more ambitious policy targets are reinforced by the internalization of spillovers and thus policy becomes too expansive from her point of view.[3]

We summarize our results in the following proposition:

Proposition 1.

1. *Both policymakers prefer coordination if spillovers are present and they can coordinate with their own type.*
2. *Having to coordinate with the opposite type abroad increases the costs of cooperation and if spillovers are small, neither policymaker will favor coordination. If spillovers are large, coordination is still preferable for policymaker L but may be rejected by R.*
3. *Evaluating policy when the domestic opponent coordinates with one's own type abroad, R actually wants L to cooperate with R^* for low α, whereas L fears that cooperation of R with L^* leads L^* to lower its policy.*
4. *Policymaker L would like to see policymakers R, R^* coordinate whereas policymaker R prefers non-cooperation of L, L^* for low α.*
5. *All results are reinforced by increasing political polarization.*

Proof. See Online-Appendix. □

Thus, policymakers will prefer coordination if they coordinate with their own type abroad. Coordination becomes less desirable if spillovers are small and policy has to be coordinated with someone with diverging policy goals. Policymaker L will prefer coordination between different types of policymakers because internalization leads to more active policy but is disliked by policymaker R for the same reason. We conclude that more ambitious policymakers are more likely to favor coordination whereas less ambitious ones are more likely to reject it or terminate an agreement that requires coordination. Political polarization reinforces these results.

5. The choice of policy regime

An alternative regime is one where current governments not only agree to case-by-case coordination but commit to future cooperation. By entering the European Union, countries forgo sovereignty and commit to coordinate with other members, independent of who will be in office in the future. EU policies do change over time, but in general it can be expected that all future national governments will coordinate policies. Thus, with a commitment to future cooperation, internalization of spillovers can be ensured on a lasting basis. The decision to enter such an agreement is usually taken before policymakers know who exactly will coordinate future policies and it may well be that oneself would have to cooperate with foreign policymakers whose preferences are different from one's own. As our case-by-case comparisons demonstrated, some constellations may actually not be beneficial for cooperation and thus individual policymakers today have to ask themselves whether they should enter such an agreement if in the future they may actually prefer not to have to coordinate policies. Hence, the incentive to enter such a commitment to future cooperation should depend on the degree of political polarization at home and between countries as well as election probabilities of policymakers.

5.1. Commitment to coordination

To evaluate the choice of possible regimes, we assume that policymakers have to make the decision to cooperate or not before knowing whether they will set coordinated policy or their domestic opponent, and whether their country will have to agree with policymaker L^* or R^* abroad. Thus policymakers have to take their own election probability as well as the possible election outcomes abroad into account. We denote with π and π^* the election probabilities of policymakers L and L^*, respectively, which we take as given. The assumption is that voters do not base their votes on whether governments decide to cooperate or not. Thus, the decision to cooperate is made in the first period (before elections) and policies are set in the second period.

We begin by defining the gains from coordination over non-cooperation as $G_k(k,k^*) = V_k^N(k,k^*) - V_k^C(k,k^*)$. Then, the expected gains from coordination for policymaker $k = R, L$ are

$$\begin{aligned} EG_k(x_{kk^*}^N, x_{kk^*}^C) = {} & \pi\pi^* G_k(L,L^*) + \pi(1-\pi^*)G_k(L,R^*) \\ & + (1-\pi)\pi^* G_k(R,L^*) + (1-\pi)(1-\pi^*)G_k(R,R^*). \end{aligned} \tag{17}$$

[3] This result would change for negative spillovers because internalization of spillovers would imply less active policy and thus partly compensate the impact of a more ambitious policy target abroad. See the Online-Appendix for details.

The expected gains from coordination weigh the gains or losses from all possible combinations of policymakers, depending on election results, with their respective election probabilities. As we have shown, there are countervailing effects arising from polarized policy targets on the incentives to coordinate policies depending on the combination of policymakers, and these countervailing effects on the losses from four possible different government constellations have to be weighted with the country specific election probabilities of the respective policymakers. For specific cases, we can make predictions on whether a regime of coordination will be established. When it is certain that in both countries right policymakers will be in power in the future ($\pi = \pi^* = 0$), a regime of coordination will be preferred by both types of policymakers. For the right policymakers, this allows internalizing the positive spillovers without having to fear that she is forced into a regime where she has to suffer from expansive policies imposed by left policymakers. For the left policymaker, a regime of coordination is preferred because under coordination right policymakers will implement policies that are closer to the more expansive policy target of the left policymaker.

As the other cases depend on the policymaker under consideration, we simulate the incentives for coordination for some specific parameter constellations and policymaker type. We normalize the policy target such that we can interpret $\bar{y}_k$ as deviations from a standardized policy level of zero (in percentage points). In a non-polarized world, policymakers' policy targets are the same, which we assume to be 5% above target (0.05). Furthermore, we abstract from international political polarization and set $\bar{y}_L = \bar{y}^*_{L^*}$ and $\bar{y}_R = \bar{y}^*_{R^*}$.

In Fig. 1, left panel, we plot the difference in losses for policymaker L over her election probability, assuming $\pi = \pi^*$. We do this for no spillovers ($b = 0$, solid line) and for positive spillovers ($b = 0.5$, dashed line). In this plot, policy targets differ by 3.5 percentage points ($\bar{y}_L - \bar{y}_R = 0.035$). Other parameters are $a = 1$ and $\alpha = 1$. Taking the situation where there is no spillover as a benchmark to isolate the political incentive to cooperate, policymaker L is indifferent between non-cooperation and coordinating policies if it is either certain that types L will coordinate in the future ($\pi = \pi^* = 1$) or types R ($(1-\pi) = (1-\pi^*) = 1$) will coordinate in the future. For election probabilities $0 < \pi < 1$, the losses from non-cooperation exceed the losses from coordinating policies so that coordinating policies becomes more valuable for intermediate levels of election probabilities. The reason is that there is a chance that policymaker R will have to cooperate with L^* which is preferred over non-cooperation because it ensures more ambitious policy than non-cooperation. As can be expected, a positive spillover ($b = 0.5$) increases the payoffs from coordination irrespective of the election probability.

In the right panel of Fig. 1, we plot the difference in losses for policymaker R over election probabilities, again assuming $\pi = \pi^*$. For no spillovers, policymaker R wants to coordinate policies if $0 < \pi < 1$ and is indifferent for $\pi = 1$ and $\pi = 0$. This observation follows the same logic as for the case of policymaker L. With spillovers ($b > 0$) higher election probabilities for policymaker L (and L^*) make it less attractive to policymaker R to coordinate and will eventually make her prefer not to coordinate. Non-coordinated policies are preferred in this case since the internalization of spillovers would induce an additional increase in policies.

In Fig. 2, we plot curves for which policymaker R is indifferent between entering a binding cooperation agreement for the future or not ($EG_R(x^N_{kk^*}, x^C_{kk^*}) = 0$), as a function of the polarization of policy targets, which varies between zero and $\bar{y}_L - \bar{y}_R = 0.05$, and the election probability of policymaker L. This is done for two levels of spillovers ($b = 0.2$, solid line; $b = 0.5$, dashed line). Other parameters are $a = 1$ and $\alpha = 1$. Areas to the left of the solid/dashed line constitute parameter constellations for which policymaker R wants coordination, and areas to the right of the solid/dashed line constitute parameter constellations for which policymaker R does not want to coordinate. For intermediate levels of election probability π of policymaker L, policymaker R wants to coordinate when polarization is low and when it is high, but not for intermediate levels of polarization. The logic for this is that for intermediate levels of π all future government constellations are more or less equally likely. As long as polarization is low, coordination internalizes the positive spillover with hardly any costs arising from having to coordinate with the "wrong" policymaker. For high levels of polarization, coordination is also attractive because it constrains the opponent in office. While it internalizes the spillover, which leads to more active policy, it also constrains the hands of policymakers with high policy targets. These two cases outweigh the negative consequences from coordination if policymakers L come into power in both countries. As spillovers become more important, policymaker R becomes more inclined to coordinating policies, as long as there is not too much polarization. More coordination allows internalizing the spillover and the costs of having to deal with a policymaker of the opposite type are relatively low, as policy targets are fairly aligned. This is different for polarized policy targets. Now, more spillovers aggravate diverging views on policy targets. Consequently coordination becomes less attractive, or will only be considered by policymaker R if she can more likely expect policymakers of her own type to be in office in the future.

We observe that adding electoral probabilities makes the relationship between polarization and incentives to coordinate policies nonlinear. While our analytical and numerical results suggest that the policymaker with a high policy target is always in favor of coordination, the policymaker with a low policy target is not. For her, the incentive to coordinate future policies is a function of how likely it is that policymakers of the other type are in charge in the future, and how large polarization is. A low election probability of the type L makes it interesting for policymaker R to commit to coordination. For high electoral uncertainty, however, our simulation suggests that a cooperative regime will only emerge for low and high levels of polarization but be refused by the right policymaker otherwise.

5.2. Delegation or coordination?

An alternative form of institutional cooperation is the delegation of policy to a common agent as it has been done for some policy areas in the European Union such as trade policy, competition policy, or monetary policy. The possibility to determine policy under delegation is much more restricted than if policy making is left in the hands of the respective policymaker. From the view of an individual policymaker such delegation has the benefit that it takes away policy making power from domestic and foreign

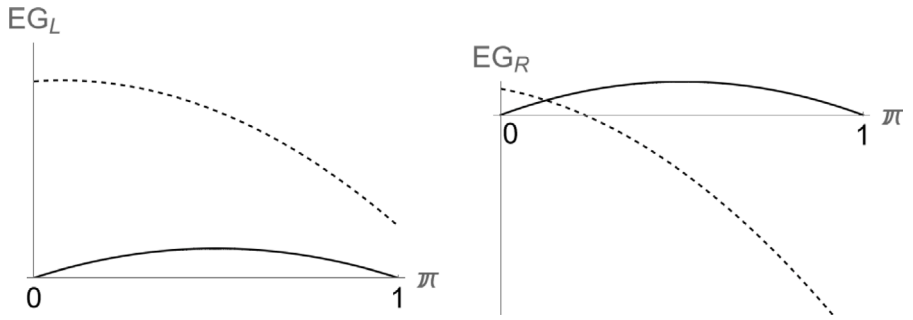

Fig. 1. Difference in expected losses for policymakers L and R (domestic polarization). Notes: Figure shows difference of expected losses between no cooperation and coordination for policymaker L (left panel) and policymaker R (right panel) over the election probability (π) of party L. Solid line refers to case with no spillover ($b = 0$) and dashed line refers to case with spillover ($b = 0.5$). Other parameters: $a = 1$, $\alpha = 1$, $\bar{y}_L - \bar{y}_R = 0.035$.

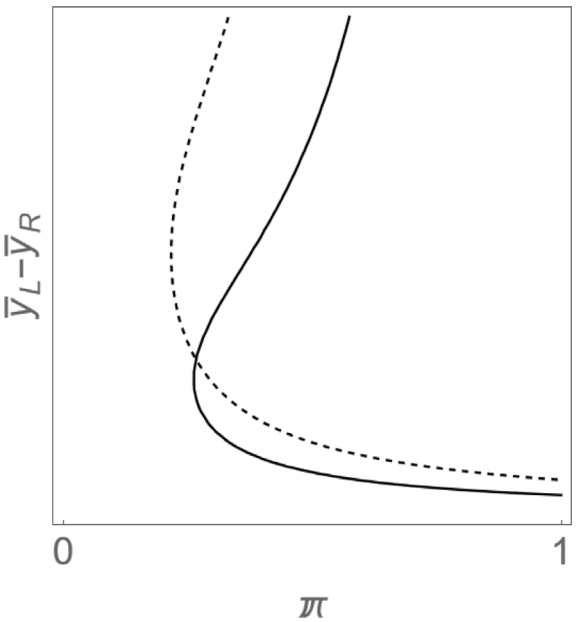

Fig. 2. Incentives to coordinate for policymaker R (domestic polarization). Notes: Figure shows areas of coordination and no cooperation for policymaker R, over polarization ($\bar{y}_L - \bar{y}_R$) and the election probability (π) of policymaker L. Solid/dashed line refer to the case of indifference between coordination and no coordination. Areas to the left of the solid/dashed line constitute parameter combinations for which party R wants to coordinate. Solid line refers to case with lower spillover ($b = 0.2$) and dashed line refers to case with higher spillover ($b = 0.5$). Other parameters are: $a = 1$, $\alpha = 1$; $\bar{y}_L - \bar{y}_R$ varies between zero ($\bar{y}_L = \bar{y}_R = 0.05$) and 0.05 ($\bar{y}_R = 0.025$ and $\bar{y}_L = 0.075$).

policymakers in the longer run. Thus non-beneficial coordinated policies, should the "wrong" policymakers come into power in the future, can be avoided. Being able to choose such an agent and imposing an objective on that agent allows to lock in policy for the long run — again assuming that the delegation cannot be reneged on.

We assume for this case that current policymakers impose an objective function on the agent in the form of

$$V^D = (y - \bar{y}^D)^2 + \alpha(x^D)^2, \tag{18}$$

where x^D is the policy set under delegation and $\bar{y}^D$ is the target imposed on the agent. Policy output in both countries will be same under a common delegated policy because of the symmetric structure of the economies, and be given as $y = y_k = y^*_{k^*} = (a + b)x^D$.

From the first order condition of this problem, the agent's policy follows as

$$x^D = \frac{(a + b)\bar{y}^D}{(a + b)^2 + \alpha}. \tag{19}$$

In case that policymakers k and k^* delegate and impose their preferences on the agent, the target should be $\bar{y}^D_{kk^*} = \frac{1}{2}(\bar{y}_k + \bar{y}^*_{k^*})$. However, once the preferences of the agent have been set, policy can no longer respond to changes of incumbent policymakers.

Therefore, the losses under this regime from the point of view of policymaker $k = L, R$ are

$$V_k^D(k,k^*) = (\alpha \frac{x_{kk^*}^D}{a+b} + (\bar{y}_k - \bar{y}_{kk^*}^D))^2 + \alpha (x_{kk^*}^D)^2, \tag{20}$$

which obviously varies depending on which types of policymakers delegate policy.

We take the decision to coordinate policies as given when evaluating the question whether expected losses of delegation are lower than those under coordination of governments in office. We define the gains from delegation over coordination as $G_k^D(k,k^*) = V_k^C(k,k^*) - V_k^D(k,k^*)$, where $V_k^C(k,k^*)$ depends on which policymakers are in office and coordinate their policies. In contrast, $V_k^D(k,k^*)$ depends on which policymakers appointed the agent that sets policy and is invariant to election outcomes. As before, we simplify by assuming that election probabilities are identical in both countries and thus $\pi = \pi^*$.

We define the difference in losses between coordination and delegation for the case that policymakers k and k^* decide on delegation as

$$\begin{aligned} EG_k^D(k,k^*) = {} & \pi^2(V_k^C(L,L^*) - V_k^D(k,k^*)) + 2\pi(1-\pi)(V_k^C(R,L^*) - V_k^D(k,k^*)) \\ & + (1-\pi)^2(V_k^C(R,R^*) - V_k^D(k,k^*)), \end{aligned} \tag{21}$$

where $V_k^D(k,k^*)$ are the respective losses under delegation, for a policymaker k, associated with the policy set by an agent that has been appointed by policymakers k and k^*. The differences are weighted with the election probabilities of the policymakers at home and abroad to take into account that, alternatively to delegation, a commitment to coordination of policies may result in four different constellations of policymakers L and R at home and abroad coordinating policies.

Given the symmetry of the two economies, $V_k^C(L,R^*) = V_k^C(R,L^*)$, the cases where opposite types coordinate are equal. Furthermore policymakers are indifferent between coordination among themselves and an agent they delegate policy to. It is thus clear that $EG_L^D(L,L^*) = 0$ whenever $\pi = 1$ and likewise $EG_R^D(R,R^*) = 0$ whenever $\pi = 0$. Policymakers are clearly worse off, however, if they have to coordinate with their foreign opponents and thus prefer delegation over the probability this situation arises. Policymakers L, L^* will prefer delegation over coordination whenever $\pi < 1$ and policymakers R, R^* will do so whenever $\pi > 0$. If, however, policymaker of different types consider delegation, the choice is less clear.

From the perspective of policymaker L, we have $EG_L^D(R,L) = \pi^2(V_L^C(L,L) - V_L^D(R,L)) + (1-\pi)^2(V_L^C(R,R) - V_L^D(R,L))$, which becomes

$$EG_L^D(R,L) = \frac{1}{4}(\bar{y}_L - \bar{y}_R)^2 \frac{(a+b)^2}{(a+b)^2+\alpha}(-\pi^2 + 3(1-\pi)^2). \tag{22}$$

Policymaker L will thus prefer delegation over coordination if polarization is high and if her election probability is low. There is an upper limit $\bar{\pi}$ on her election probability for which policymaker L's preferred form of cooperation is delegation.

Expected gains from delegation over coordination are different for policymaker R because her preferred regime has the opposite probability to that of policymaker L. From R's perspective $EG_R^D(R,L) = \pi^2(V_R^C(L,L) - V_R^D(R,L)) + (1-\pi)^2(V_R^C(R,R) - V_R^D(R,L))$, which becomes

$$EG_R^D(R,L) = \frac{1}{4}(\bar{y_L} - \bar{y}_R)^2 \frac{(a+b)^2}{(a+b)^2+\alpha}(3\pi^2 - (1-\pi)^2). \tag{23}$$

Policymaker R will thus prefer delegation if polarization is high and her election probability is low. There is a lower limit $\underline{\pi}$ above which policymaker R's preferred form of cooperation is delegation.

Comparing (22) and (23) gives

$$EG_L^D(R,L) - EG_R^D(R,L) = (\bar{y}_L - \bar{y}_R)^2 \frac{(a+b)^2}{(a+b)^2+\alpha}(1-2\pi) \tag{24}$$

and therefore we have:

Proposition 2.

1. *Policymakers of the same type (L, L^* and R, R^*) will always prefer delegation over coordination if their election probability is smaller than one.*
2. *For intermediate values of election probability ($\underline{\pi} < \pi < \overline{\pi}$) both policymakers prefer delegation over coordination of policies if they delegate with their opponents abroad.*
3. *Policymaker L has a higher gain from delegation than policymaker R if $\pi < \frac{1}{2}$ and vice versa. The difference in gains is increasing in polarization and vanishes if polarization disappears and if election chances are equal.*

Proof. See Online-Appendix. □

Policymakers will always prefer delegation if they delegate with a policymaker of their own type since this allows them to lock in their preferred policy targets. For intermediate election probabilities they even prefer to delegate jointly with their foreign opponents because this precludes the possibility that their domestic and foreign opponents can jointly determine policies after elections. The gains from delegation are larger the smaller is the individual election probability of the respective policymaker and the higher is polarization. We thus conclude that electoral uncertainty and increasing political polarization are likely to lead to more delegation as the preferred form of policy cooperation.

6. Conclusion

In this paper, we look at the interaction between increasing domestic political polarization and international cooperation. While it may appear that increasing polarization between domestic and foreign policymakers makes international cooperation more difficult to achieve and sustain, we show that polarization among domestic policymakers can actually be a strong incentive for committing to international cooperation. We demonstrate, in contrast to first intuition, that domestic political polarization does not always lower the incentives to coordinate policies. This is because coordination does not only allow for the internalization of externalities but is also constrains the hand of future governments if there is a binding commitment to future coordination. We also analyze delegation to a third party as an alternative to policy coordination among incumbent policymakers. By selecting the type of agent to which policy making is delegated, incumbents can ensure that their preferred policy will be implemented even if they are no longer in office. The cost, of course, is that they also give up the possibility to set future policies themselves. Whether delegation trumps coordination and whether coordination trumps non-coordination depends on which governments will be in power at home and abroad in the future. Political polarization between policymakers and electoral uncertainty about future incumbents will be decisive for the choice that governments in power face. We show that delegation is preferred by all policymakers if electoral outcomes are close to random and that the incentives to delegate increase with polarization. Thus, increasing political polarization increases the importance of regime choice for policymakers and they are more likely to disagree on whether there should be cooperation and what form it should take the more predictable election outcomes become. Policymakers with better election chances are less likely to prefer delegation.

We also show that the type of policymaker influences the regime choice. Policymakers with more ambitious policy targets have a higher incentive to cooperate because they place a higher value on internalizing positive spillovers; more conservative types instead fear that cooperation leads to an overly expansive policy, in particular when having to coordinate with an ambitious foreign policymaker. Coordination with a foreign policymaker of one's own type is preferred by both types of policymakers but they disagree on the desirability of cooperation depending on the combination of domestic and foreign policymakers.

The results that we derive thus help to explain why "right" and "left" policymakers often take a different position concerning the desirability of international policy coordination and what form it should take. They also explain how and when increasing polarization at home undermines international cooperation (see De Vries et al., 2021). This interaction between the type of policymaker, the polarization of policy targets and electoral outcomes is a novel aspect that deserves further empirical and theoretical work. Further work should look at the feedback from international cooperation on election chances of polarized policymakers, which we have taken as given. While it is often argued that increasing inequality has undermined the electorate's appetite for more integration (Harms and Schwab, 2020), the aspect that more cooperation can constrain massive policy shifts at home has not been taken sufficiently into account. Another interesting aspect would be to look more closely at delegation decisions and the exact choice of whom to delegate to. Finally, more empirical effort should be devoted to the connection between policymakers' targets and international cooperation. Are "left" leaning policymakers more willing to cooperate than more conservative types?

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

Acknowledgments

We are grateful to Sir Paul Tucker and participants at the Seminar on New Research on Europe at the Center for European Studies at Harvard University, at the 2022 Public Choice Society Conference in Nashville, and at the 79th Annual Midwest Political Science Conference in Chicago for their comments and suggestions. We also thank Carolina Manzano Tovar, our editor Toke Aidt, and three anonymous referees for very helpful and constructive comments.

Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.ejpoleco.2023.102401.

References

Aidt, Toke S., Albornoz, Facundo, Hauk, Esther, 2021. Foreign influence and domestic policy. J. Econ. Lit. 59 (2), 426–487, URL https://doi.org/10.1257/jel.20201481.

Alesina, Alberto, Tabellini, Guido, 2007. Bureaucrats or politicians? Part I: a single policy task. Amer. Econ. Rev. 97 (1), 169–179, URL https://doi.org/10.1257/aer.97.1.169.

Autor, David, Dorn, David, Hanson, Gordon, Majlesi, Kaveh, 2020. Importing political polarization? The electoral consequences of rising trade exposure. Amer. Econ. Rev. 110 (10), 3139–3183, URL https://doi.org/10.1257/aer.20170011.

Barrett, Scott, 2007. Why Cooperate?: The Incentive to Supply Global Public Goods. Oxford University Press on Demand.

Blum, Johannes, Potrafke, Niklas, 2020. Does a change of government influence compliance with international agreements? Empirical evidence for the NATO two percent target. Def. Peace Econ. 31 (7), 743–761, URL https://doi.org/10.1080/10242694.2019.1575141.

Conconi, Paola, Sahuguet, Nicolas, 2009. Policymakers' horizon and the sustainability of international cooperation. J. Public Econ. 93 (3–4), 549–558, URL https://doi.org/10.1016/j.jpubeco.2008.11.006.

Congleton, Roger D., 2020. The institutions of international treaty organizations as evidence for social contract theory. Eur. J. Political Econ. 63, 101891, URL https://doi.org/10.1016/j.ejpoleco.2020.101891.

Dai, Xinyuan, Snidal, Duncan, Sampson, Michael, 2017. International cooperation theory. In: Oxford Research Encyclopedia of International Studies. URL https://doi.org/10.1093/acrefore/9780190846626.013.93.

De Vries, Catherine E., Hobolt, Sara B., Walter, Stefanie, 2021. Politicizing international cooperation: The mass public, political entrepreneurs, and political opportunity structures. Int. Organ. 75 (2), 306–332, URL https://doi.org/10.1017/S0020818320000491.

Dobson, Wendy, 1991. Economic Policy Coordination: Requiem or Prologue? Institute for International Economics, Washington, DC.

Drazen, Allan, 2000. Political Economy in Macroeconomics. Princeton University Press, Princeton, URL https://doi.org/10.1515/9780691188003.

Dustmann, Christian, Eichengreen, Barry, Otten, Sebastian, Sapir, Andre, Tabellini, Guido, Zoega, Gylfi, 2017. Europe's Trust Deficit: Causes and Remedies. Centre for Economic Policy Research, London.

Eggertsson, Gauti B., Le Borgne, Eric, 2010. A political agency theory of central bank independence. J. Money Credit Bank. 42 (4), 647–677, URL https://doi.org/10.1111/j.1538-4616.2010.00302.x.

Eichengreen, Barry, 2019. Globalizing Capital: A History of the International Monetary System. Princeton University Press, Princeton, URL https://doi.org/10.1515/9780691194585.

Frankel, Jeffrey A., 2015. International coordination. In: Glick, Reuven, Spiegel, Mark M. (Eds.), Policy Challenges in a Diverging Global Economy. In: Asia Economic Policy Conference, Federal Reserve Bank of San Francisco, San Francisco, pp. 149–185.

Frieden, Jeffrey, 2021. International cooperation in the age of populism. In: Mata, Maria Eugenia, de Sousa, Miguel Rocha, Pereira, Luis Brites (Eds.), Economic Globalization and Governance: Essays in Honor of Jorge Braga de Macedo. Springer, pp. 303–314.

Gardner, Richard N., 1980. Sterling-Dollar Diplomacy in Current Perspective. Columbia University Press, New York, URL https://doi.org/10.7312/gard92960.

Grossman, Gene M., 2016. The purpose of trade agreements. In: Bagwell, Kyle, Staiger, Robert (Eds.), Handbook of Commercial Policy, Vol. 1. Elsevier, pp. 379–434.

Harms, Philipp, Schwab, Jakob, 2020. Depression of the deprived or eroding enthusiasm of the elites: What has shifted the support for international trade? Eur. J. Political Econ. 64, 101901, URL https://doi.org/10.1016/j.ejpoleco.2020.101901.

Hefeker, Carsten, Neugart, Michael, 2018. Non-cooperative and cooperative policy reforms under uncertainty and spillovers. J. Comp. Econ. 46, 94–102, URL https://doi.org/10.1016/j.jce.2017.01.002.

Ikenberry, G. John, 1992. A world economy restored: expert consensus and the Anglo-American postwar settlement. Int. Organ. 289–321, URL https://doi.org/10.1017/S002081830000151X.

Keen, Michael, Konrad, Kai A., 2013. The theory of international tax competition and coordination. In: Auerbach, A.J., Chetty, R., Feldstein, M., Saez, E. (Eds.), Handbook of Public Economics, Vol. 5. Elsevier, pp. 257–328.

Maggi, Giovanni, 2014. International trade agreements. In: Gopinath, G., Helpman, E., Rogoff, K. (Eds.), Handbook of International Economics, Vol. 4. Elsevier, pp. 317–390.

Maskin, Eric, Tirole, Jean, 2004. The politician and the judge: Accountability in government. Amer. Econ. Rev. 94 (4), 1034–1054, URL https://doi.org/10.1257/0002828042002606.

Ostry, Jonathan D., Ghosh, Atish R., 2016. On the obstacles to international policy coordination. J. Int. Money Finance 67, 25–40, URL https://doi.org/10.1016/j.jimonfin.2015.06.008.

Persson, Torsten, Svensson, Lars E.O., 1989. Why a stubborn conservative would run a deficit: Policy with time-inconsistent preferences. Q. J. Econ. 104 (2), 325–345, URL https://doi.org/10.2307/2937850.

Putnam, Robert D., Bayne, Nicholas, 1984. Hanging Together: The Seven-Power Summits. Harvard University Press, Cambridge, Massachusetts.

Rodrik, Dani, 2021. Why does globalization fuel populism? Economics, culture, and the rise of right-wing populism. Annu. Rev. Econ. 13, 133–170, URL https://doi.org/10.1146/annurev-economics-070220-032416.

Schneider, Christina J., Urpelainen, Johannes, 2014. Partisan heterogeneity and international cooperation: the case of the European Development Fund. J. Confl. Resolut. 58 (1), 120–142, URL https://doi.org/10.1177/0022002712467939.

Schultz, Christian, 1999. Monetary policy, delegation and polarisation. Econom. J. 109 (455), 164–178, URL https://doi.org/10.1111/1468-0297.00425.