The Limits to Partial Banking Unions:
A Political Economy Approach

Dana Foarta[*]

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Abstract

This paper studies the welfare effects of a 'partial banking union' in which cross-country transfers for bailouts are set at the supranational level, but policymakers in member countries decide the distribution of funds. This allows the self-interested policymakers to extract rents in the bailout process. In equilibrium, such a banking union can actually lower the welfare of citizens in the country receiving transfers compared to the autarky case, as the receiving country must increase its share of the overall burden of the bailout, in order to compensate for the rent-seeking distortion. Supranational fiscal rules are ineffective at reversing this result.

Increased cross-border financial flows in the lead up to the 2007-2008 financial crisis facilitated increased investment, output and growth in both developed and developing economies.[1] These flows decreased during the financial crisis,[2] and the trouble experienced by the banking sector exposed a largely overlooked aspect of financial integration – that public support for banks in a financial crisis depends on national governments, and that this support generates significant cross-country spillovers. Naturally, the presence of such spillovers suggests that a supranational agreement in the form of a banking union could deliver a Pareto improvement. It would centralize public bailouts and ensure that all spillovers are taken into account by decision-makers. Yet, such centralization requires governments to give up their decision power over national banking systems. If this requirement is infeasible due to sovereignty concerns, then any supranational agreement must allow national governments to retain some decision power, leading to a hybrid system, or a 'partial banking union.' Once this agreement is in place, domestic political economy constraints may interfere with the functioning of this institution: policymakers may divert resources towards spending that provides them with local political rents. This raises the question of whether such a banking union actually improves welfare and achieves an efficient government intervention in the banking sector.

The tension between domestic and supranational institutions is illustrated by the Eurozone's reaction following the 2007-8 financial crisis. After lengthy negotiations, the European Banking Union was created as a mechanism for common bank regulation. But its Common Resolution Mechanism stopped short of achieving a fully centralized response to a banking crisis.[3] In particular, it does not have a functional system for determining cross-country transfers towards public bailouts before a crisis is under way.[4] While the procedures in place are aimed at avoiding another major crisis, if such a crisis does happen, public bailouts in one country will, to a large extent, have to go through that country's government. The role that domestic political distortions play in such a situation was illustrated by the Spanish bailout of the savings and loan sector (the 'cajas') during the financial crisis.[5] Local policymakers decided to rescue failing cajas by merging them based on political and regional motives rather than economic efficiency, as each of these institutions had

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[1]See Alfaro et al. (2014) and Kalemli-Ozcan et al. (2014), among others.

[2]See Bertaut and Pounder (2009) and ECB (2015).

[3]For details on the Common Resolution Mechanism, see Hadjiemmanuil (2015).

[4]The provisions for this are contained in the rules of the Direct Recapitalization Instrument (DRI). A country may apply for DRI funds only after it is considered unable to fund the bailout from its own budget; more details in Hadjiemmanuil (2015).

[5]Discussed in greater detail in Garicano (2012) and Cuñat and Garicano (2009).

significant political connections to one of the major Spanish parties.[6] These inefficient mergers led to the creation of larger troubled entities, increasing the cost of public bailouts and the pressure on public finances in Spain and in the Eurozone.

This paper considers the above facts and builds a model of a supranational arrangement over bank bailouts in which domestic policymakers have decision power over the distribution of bailout funds. The model considers two countries, each with banks that hold deposits made by citizens from both countries. In each country, a crisis can wipe away value from bank investments made with the citizens' deposits. The crisis opens up the possibility of public bailouts, where each government provides funds to banks in its country, in order to salvage productive investments. Since deposits in banks are held by citizens from both countries, a bailout in one banking system produces cross-country spillovers. A supranational institution can set financial transfers between countries; however, the supranational institution has limited powers: it cannot directly give these transfers to banks. It can only propose cross-country transfers and the overall spending on public bailouts, but each government decides how the bailout funds are distributed to banks in its country. The model therefore accounts for the political constraints that limit supranational action in domestic affairs.

Each government is partially self-interested: it is concerned about the welfare of citizens within its own country, but he also derives political rents from engaging in public bailouts. It can use the budget for three purposes: to provide public bailouts to banks, to extract political rents, and to provide a public good – for non-bailout purposes. The spending on public bailouts directly affects households from both countries, and increasing this spending will be the goal of the supranational agreement. The public goods are consumed only in the country in which they are provided. Political rents are consumed only by the policymaker in the country where they are extracted. This division of the budget also captures, in reduced form, imposing austerity – by cutting public good provision – in order to increase the payments to the financial sector, while structuring government spending to still provide political rents to clientelistic groups. This government spending decision was shown to be relevant during bailout episodes. The particular choice of budget cuts in the implementation of austerity programs in Greece after 2010, for example, was shown to follow a pattern that protected the clientelistic interests of the political elite, while imposing cuts on public programs that affected

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[6]Discussion and more details in Garicano (2012).

the groups not connected to the ruling political parties.[7]

The paper's main result is that creating a partial banking union under domestic political economy distortions can reduce citizen welfare in the country that receives transfers rather than in the country that provides transfers, compared to the autarky case of no partial banking union. The result relies on the interaction of two forces, one domestic and one supranational. At the domestic level, the ability of policymakers to extract rents leads to a mismatch between their incentives and those of their citizens. The policymakers have the incentive to extract rents whenever funds are allocated to banks, and this reduces the welfare of citizens. At the supranational level, policymakers must agree on how much each country contributes to the funding of bailouts. The citizens do not have a seat at the table when this decision is made. The spending on bailouts provides policymakers with the additional benefit of political rents, so they evaluate the relative costs and benefits of bailouts differently than citizens. Therefore, they may agree to a partial banking union in which their country faces high spending on bailouts and low spending on other public goods, even if this reduces the welfare of their country's citizens. The supranational division of bailout costs is determined using a set of country bargaining weights, such that a lower country weight translates into a higher contribution to the funding of bailouts. The model shows that citizen welfare in the country receiving transfers decreases when the country carries a sufficiently low supranational weight relative to the value of political rents to its policymakers. Determining the threshold bargaining weight under which welfare losses occur has immediate policy relevance. In the case of the Eurozone, for instance, the limited budget of the European Stability Mechanism, the limitations of the Common Resolution Mechanism, and the lack of a common fiscal policy imply that, in a crisis, funding for large-scale public bailouts will be decided through direct negotiations between member countries.

Policy discussions point to more fiscal integration, for instance through supranational limits on government borrowing, as a solution to the shortcomings of partial financial integration.[8] After establishing the main result described above, the model addresses this argument. It considers the effect of fiscal rules that restrict government borrowing. Such rules reduce the policymaker's ability to borrow in order to finance public bailouts and to take rents, and this increases citizen welfare in autarky; however, fiscal rules may decrease the overall welfare gains from a partial banking union. The reason for this is that fiscal rules cannot restrict rent seeking without also

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[7]See Afonso et al. (2015) and Frieden and Walter (2017).

[8]Restrictions on the governments' ability to borrow have been under discussion in early 2016. For more details, see Bloomberg Business, "EU Weighs Bank State-Debt Limits to Ease Germany's Risk Concerns," January 31, 2016.

restricting government spending in general. If a policymaker cannot provide sufficient funds to banks, then more transfers have to come from the other country in order to fund bailouts. The need for more transfers makes it costlier to implement a partial banking union. Moreover, when the supranational agreement generates an increase the bailout spending through conditionality – the required spending on bailouts versus public goods –, fiscal rules are not a useful instrument for the supranational authority, since limiting a country's ability to borrow only makes conditionality costlier for that country.

The model also considers domestically set fiscal rules, and it shows that these rules may be more effective than supranational fiscal rules at reducing welfare losses in the country receiving transfers. The supranational authority weighs the welfare of both countries in its decision problem, and it may find it desirable to impose policies that lower welfare for citizens of one country, but that increase overall welfare when both countries are considered. Domestic fiscal rules instead allow citizens in each country to choose policies that maximize the welfare of households in their country alone. Binding domestic fiscal rules may therefore be set, even if they reduce the overall welfare gains from the partial banking union. Finally, the model shows that the most effective domestic fiscal rules for reducing welfare losses in the country receiving transfers are the rules that can be adjusted if the country joins a partial banking union. This way, one set of fiscal rules is in place if the country does not join the partial banking union, and another set of fiscal rules is implemented if the policymakers join the partial banking union. This system allows citizens to strategically constrain the expansion of spending on bailouts and political rents under the supranational agreement. Fiscal rules reduce the losses in welfare to citizens due to the supranational division of bailout costs – the second force driving the model's main result. For any positive country weight at the supranational level, fiscal rules expand the maximum size of the domestic rent seeking distortion under which a Pareto improvement can be achieved in a partial banking union. From a policy perspective, it means that even limited political or regulatory reforms that reduce political rents, but do not fully eliminate them, can be valuable in the design of a welfare-improving partial banking union with fiscal rules.

Related literature.   The interplay between financial integration and fiscal policy has been vastly studied in the literature. Yet, the main focus for most of the work in this area has been on optimal policy design with a benevolent government. This includes the study of optimal fiscal

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policy coordination (Kehoe, 1987; Chari and Kehoe, 1990; Beetsma and Lans Bovenberg, 1998; Halac and Yared, 2015), fiscal rules in currency unions (Von Hagen and Eichengreen, 1996; Ferrero, 2009) or the role of fiscal transfers in providing efficient insurance within a currency union (Farhi and Werning, 2012). These papers abstract from the effects of political economy distortions. By contrast, this paper considers the issue of financial integration taking into account the political economy issues that emerge when policymakers are partially self-interested. Therefore, this paper is most closely related to the political economy work that considers the effects of different political institutions in the context of fiscal or financial integration (Tabellini, 1990; Lohmann, 1993; Persson and Tabellini, 1996a,b). Whereas that literature focuses mainly on the effects of different electoral institutions and the aggregation of voter preferences, this paper considers the issue of political rent seeking and examines the distortion this brings to supranational policies.

The link between financial integration and domestic public debt in the presence of political economy constraints has also been studied by Tabellini (1990) and Azzimonti et al. (2014), who show how fiscal or financial integration can lead to higher public debt due to political economy biases. This paper, however, highlights a different channel for the increase in public spending, and implicitly public debt. Debt does not increase due to lower costs of borrowing (as in Tabellini, 1990) or the aggregation of heterogeneous voter preferences (as in Azzimonti et al., 2014), but rather because cross-country transfers increase rent seeking. The increase in debt is directly linked to the existence of supranational agreements in the absence of political integration. In a set of papers also motivated by the European supranational institutions, Persson and Tabellini (1996a,b) study cross-country insurance and the effect of fiscal transfers on welfare under different political decision-making institutions, specifically direct voting versus bargaining. This paper provides a complement to their results. While their papers highlight the inefficiencies that emerge under various institutions of collective choice – voting versus bargaining–, this paper considers inefficiencies rooted in domestic institutions – rent seeking. Moreover, it presents another channel through which domestic institutions affect supranational agreements: that of rule implementation (the allocation of transfers by the local policymaker) rather than rule selection (the collective choice of transfers).

The desirability of supranational controls over domestic spending has also been examined in Dewatripont and Seabright (2006), but in the context of a politician whose type is unknown to voters, and who uses domestic spending to signal his type. By contrast, this paper considers the role of supranational controls in a model without private information, where the politician has a

direct preference for rent seeking.

Finally, the design of fiscal rules and their effect on government spending is explored in Corsetti and Roubini (1997) and Milesi-Ferretti (2004) in the context of politically motivated public spending. Abstracting from political economy considerations, Halac and Yared (2015) study the optimal design of fiscal rules in a multi-country setting. This paper models fiscal rules in line with this literature, but it focuses on the interaction between fiscal rules and financial integration through a partial banking union.

Organization. The rest of the paper is organized as follows. Section 1 presents the setup of the model. Section 2 gives the benchmark case with benevolent policymakers. Section 3 presents the main result of the paper. Section 4 considers the role of fiscal rules. Section 5 concludes, and the Appendix contains proofs and extensions.

1 Environment

Consider a two-period economy, with periods 0 and 1.[9] The economy consists of two countries, both of which are small open economies. One country will be the provider of cross-country transfers, and it will be referred to as Financing, or F. The other country will be receiving transfers, and it will be referred to as Debtor, or D. An independent supranational authority, denoted by S, plays the role of a Principal who proposes the terms of a partial banking union between countries. Each of the two countries is made up of a continuum of mass 1 of identical households and a continuum of mass 1 of identical banks.

1.1 Households

In period 0, all households from both countries start with a perfectly diversified portfolio of risky projects, in the form of deposits in banks. Households in country D hold total deposits z^D, a fraction α^D of which is deposited in banks in country D, while the remaining fraction is deposited in banks in country F.[10] Similarly, households in country F hold total deposits z^F, a fraction α^F

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[9]An infinite-horizon version of the model shows that the main results of the model can be extended to a dynamic environment with repeated crises. This analysis is done in companion work and available from the author.

[10]The assumption that households hold deposits in banks outside their country's borders is a simplification meant to capture the loans made by banks in one country to banks outside that country. Specifically for the case of the Eurozone, direct deposits by households in foreign banks represent a negligeable fraction of cross-border banking

of them is deposited in banks in country F and the remaining fraction is deposited in banks in country D.[11]

Households derive utility from private consumption equal to the return from their deposits, c^i in the first period, and c_1^i in the second period. They also consume a public good provided by the government of their country, $i = D, F$. The public good is provided in each of the two periods, with g^i denoting public good provision in the first period, and g_1^i denoting public good provision in the second period. Household preferences in country i are given by[12]

$$U^i = u(c^i) + w(g^i) + \beta \left(u(c_1^i) + w(g_1^i) \right), \tag{1}$$

where $u(\cdot)$ and $w(\cdot)$ are increasing, strictly concave, continuously differentiable, $0 < u'(0) < \infty$, $0 < w'(0) < \infty$, $\lim_{g \to \infty} w'(g) = 0$.

1.2   Banks

Banks in each country hold identical risky investment projects which pay off at the end of period 0. They do not have any equity and can fund projects exclusively using household deposits. Their objective is to maximize the returns to their depositors. The initial investment made by banks in country $i \in \{D, F\}$ is denoted by I^i and consists of the deposits from both D and F households:

$$I^D = \alpha^D z^D + (1 - \alpha^F) z^F, \tag{2}$$

$$I^F = (1 - \alpha^D) z^D + \alpha^F z^F. \tag{3}$$

The project return is subject to uncertainty. Following investment, an aggregate shock $\theta \in \Theta \subset \mathbb{R}$ is realized in both countries. After the shock, projects become distressed –a fraction θ of all investment projects is lost, while the remaining $(1 - \theta)$ fraction of all projects is intact. The intact portion of the project has a rate of return R in the next period. The distressed portion of projects does not produce any returns, unless additional funds are reinvested. After observing θ and prior to

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compared to the substantial cross-border loans made between banks.

[11]The households cannot access a market for bonds that would allow them to smooth private consumption accross periods. This simplification was made in order to focus on the portofolio allocation problem for the government. It does not affect the main results as long as reinvestment funds can only be provided through the government. Details are available from the author upon request.

[12]For ease of notation, I omit the subscripts for the period 0 variables and keep only the subscripts for the period 1 policies.

project completion, the banks in country i can reinvest x^i new funds into their projects –through a process called recapitalization– such that the total size of the projects is at most equal to the initial investment: $x^i \leq \theta I^i$.[13] Since there is no private loan market for banks to access reinvestment funds, any funds x^i must be provided by the government of country i. Another key assumption is that these recapitalization funds cannot be targeted towards the deposits of a particular household, since projects are funded with deposits from all households and cannot be broken apart. This ensures that both the D and F households benefit from the reinvestment, in proportion to their contribution to the total investment. At the end of period 0, the project is completed and returns $R((1-\theta)I^i + x^i)$ consumption units, where $R > 1/(1-\theta)$, $\forall \theta \in \Theta$.

In the second period, banks hold safe projects with rate of return $R_1 = 1$ and receive deposits from D and F households, in the same proportions as in period 0. Therefore, the private consumption in the second period is equal to the household's endowment, $c_1^i = z^i$. The assumption of a second period creates a role for public debt in smoothing public good provision over time, as further discussed below.

1.3   Policymakers

Policymakers in each country have access to a budget e^i, $i \in \{D, F\}$ each period. In period 0, policymakers can spend the budget on three categories of expenses: they can provide public goods g^i, recapitalization funds x^i and also to take on rents r^i. The division of the budget into these three categories captures the core problem faced by governments responding to the need for public recapitalizations in the financial system. The government can provide public funds for recapitalizations, but these must come at the expense of other non-financial expenses. The way government expenses are structured, however, can still protect the sources of political rents, even as austerity is imposed in order to reduce expenses in the non-financial sectors. This justifies treating political rents as a separate category, as further explained below.

The policymakers may also take on debt $b^i \in [\underline{b}^i, b^{i,MAX}]$ at rate $1/\beta$, equal to the discount rate, with a lower limit $\underline{b}^i = -e^i/\beta$ and upper limit $b^{i,MAX} = e^i$. Moreover, the policymakers can join a partial banking union, with terms described below. The partial banking union involves a transfer τ from country F to country D. Therefore, policymaker i faces the following budget constraint in

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[13]The liquidity shock is modeled as a simplified version of the one in Holmström and Tirole (1998).

period 0 :

$$r^i + x^i + g^i \leq e^i + \beta b^i + \tau^i, \tag{4}$$

where $\tau^D = \tau = -\tau^F$. In period 1, each policymaker provides public goods g_1^i and repays debt b^i, leading to budget constraint

$$g_1^i \leq e^i - b^i. \tag{5}$$

The rent seeking process is modelled as follows. The policymaker can use public funds to intervene in the banking sector: he can provide reinvestment funds x^i for the distressed projects described above (with rate of return $R > 1$), but he can also provide funds towards investments that have a rate of return of 1, a return that goes to the policymaker alone. The reinvestment of x^i is socially efficient since $R > 1$. The investment in the projects that only benefit the policymaker and have a rate of return of 1 is socially inefficient, and represents rent seeking. The value of political rents is determined as in Grossman and Helpman (1994): the politician weights both household utility and the benefits coming from political rents. Therefore, the total spending towards reinvestments will be equal to $x^i + r^i$, but only x^i are recapitalizations that provide returns to households. The allocation of funds between rents and recapitalizations cannot be verified by the other country or by the supranational authority.

Policymaker i's utility is then given by

$$V^i = (1 - \gamma^i)v(r^i) + \gamma^i U^i, \tag{6}$$

where $i \in \{D, F\}$, $\gamma^i \in (0, 1)$ represents the weight placed on household utility relative to rents by government i, and $v(r^i)$ is the utility derived by the policymaker from rents.[14] The function $v(r)$ is increasing, concave, continuously differentiable, $0 < v'(0) < \infty$, $\lim_{r \to \infty} v'(r) = 0$. Since rents are extracted as part of the recapitalization process, they can only be extracted in the first period. The private consumption of households is given by

$$c^i(x^i, x^j) = R(1 - \theta)z^i + R\sigma^i x^i + R\left(1 - \sigma^j\right) x^j, \tag{7}$$

where $\sigma^i = \alpha^i z^i / \left(\alpha^i z^i + (1 - \alpha^j)z^j\right)$ represents the share of deposits owned by country i households

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[14]This form of the utility function can be interpreted as the reduced form of an electoral process in which an elected politician faces a reelection constraint.

in country i banks, $i \in \{D, F\}$.

Finally, it is worth noting that the assumption of exogenous government budgets is made for simplicity, in order to focus the discussion on the distribution of government expenses, as this lies at the core of the results. The government budget could be endogenized without changing the qualitative results. Consider, for instance, the taxation of income from investments in the second period. Tax increases then result in less private consumption in the second period. If the proceeds from these taxes are used to repay debt, then the qualitative effect on household welfare is the same as in the same as in the case of a government with fixed fiscal capacity and lower government debt.

1.4 The Partial Banking Union

A partial banking union is an agreement between the two countries consisting of the following elements. First, it consists of a supranational authority that collects all information on the deposits z^D and z^F made by households, on the government resources e^D and e^F, and on the value of the loss θ. Second, it consists of a crisis intervention mechanism agreed upon ex-ante, conditional on the size of the loss θ. The intervention mechanism establishes a transfer $\tau(\theta)$ to be made by country F to country D and a minimum reinvestment spending $\underline{x}(\theta)$ that country D must commit to. The supranational authority lacks enforcement power, in that it cannot choose and enforce a specific allocation of funds to recapitalizations of bank projects and to rents. The reinvestment spending $\underline{x}$ is done by policymaker D. This is what makes the partial banking union vulnerable to domestic political economy incentives. Any required spending $\underline{x}$ on total reinvestments is satisfied as long as

$$x^D + r^D \geq \underline{x}. \tag{8}$$

The partial banking union described above differs from a full banking union along two key dimensions. The first is that the supranational authority cannot directly recapitalize banks. The second is that the partial banking union offers no insurance against bank crises. The transfer $\tau(\theta)$ and the reinvestment spending $\underline{x}(\theta)$ must be acceptable to policymakers from each country in order to be implemented.[15]

Relating the model back to the motivation for the paper, these features are meant to capture

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[15]If a risk-sharing mechanism were available, the agreement could take the form of transfers and reinvestment requirements established ex-ante, and participation in the agreement would be decided in expectation of θ.

the differences between the European Banking Union and a full banking union: there is a common supervisory mechanism in place, hence the full information about deposits and losses, but national authorities still have significant decision power in any post-crisis intervention, and there is no Eurozone–wide deposit insurance scheme. This lack of ex-ante commitment of resources makes crisis interventions contingent on ex-post approval of all involves parties.

The terms $(\tau, \underline{x})$ are chosen by a supranational authority that maximizes a weighted sum of D and F household utilities, with relative weight $\eta \in (0, 1)$ on the D households,

$$\max_{\tau, \underline{x}} \{ \eta U^D(x^D, x^F, g^D, g_1^D) + (1 - \eta) U^F(x^F, x^D, g^F, g_1^F) \}, \tag{9}$$

under the condition that any chosen pair $(\tau, \underline{x})$ must be preferred by each policymaker to the outside option of no implementation of the agreement:

$$(1 - \gamma^D)v(r^D) + \gamma^D U^D(x^D, x^F, g^D, g_1^D) \geq$$
$$(1 - \gamma^D)v(r^{D0}) + \gamma^D U^D(x^{D0}, x^{F0}, g^{D0}, g_1^{D0}), \tag{10}$$
$$(1 - \gamma^F)v(r^F) + \gamma^F U^F(x^F, x^D, g^F, g_1^F) \geq$$
$$(1 - \gamma^F)v(r^{F0}) + \gamma^F U^F(x^{F0}, x^{D0}, g^{F0}, g_1^{F0}), \tag{11}$$

where the superscript 0 indicates the policies chosen in the outside option, without the implementation of the agreement.

To ensure focus on the non-trivial case in which there is scope for transfers between countries, and to ensure country D is the one receiving transfers, the following assumption is made about government endowments.

Assumption 1 *For all $\theta \in \Theta$, the endowments of the D and F governments satisfy*

$$e^D(1 + \beta) < \theta I^D + g^{D*}(1 + \beta) + r^{D*}, \tag{12}$$
$$e^F(1 + \beta) \geq \theta I^F + \theta I^D + g^{F*}(1 + \beta) + r^{F*} + r^{D*}, \tag{13}$$

where g^{i*} is defined implicitly by $w'(g^{i*}) = \sigma^i R u'(c^i(\theta I^i, \theta I^j))$, and r^{i*} is defined implicitly by $\left(1 - \gamma^i\right) v'(r^{i*}) = \gamma^i \sigma^i R u'(c^i(\theta I^i, \theta I^j))$, $i, j \in \{D, F\}$, $i \neq j$.

Assumption 1 is necessary in order to establish the need for cross-country transfers. The first

inequality restricts e^D to be sufficiently small such that the D government does not fully recapitalize its banks if no partial banking union is in place, i.e., $x^{D0} < \theta I^D$. The second inequality ensures that the F government's endowment e^F is sufficiently large so that full recapitalizations are provided to the F banks even if transfers are made to country D $\left(\text{so } x^F = \theta I^F\right)$. Since the F country recapitalizes its banks without outside transfers, this establishes that, if transfers are feasible, then the F country will be the country providing transfers, while the D country will be the one receiving transfers.

1.5 Timing

To sum up, the timing of events is as follows: (1) The terms of the partial banking union are set contingent on the realization of θ; (2) Households deposit their endowments z^D and z^F in banks, as described above; (3) Banks make investments in projects; (4) The loss θ is realized; (5) The transfer $\tau(\theta)$ and reinvestment spending $\underline{x}(\theta)$ are implemented; (6) Policymaker i decides $\left\{r^i, x^i, g^i, b^i, g_1^i\right\}$, $i \in \{D, F\}$, and payoffs are realized.

2 Benchmark with Benevolent Policymakers

We begin the analysis with the benchmark in which the two policymakers are benevolent. This provides a baseline case from which we can analyze the effects of political economy distortions. Each policymaker i maximizes the same utility as that of households in its country, U^i. The supranational authority proposes a transfer τ and a minimum reinvestment expenditure $\underline{x}$ in order to maximize the weighted sum of household utilities,

$$\max_{\tau, \underline{x}} \eta U^D + (1 - \eta) U^F, \tag{14}$$

subject to the participation of each policymaker:

$$U^D(x^D, x^F, g^D, g_1^D) \geq U^D(x^{D0}, x^{F0}, g^{D0}, g_1^{D0}), \tag{15}$$

$$U^F(x^F, x^D, g^F, g_1^F) \geq U^F(x^{F0}, x^{D0}, g^{F0}, g_1^{F0}), \tag{16}$$

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where, as described above, the superscript 0 indicates policies chosen without the banking union in place.

Without rent seeking, there is no mismatch between policymakers and households. This baseline problem leads to the immediate benchmark result on the welfare effect of a partial banking union.

Proposition 1 *With benevolent governments, a partial banking union with transfers $\tau(\theta)$ and a reinvestment requirement $\underline{x}(\theta)$ that satisfy conditions (15) and (16) always achieves a Pareto improvement.*

Proof: In Appendix A, section A.1.

The result emerges because the economic benefits of a partial banking union are the same for policymakers and households. The incentives of policymakers and households are aligned, so any agreement that is accepted by policymakers necessarily benefits households. Analytically, the participation constraint of policymaker i requires that $U^i \geq U^{i0}$. If a positive transfer $(\tau > 0)$ is optimal, and a partial banking union is implemented, then it must be the case that at least one country's welfare is improved over the outside option of no partial banking union. The participation constraints ensure that the other country's utility does not decrease below its value under no partial banking union. Therefore, whenever a partial banking union is implemented, it leads to a Pareto improvement.

Starting from this result, we proceed to introduce rent seeking in the decision problem of the policymakers. The following set of results show how the mismatch in incentives between policymakers and households interacts with the supranational weighting of household utilities to overturn this benchmark result.

3   Partial Banking Union with Rent Seeking

We return to the model in which policymakers value both political rents and household welfare. In proposing a partial banking union, the supranational authority chooses a pair $(\tau, \underline{x})$ that maximizes the weighted sum of household utilities, as described in (9), subject to the participation constraints (10) and (11). The veto power that policymakers have over the supranational policies ensures that they do not implement policies which lower their utilities. Yet, since the policymakers are no longer perfectly aligned with households in their policy preferences, this does not guarantee that household

utility does not decrease. This is captured in the main result of the model:

Proposition 2 *There exists a threshold $\eta^*(\theta) \in (0,1)$ for the bargaining power of country D such that:*

- *If country D, the country receiving transfers, has bargaining power $\eta < \eta^*(\theta)$, then its citizens are worse off under the partial banking union than without a partial banking union, while policymakers in both countries and the citizens in the country providing transfers are better off.*

- *If country D has bargaining power $\eta \geq \eta^*(\theta)$, then the partial banking union achieves a Pareto improvement over the case with no partial banking union.*

Proof:In Appendix A, section A.2.

The result comes out of the interaction of two forces: one domestic and one supranational. At the domestic level, rent seeking creates a mismatch between the incentives of policymakers and those of households. The policymaker in country D derives benefits from rents, so transfers from country F increase rent seeking. But transfers also increase other government spending, not only rents, so the domestic distortion does not by itself reduce household welfare in a partial banking union. At the supranational level, there is another mismatch between policymakers and households. Any supranational agreement must be accepted by policymakers. They must agree on how much each country contributes to the funding of bailouts – the total reinvestment $\underline{x}$, which includes both rents and recapitalizations. Households do not have a seat at the table when this decision is made. The spending on reinvestments provides policymakers with the additional benefit of political rents, so their evaluation of the benefits relative to the costs of the supranational agreement is different than that of households. It is biased in favor of the agreement. The supranational division of bailout costs is determined according to the relative weights η for country D and $(1-\eta)$ for country F. A lower weight η means that country D must cover a higher share of the funding of bailouts. When η is sufficiently low $(\eta < \eta^*)$ the cost for D households of the supranational agreement is higher than the benefit they receive from transfers. Yet, since rents make the relative benefit higher for policymaker D, the agreement is still accepted.

To see that both forces are necessary in order to obtain the result, consider what happens when only one of these forces is present. Without rent seeking, Proposition 1 shows that a Pareto

improvement is always achieved. Without the supranational restriction that only policymakers have a seat at the table, the households can oppose any supranational agreement that is reducing their welfare. The loss in welfare emerges when policymakers have rent seeking incentives and households do not have a seat at the table at the supranational level, where the division of bailout costs is decided. The domestic mismatch between the incentives of policymakers and those of households is mirrored at the supranational level, where agreements can be reached with terms unfavorable to households.

The mismatch in incentives only leads to a reduction in welfare for households in the country receiving transfers. For the country providing transfers, country F, the policymaker and the households receive the same consumption from more spending on recapitalizations in country D. The cost of providing transfer τ is less public good provision in country F, but also fewer rents for policymaker F. Therefore, the cost of making transfer τ is relatively higher for policymaker F than it is for F households, since households do not value the political rents. In this case, policymaker F is biased against accepting the agreement, and any supranational policy that is acceptable to policymaker F increases the welfare of F households.

Analytically, the reasoning for Proposition 2 is as follows. Given $(\tau, \underline{x})$, policymaker D chooses $\zeta^D \equiv \left\{ r^D, x^D, g^D, g_1^D, b^D \right\}$, to solve

$$\max_{\zeta^D} \left(1 - \gamma^D\right) v(r^D) + \gamma^D \left[u(c^D(x^D, x^F)) + w(g^D) + \beta w(g_1^D) \right] \tag{17}$$

subject to

$$r^D + x^D + g^D \ \leq \ e^D + \beta b^D + \tau, \tag{18a}$$

$$r^D + x^D \ \geq \ \underline{x}, \tag{18b}$$

$$g_1^D \ \leq \ e^D - b^D, \tag{18c}$$

$$x^D \ \leq \ \theta I^D. \tag{18d}$$

Constraints (18a) and (18c) are the budget constraints of the D government in periods 0 and 1, respectively. Constraint (18b) specifies the minimum required spending on reinvestments under the partial banking union, and constraint (18d) gives the maximum level of recapitalizations given the loss to projects.

The first relationship coming out of problem (17) is that an increase in recapitalizations x^D cannot be achieved without an increase in rents r^D. With an interior solution, the first-order conditions to the politician's problem lead to

$$\left(1 - \gamma^D\right) v'(r^D) = \gamma^D \sigma^D R u'(c^D(x^D, x^F)). \tag{19}$$

The politician's utility is concave in both rents and recapitalizations, so any incentive to increase recapitalizations will also give the politician the incentive to increase rents. A policy $\underline{x}$ that increases recapitalizations implies $r^D > r^{D0}$ and $x^D > x^{D0}$.

The second relationship leading to the result is that the value of U^D is positively linked to η. This comes out of the supranational authority's problem (9). The weight η determines the share of the costs borne by country D when more reinvestment spending is decided by the supranational authority. As η increases, country D's pays a relatively smaller share of the costs. Specifically, the first-order conditions to problem (9) lead to

$$(1 - \eta)\left(1 - \sigma^D\right) R u'(c^F) + \eta \sigma^D R u'(c^D) \frac{\partial x^D}{\partial \underline{x}} = \eta w'(g^D), \tag{20}$$

$$(1 - \eta) w'(g^F) \left(-\frac{\partial g^F}{\partial \tau}\right) = \eta w'(g^D). \tag{21}$$

Applying the Envelope Theorem in this maximization problem then leads to the result that an increase in η increases equilibrium transfers τ and decreases equilibrium reinvestment $\underline{x}$. Given problem (17), this implies an increase in D household utility.

To see the role of η more clearly, consider two extreme cases. If $\eta = 0$, then the supranational authority does not take into account the utility of D households. In this case, it assigns country D the bailout costs, up to the participation constraint (10) binding. When constraint (10) binds, the increased political rents imply $v(r^D) > v(r^{D0})$ and $U^D(x^{D0}, x^{F0}, g^{D0}, g_1^{D0}) > U^D(x^D, x^F, g^D, g_1^D)$. If $\eta = 1$, then the supranational authority does not take into account the utility of F households. The utility of D households is maximized, transfers are maximized subject to the participation constraint of policymaker F, and so $U^D(x^D, x^F, g^D, g_1^D) > U^D(x^{D0}, x^{F0}, g^{D0}, g_1^{D0})$. Then, $\eta^* \in (0,1)$ denotes the value at which

$$U^D(x^D(\eta^*), x^F(\eta^*), g^D(\eta^*), g_1^D(\eta^*)) = U^D(x^{D0}, x^{F0}, g^{D0}, g_1^{D0}). \tag{22}$$

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Proposition 2 shows that in an environment with domestic rent seeking distortions, a partial banking union delivers two welfare implications: first, the welfare of households in the country receiving transfers may decrease, while political rent-seeking in these countries increases; and second, the welfare of households in the country providing transfers does not decrease. Linking this result to the European bailouts of 2010-2013, the model's implications provide a key nuance to the perceptions expressed by many voters in Europe that taxpayers in the core Eurozone countries bore the cost to rescue profligate or rent-seeking governments in the periphery.[16] While taxpayers in the financing country are making cross-country transfers, the cost of the bailout is shared, and taxpayers in the receiving country may bear an overall welfare loss from this process, even though political rents in their country increase.

Also, the mechanism behind the results points out to the importance of differentiating between the effects of austerity measures on public good provision to households and the effects on political rent-seeking. The model provides a mechanism for explaining why rent seeking may not decrease when austerity is imposed. Delays or insufficient limits to policies that provide rents to politically connected groups can be used to shield the politically connected, as has been documented for example in the type of spending cuts implemented as part of the Greek bailout.[17]

The result of Proposition 2 depends crucially on the relative bargaining weight carried by the country receiving transfers. To shed more light on the condition for η that emerges in Proposition 2, a lower bound for η^* can be established as a function of the "baseline" rent seeking in country D without the banking union, r^{D0}.

Corollary 1 *The threshold $\eta^*(\theta)$ on country $D's$ bargaining weight is bounded below by a decreasing function of r^{D0}, the rents derived by the policymaker of country D under autarky. This lower bound is achieved when full recapitalizations are provided in country D under the partial banking union $(x^D = \theta I^D)$ and there is no rent seeking in country F $(r^{F0} = 0)$.*

Proof: In Appendix A, section A.3.

The lower bound for η^* is derived at the extreme case in which D banks receive the maximum recapitalization, and all public funds in country F are used for socially efficient purposes and not

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[16]See, for instance, the survey data on European voter attitudes collected by Pew Global Research in 2012 (http://www.pewglobal.org/2012/05/29/european-unity-on-the-rocks, September 2017).

[17]Frieden and Walter (2017) and Alfaro et al. (2014) provide evidence of groups being affected differently by the chosen austerity measured and of clietelistic politics affecting the type of policies chosen to comply with austerity demands.

for rents. It helps highlight the relationship between the domestic and supranational forces at the root of the main result: high domestic rent seeking outside of a banking union means that fewer funds are used by politicians for socially efficient spending. This implies a high marginal benefit to households from additional recapitalizations, and therefore a high benefit from joining a partial banking union. This higher benefit means that improvements to household welfare can be achieved even if the weight η on country D is small – even if the transfers to country D are small.

The following results further explore the determinants of η^*, by performing comparative statics.

Corollary 2 *As the fiscal resources e^F of country F increase relative to those of country D (measured by e^D), the minimal bargaining power $\eta^*(\theta)$ which the latter must have for its citizens not to lose from the partial banking union decreases; the minimal bargaining power $\eta^*(\theta)$ also decreases as the weight γ^F placed by the policymaker in country F on the welfare of citizens increases.*

Proof: In Appendix A section A.4.

Corollary 2 shows that a higher difference in government budgets decreases the minimum supranational weight that country D must carry in order to overcome the distortion due to rent seeking. A higher budget for country F means that more of the bailout costs can be covered through transfers, thus easing the costs to country D households of the agreement policymakers accept at the supranational level. Similarly, a higher value of γ^F means that policymaker F places more weight on household welfare, and implicitly on recapitalizations. Then, this policymaker is more willing to accept higher transfers.

Corollary 3 *Consider a partial banking union that achieves full recapitalizations in country D ($x^D = \theta I^D$). If banks have high holdings of foreign assets ($\alpha^D + \alpha^F \leq 1$), then the minimal bargaining power $\eta^*(\theta)$ which country D must have for its citizens not to lose from the partial banking union decreases in the share α^F of assets held by country F households in country F banks.*

Proof: In Appendix A, section A.5.

Corollary 3 explores the effect of having households in country F hold more of their resources in banks abroad. It provides one measure of the depth of financial integration. The condition that holdings of foreign assets by banks are sufficiently high can be re-written as $\alpha^D \leq 1 - \alpha^F$. This condition says that the share α^D of deposits held by D households in D banks is lower than the share $1 - \alpha^F$ of deposits held by F households in D banks rather than in F banks. In other words,

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the citizens of country F are relatively more exposed to D banks than the citizens of country D, so they are relatively more affected by the bailout policies implemented by policymaker D.

The result shows that the threshold η^* below which a partial banking union is Pareto inefficient increases in environments with (i) high financial integration, and (ii) sufficiently large fiscal capacity in country F to allow for full recapitalizations in country D through a supranational agreement. These two factors combine to create high spillovers from bailouts. If financial integration as measured by the holdings of assets in foreign banks is high ($\alpha^D + \alpha^F \leq 1$), then bailouts bring relatively little benefit to country D households, as they hold few assets in their domestic banks, and a high benefit to country F households. A supranational agreement then entails a large increase in recapitalizations. But this also means a large increase in rent seeking. As long as country D contributes any funds to these bailouts – which is the case whenever $\eta \leq \eta^*$ –, more financial integration increases the supranational distortion described in Proposition 2: higher bailout spending is accepted by policymakers, who benefit from more rents.

The above results examine the welfare consequences of partial banking unions. The model, however, also yields positive implications about the relationship between measures of financial integration, cross-country transfers and recapitalizations in the absence of a complete banking union.

Proposition 3 *(Exposure to debtor country banks) Consider an environment with high holdings of foreign assets by banks ($\alpha^D + \alpha^F \leq 1$). A decrease in the share α^F of private assets held by F households in their own country's banks has the following effect:*

- *It leads to higher reinvestment spending $\underline{x}$ required by the supranational agreement and higher cross-country transfers τ if country $D's$ supranational bargaining weight η is sufficiently small;*

- *If leads to lower reinvestment spending $\underline{x}$ and lower cross-country transfers τ if country $D's$ supranational bargaining weight η is sufficiently large.*

Proof: In Appendix A, section A.6.

As described above, the condition that $\alpha^D + \alpha^F \leq 1$ implies that the citizens of country D are relatively less exposed to D banks than the citizens of country F. A decrease in the share α^F of private assets held by F households in country F banks implies a higher exposure of F households to country D banks. Without a change in the terms of the agreement $(\tau, \underline{x})$, the

citizens of country D would then derive a lower marginal benefit from bailouts in country D – because their relative exposure to domestic banks decreases – and the citizens of country F would derive a higher marginal benefit from bailouts in country D – because their relative exposure to these banks increases. Therefore, if the supranational authority values the welfare of citizens of country D sufficiently highly – η is sufficiently large –, the required bailouts and transfers decrease. If the supranational authority values the welfare of citizens of country F sufficiently highly – η is sufficiently small –, the required bailouts and transfers increase.

This result highlights the key importance of supranational bargaining weights when examining how cross-country transfers and recapitalizations respond to changes in financial integration. This insight may be used to examine the different responses of financing countries to the same debtor. In the case of the Irish bailout of 2010, for example, Germany had a larger exposure to the Irish banks than the United Kingdom in terms of proportion of total banking assets,[18] and the two countries expressed different opinions on the size of the proposed bailout. Germany supported a larger bailout, while the United Kingdom objected to this proposal and supported a smaller bailout.[19] These different positions are supported by the above result if the financing countries had larger supranational bargaining weights relative to the debtor country.

Another view of financial integration is that it leads to relatively more investment from foreign sources of funding. Consider a decrease in z^D and an increase in z^F such that the total investment in country D does not change.

Proposition 4 *(Ownership of deposits) Consider the case in which full recapitalizations are performed in both countries under the partial banking union ($x^D = \theta I^D$ and $x^F = \theta I^F$). Consider also a decrease in the ratio z^D/z^F of the private assets of citizens from country D relative to those of citizens from country F, performed such that the total size of assets held in the banks of country D remains constant (I^D does not change).*

- *The reinvestment spending $\underline{x}$ required by the supranational agreement and the cross-country transfers τ both increase if the following condition is satisfied:*

$$- R z^D u''(R z^D) < u'(R z^D). \tag{23}$$

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[18] According to IMF statistics, exposure to the Irish banks as a percentage of home country banking system assets was 1.8% for Germany and 1.3% for the U.K. (data provided in Sharma (2014), pp. 136).

[19] Sources and background provided in Breen (2012), pp. 10.

- *The reinvestment spending $\underline{x}$ required by the supranational agreement and the cross-country transfers τ both decrease if the above condition is not satisfied.*

Proof: In Appendix A, section A.7.

Proposition 4 examines the effect of increasing the exposure of country F households to country $D's$ banks. The total size of bank assets in country D is held constant, but the share of these assets owned by the citizens of country F increases. This increased exposure of foreign households to country $D's$ banks immediately implies that the citizens of country F derive a higher benefit from recapitalizations in country D. Yet, for the households of country D the effect is two-fold. First, households in country D receive a smaller share of any public recapitalizations, since they are less exposed to their domestic banks. Then, for the policymaker in country D, rents become relatively more valuable than recapitalizations. Second, households in country D have relatively fewer assets z^D compared to households in country F, and therefore the marginal benefit of bailouts in terms of increasing their consumption is higher.

Condition 23 allows us to evaluate which of the two effects above is stronger. The first effect is captured by $u'(Rz^D)$, since this measures the marginal benefit of increasing private consumption through bailouts. The second effect is captured by $Rz^D u''(Rz^D)$, which measures how much the marginal value of consumption decreases as z^D decreases. If Condition 23 holds, then the second effect is smaller than the first effect, meaning that bailouts are less valuable to households in country D. Policymaker D then prefers to substitute away from recapitalizations and increase rents instead. Therefore, bailouts must be financed through higher cross-country transfers and with higher conditionality through the reinvestment requirement. If Condition 23 is not satisfied, then the second effect dominates, and public bailouts are more valuable to households in country D. Policymaker D takes relatively fewer rents, and relatively more recapitalizations are performed with domestic funds.

Acharya et al. (2014) point out that distinguishing between domestic and foreign claims on banks is relevant for understanding crises in general. The above result highlights a measurable implication for the connection between the domestic households exposure banks and the terms of supranational agreements. One may consider the above result, for example, when examining whether higher relative domestic assets are associated with less political opposition in the financing countries to bailouts in countries to which their citizens are exposed.[20] As shown above, higher

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[20]In the 2011 bailout agreements for Portugal versus Greece, for example, one may also consider whether the

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relative domestic assets may have different implications for the size of cross-country transfers and for rent-seeking. Notice also that, although using two different measures of financial integration, Propositions 3 and 4 give similar implications for the changes in supranational agreements.

The above results show that the reduction in D household welfare comes from the interplay of domestic rent seeking and supranational allocation of bailout spending. Having established this main result and its implications, we next move to explore a potential solution to the inefficiency caused by the partial banking union. The next section considers the role of fiscal rules that limit public debt may play in reducing rent seeking in a partial banking union.

4   A Partial Banking Union with Fiscal Rules

Fiscal integration has been argued to be a solution to the shortcomings of partial financial integration. This section shows that this may not be the case when fiscal integration is achieved through fiscal rules.

I model fiscal rules as the policy of each country setting an upper limit on debt at the beginning of period 0, contingent on the loss θ.[21] As in Halac and Yared (2015), I consider and contrast two types of fiscal rules: supranational and domestic. Supranational fiscal rules are set by the supranational authority which maximizes the weighted sum of household welfare. Domestic fiscal rules are set in a decentralized fashion, with each country choosing its fiscal rule independently.

4.1   Only Supranational Fiscal Rules

First, consider the case in which fiscal rules are set at the supranational level, by the supranational authority. A debt limit $\overline{B}^i(\theta)$ contingent on the loss θ is proposed for country $i \in \{D, F\}$ at the same time as the transfer $\tau(\theta)$ and minimum reinvestment requirement $\underline{x}(\theta)$. If the partial banking union is not implemented, the outside option for policymakers in each country is to choose policies under no banking union and no fiscal rules.[22]

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higher relative domestic assets in Portugal contributed to less political opposition from donor countries to transfers made to Portugal versus Greece.

[21]In Appendix B, I present a version of the model in which fiscal rules cannot be made contingent on the realization of shock θ. The main results are qualitatively similar. In compiling a new dataset of fiscal rules in use around the world, Budina et al. (2012) find a recent evolution of fiscal rules towards rules that offer more flexibility in response to shocks. Therefore, the modelling choice of shock-contingent fiscal rules seems more relevant for current policy debates.

[22]In Section 4.3 below, we relax this assumption to allow for both supranational and domestic fiscal rules.

Denote by $\overline{U}^i(\theta, \overline{B}^i, \tau, \underline{x})$ the indirect household utility in country $i \in \{D, F\}$ given θ, when the debt limit is $\overline{B}^i$, and the terms of the partial banking union are $(\tau, \underline{x})$. The problem for the supranational authority is therefore:

$$\max_{\overline{B}^D, \overline{B}^F, \tau, \underline{x}} \eta \overline{U}^D(\theta, \overline{B}^D, \tau, \underline{x}) + (1 - \eta)\overline{U}^F(\theta, \overline{B}^F, \tau, \underline{x}) \tag{24}$$

subject to

$$
\begin{aligned}
(1 - \gamma^D)v\left(r^D\left(\overline{B}^D\right)\right) + \gamma^D \overline{U}^D\left(\theta, \overline{B}^D, \tau, \underline{x}\right) &\geq (1 - \gamma^D)v(r^{D0}) \\
&\quad + \gamma^D \overline{U}^D(\theta, b^{D0}, 0, 0), \tag{25} \\
(1 - \gamma^F)v\left(r^F\left(\overline{B}^F\right)\right) + \gamma^F \overline{U}^F\left(\theta, \overline{B}^F, \tau, \underline{x}\right) &\geq (1 - \gamma^F)v(r^F) \\
&\quad + \gamma^F \overline{U}^F(\theta, b^{F0}, 0, 0). \tag{26}
\end{aligned}
$$

Constraints (25) and (26) represent the participation constraints for the D and F governments, respectively.

The analysis of the above problem leads us to the following result.

Proposition 5 *Binding supranational fiscal rules are not imposed in equilibrium whenever a partial banking union establishes a binding reinvestment requirement $\underline{x}$ for policymaker D.*

Proof: In Appendix A, section A.8.

The supranational authority internalizes the fact that fiscal rules and the partial banking union have opposing effects on rent seeking in country D. If it imposes a binding reinvestment spending $\underline{x}$, the supranational authority accepts that rent-seeking will increase along with recapitalizations. Moreover, fiscal rules have no effect on the choice of rents versus recapitalizations once a binding spending amount $\underline{x}$ is set. Yet, fiscal rule have a negative effect on public good provision by precluding cost smoothing across periods. Thus, in this case, fiscal rules that limit debt only increase the cost of bailouts. The above result shows that when the same decision-maker can select both the terms of the partial banking union and the fiscal rules, it faces a trade-off between using a binding reinvestment requirement $\underline{x}$ and using debt limits. If the supranational authority found it optimal to set a non-binding $\underline{x}$, then fiscal rules may also be optimal, in order to reduce rent-seeking. Yet, as soon as a binding $\underline{x}$ is optimal, the supranational authority internalizes the

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opposing incentives to the policymakers in terms of rent seeking offered by a binding $\underline{x}$ and a debt limit. Notice also that, given the proof to Proposition 2, the case in which the welfare of country D households decreases involves a binding reinvestment requirement $\underline{x}$.

The next section considers the setting in which fiscal rules are set at the domestic rather than the supranational level.

4.2   Only Domestic Fiscal Rules

Consider the case in which fiscal rules are set at the domestic level, by each country. A debt limit $\bar{b}^D(\theta) \geq 0$ contingent on the loss θ is set in country D so as to maximize D household utility, anticipating that the policymaker will decide whether to implement the terms of the partial banking union. The key assumption is that the fiscal rule is set by households through a constitutional process that allows them to set this rule and commit to it before the policymaker makes policy decisions.[23] In terms of the timing of the model described in Section 1.5, setting the fiscal rule would represent step 0 in the sequence of events.

Since the fiscal rule is set in anticipation of the partial banking union, the households infer its effect on the supranational authority's choice of τ and $\underline{x}$. The supranational authority must propose the transfer τ and reinvestment requirement $\underline{x}$ taking into account the debt limits $\bar{b}^D$ and $\bar{b}^F$ in each country. The problem it faces is

$$\max_{\tau, \underline{x}} \eta \overline{U}^D(\theta, \bar{b}^D, \tau, \underline{x}) + (1 - \eta)\overline{U}^F(\theta, \bar{b}^F, \tau, \underline{x}) \tag{27}$$

subject to

$$
\begin{aligned}
(1 - \gamma^D)v(r^D) + \gamma^D \overline{U}^D(\theta, \bar{b}^D, \tau, \underline{x}) \;\geq\; & (1 - \gamma^D)v(r^{D0}) \\
& + \gamma^D \overline{U}^D(\theta, \bar{b}^D, 0, 0),
\end{aligned}
\tag{28}
$$

$$
\begin{aligned}
(1 - \gamma^F)v(r^F) + \gamma^F \overline{U}^F(\theta, \bar{b}^F, \tau, \underline{x}) \;\geq\; & (1 - \gamma^F)v(r^{F0}) \\
& + \gamma^F \overline{U}^F(\theta, \bar{b}^F, 0, 0).
\end{aligned}
\tag{29}
$$

The two constraints represent the participation constraints for the D and F governments, re-

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[23]The problem can be interpreted as a one-period reduced-form representation of a dynamic model in which past policymakers (with preferences aligned with those of households) have chosen fiscal rules that are binding for current and future policymakers.

spectively. The participation constraints make it clear that the fiscal rules are set outside of the partial banking union, and therefore they remain in place even if the partial banking union is not accepted.

Given $\tau(\bar{b}^D)$ and $\underline{x}(\bar{b}^D)$ derived from problem (27), households in country D choose debt limit $\bar{b}^D(\theta)$ to solve:

$$\max_{\left\{\bar{b}^D, r^D, x^D, g^D, g_1^D\right\}} u(c^D(x^D, x^F)) + w(g^D) + \beta w(g_1^D) \tag{30}$$

subject to

$$\gamma^D R \sigma^D u'(c^D(x^D, x^F)) = (1 - \gamma^D) v'(r^D), \tag{31a}$$

$$w'(g^D) \geq w'\left(g_1^D\right) \tag{31b}$$

$$x^D + r^D \geq \underline{x}(\bar{b}^D), \tag{31c}$$

$$g^D \leq e^D + \beta b^D - \underline{x}(\bar{b}^D) + \tau(\bar{b}^D), \tag{31d}$$

$$g_1^D \leq e^D - b^D, \tag{31e}$$

$$r^D + x^D + g^D \leq e^D + \beta b^D, \tag{31f}$$

$$b^D \leq \bar{b}^D. \tag{31g}$$

Constraints (31a)-(31d) are the equilibrium conditions derived from the D policymaker's maximization problem with debt limit $\bar{b}^D(\theta)$. Constraint (31f) is the budget constraint of the D government, and constraint (31g) represents the limit on public debt imposed by the fiscal rule. The problem for the F country is analogous.

In this setup, setting $\tau = 0$ and $\underline{x} = 0$ creates the benchmark case of fiscal rules without a partial banking union. Since rent seeking is only possible in period 0, restricting the government's access to funds in that period reduces rents, and this directly increases household welfare.[24]

In order to generate an analysis comparable to the case without fiscal rules, we also focus on the case in which policymaker F provides full recapitalizations ($x^F = \theta I^F$) when the domestic fiscal rule is $\bar{b}^F(\theta)$, optimally set by the F households. The lower bound on γ^F necessary for this to be the case is provided in the Appendix A.10.

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[24]This result is linked to the literature on the political economy of debt, which shows that governments overborrow if the value of current period incumbency is higher than expected future benefits to being in power (in this case, the benefit of rents exists only in period 0). See, for example, Aguiar and Amador (2011).

Proposition 6 *Consider a partial banking union with domestic fiscal rules and full recapitalization in country F ($x^F = \theta I^F$). There exists threshold $\eta^{**}(\theta)$ for country $D's$ bargaining weight such that a partial banking union with domestic fiscal rules does not achieve a Pareto improvement over no partial banking union whenever country $D's$ bargaining weight η is below η^{**}. The threshold $\eta^{**}(\theta)$ is lower than the corresponding threshold $\eta^*(\theta)$ derived in the case without fiscal rules.*

Proof: In Appendix A, section A.9.

The result is driven by the same domestic and supranational forces as those described in Proposition 2. The main effect of the fiscal rules is to change the supranational division of bailout spending between the two countries. Fiscal rules limit policymaker D's ability to borrow in order to smooth out the cost of bailouts over time. This makes it more costly for the policymaker to comply with the reinvestment requirement $\underline{x}$, and it results in a reduction in $\underline{x}$ compared to the case without fiscal rules. Moreover, the supranational authority balances the distribution of costs across countries, which results in a higher cross-country transfer being proposed. Finally, since households anticipate the partial banking union when setting the fiscal rule, they use the fiscal rule strategically, so they impose a binding rule only if this rule delivers higher utility to them than not constraining the policymaker.

The following results explore the welfare changes generated by a partial banking union in the presence of domestic fiscal rules.

Corollary 4 *The welfare of households in country F is lower in the partial banking union with domestic fiscal rules, compared to the case without fiscal rules. The welfare of households in country D is weakly higher in the partial banking union with domestic fiscal rules than in a partial banking union without fiscal rules.*

Proof: In Appendix A, section A.11.

The intuition is that fiscal rules in country D limit the ability of policymaker D to fund recapitalizations using public debt. As described above, the effect of the fiscal rule is to determine an increase in cross-country transfers. This reduces household welfare in the country providing these transfers, while it guarantees that households in the country receiving transfers are better off than without the fiscal rules. This outcome hinges on the fact that households can commit to a fiscal rule before the policymaker decides policy.

Corollary 5 highlights a key strategic effect of fiscal rules for countries receiving transfers, coming from the fact that households have the power to commit to a domestic fiscal rule before any other decisions are made by policymakers. By limiting debt-taking, households in country D reduce the fiscal burden that their policymaker can take on relative to the other policymaker when funding the recapitalizations called for by the supranational authority. Since the policymaker in country D is constrained by a binding debt limit, a higher share of the spending on recapitalizations is borne by country F. This result shows that domestic fiscal restrictions may be used strategically to restrict supranational agreements. Notice that the same strategic effect emerges if instead of debt limits, households could set limits on the country's fiscal capacity or taxing ability.[25] While the focus of the model is on debt limits, strategic limits on taxing capacity may play a role just as important if not more important than limits to borrowing ability when examining the negotiations over the recent Eurozone bailout agreements. More broadly, in direct relation to the debates in the European Union, this result provides another mechanism through which fiscal rules may restrict the functioning of a supranational agreement, complementing the work of Von Hagen and Eichengreen (1996).

Finally, Corollary 5 immediately leads to an empirical implication.

Corollary 5 *Consider a partial banking union that implements required reinvestment spending $\underline{x}$. The cross-country transfers τ received by country D are higher if there are domestic fiscal rules in country D, compared to the case without fiscal rules.*

The result implies that constraints on government spending may be leading to higher relative cross-country transfers to the countries in which such restrictions exist. Notice, however, that the smaller overall welfare gains under fiscal rules also imply that supranational agreements may be less likely between countries with fiscal rules.

In the next section, we consider the interplay between fiscal rules inside and outside the partial banking union.

4.3 Different Fiscal Rules Inside and Outside the Partial Banking Union

Consider now the flexible case in which different fiscal rules may exist inside and outside the partial banking union. First, we examine the case in which the supranational authority can set fiscal rules

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[25]The equivalence between the debt instrument and the tax instrument is discussed in Section 1.3.

if the country joins a partial banking union, but if the country does not join the banking union, then it reverts to an autarkic scenario with domestic fiscal rules. The timing of events is as follows. First, the citizens of each country decide a domestic fiscal rule for the autarky case. Then, if the country implements a supranational agreement, the supranational authority chooses a supranational fiscal rule along with the transfer τ and the reinvestment requirement $\underline{x}$.

The supranational authority faces the same objective (24), but subject to constraints

$$
\begin{aligned}
(1-\gamma^D)v\left(r^D\left(\overline{B}^D\right)\right)+\gamma^D\overline{U}^D(\theta,\overline{B}^D,\tau,\underline{x}) &\geq (1-\gamma^D)v\left(\overline{r}^{D0}\right) \\
&\quad +\gamma^D\overline{U}^D(\theta,\overline{b}^{D0},0,0), \qquad (32) \\
(1-\gamma^F)v\left(r^F\left(\overline{B}^F\right)\right)+\gamma^F\overline{U}^F(\theta,\overline{B}^F,\tau,\underline{x}) &\geq (1-\gamma^F)v(\overline{r}^F) \\
&\quad +\gamma^F\overline{U}^F(\theta,\overline{b}^{F0},0,0), \qquad (33)
\end{aligned}
$$

where $\overline{b}^{i0}$ denotes the domestic fiscal rule chosen if country $i \in \{D,F\}$ does not implement the agreement. The optimal rent seeking under debt limit $\overline{b}^{i0}$ in country i is denoted by $\overline{r}^{i0}$. Constraints (32) and (33) represent the participation constraints for the D and F governments, respectively.

Allowing both supranational and domestic fiscal rules does not change the result of Proposition 5:

Proposition 7 *Consider an environment in which supranational fiscal rules can be imposed in the partial banking union and domestic fiscal rules can be imposed outside the partial banking union. Binding supranational fiscal rules are not imposed in equilibrium whenever a partial banking union is formed with a reinvestment spending $\underline{x}$ that is binding for policymaker D.*

Proof: Analogous to the proof to Proposition 5.

The intuition is the same as for Proposition 5. When the reinvestment requirement is binding, the benefit of fiscal rules is eliminated, as described above. The supranational authority internalizes the opposing incentives to policymakers in terms of rent seeking, and it chooses either a binding reinvestment requirement $\underline{x}$, along with cross-country transfers, or fiscal rules. Of course, in the case in which the reinvestment spending is not binding for policymaker D, because sufficiently high cross-country transfers are offered, binding fiscal rules have benefits and would therefore be optimal for the supranational authority.

Another way to achieve different fiscal rules inside and outside the partial banking union is to

allow the citizens of each country to choose one fiscal rule for the autarky case, and one fiscal rule for the case in which a supranational agreement is implemented. In this case, each country chooses fiscal rule $b^i(\theta, \rho)$ conditional on both θ and ρ, where $\rho = 1$ denotes implementation of the partial banking union, and $\rho = 0$ denotes no implementation. Then, $b^i(\theta, 1)$ is chosen to solve program (30), while $b^i(\theta, 0)$ is chosen to solve the same program when $\tau = 0$ and $\underline{x} = 0$. In terms of the timing of the model, the choice of $b^i(\theta, 0)$ is made as step 0 in the sequence of events outlined in Section 1.5. We can show that, with domestic fiscal rules set conditional on ρ, a Pareto improvement can be achieved even for $\eta < \eta^{**}$, with η^{**} defined in Proposition 7.

Proposition 8 *For any bargaining weight $\eta \in (0, 1)$ held by country D, there exists a lower bound $\underline{\gamma^D}(\eta) < 1$ for the weight placed by policymaker D on citizens' welfare such that for all weights γ^D above this threshold, a partial banking union with fiscal rules that depend on whether the partial banking union is implemented achieves a Pareto improvement in household welfare.*

Proof: In Appendix A, section A.12.

Fiscal rules that can be conditioned on ρ allow D households to influence the problem for the policymakers through two different channels. First, by setting $b^D(\theta, 0)$ higher, they can increase the outside option for policymaker D, making the supranational agreement less desirable. Second, by setting $b^D(\theta, 1)$ lower, they can increase the transfer country D receives relative to the required recapitalization, making the supranational agreement less costly for country D. Thus, a Pareto improvement can be achieved even with large domestic rent seeking distortions.

Notice that a higher value of γ^D in this model means that more of the bailout spending is used for recapitalizations rather than rents. Variations in γ^D reflect changes in the value of political rents. Such changes may be achieved through regulatory or judiciary reforms that reduce corruption or that place restrictions on the links between politicians and financial institutions. Then, domestic fiscal rules and political reforms both separately act towards reducing rent seeking. Less rent seeking also increases the welfare for households in country F, who transfer funds to country D. This linkage may explain the use of structural reforms requirements as part of bailout packages; however, the difficulty comes in determining which institutions or structural reforms act towards increasing γ^D rather than having no effect or even increasing the value of rent seeking.

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5 Conclusions

This paper presented a model of a partial banking union with domestic rent seeking. It showed that such a partial banking union can reduce the welfare of citizens in the country receiving transfers. The result is driven by the an interaction of domestic and supranational forces: the domestic mismatch between the benefits of bailouts to policymakers versus citizens and the supranational allocation of bailout costs between the two countries. Fiscal rules meant to reduce rent seeking may work well without a partial banking union, but they may lower the overall welfare gains from a partial banking union.

Despite its simplicity, the model captures several main features of government intervention in the banking sector. First, it captures the diffused costs of bank bailouts. When public funds are used to recapitalize a distressed bank, the costs are spread over the entire taxpayer base, through a reduction in other public goods or an increase in public debt. Second, it captures the cross-border spillovers from government intervention. It also captures the tension that banks generate, as institutions with cross-border operations, but backed by national authorities. Moreover, it captures the inability of governments to target public funds just to domestic stakeholders, because investments are made with funds from both domestic and foreign sources. Finally, the distressed investment projects and the aggregate loss to the banking sector provide a clear motivation for government intervention and supranational transfers. Of course, other sectors of the economy share some of these features. For example, environmental policies generate significant spillovers and carry a high benefit of supranational agreements; however, it is not clear that they create the same incentives for higher public debt, increased public spending and the development of assets that make it impossible for policymakers to target policies to particular constituencies. The model is therefore aimed at capturing key elements of the politics of supranational agreements over banking sector interventions. Two main policy implications come out of this model. First, effective supranational fiscal rules may not be implemented together with a partial banking union, since the two institutions have offsetting effects on domestic incentives for rent seeking. This calls into question the policy proposals for a gradual implementation of a fiscal union together with a banking union. Without a full banking union in place, the viability of a fiscal union with supranational rules may be threatened. Second, the welfare losses stemming from the inability to fully centralize bank bailouts can be mitigated through domestic fiscal rules, if the political distortion is not too large. The results show

that even small reforms towards reducing the politicization of bank bailouts could then allow for a welfare improving partial banking union with domestic fiscal rules.

Finally, the model opens up several avenues for further research. The portfolio choices of households have so far been taken as exogenous. Allowing for an endogenous allocation of assets in response to the supranational agreement could shed light on the dynamics of investment and public good provision under a partial banking union. Also, the model has taken as given the structure of the supranational institution that proposes the partial banking union. Understanding how the supranational weighting of countries is developed could help illuminate how supranational institutions evolve in the absence of political integration.

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